

# Motor Cycling

# & Motoring

## DRY BATTERIES FOR SPARKING.

### Some Notes on their Construction and Merits, and Disadvantages compared with Accumulators.

In view of the fact that dry batteries still retain a limited field of application in the ignition system of small motors on some patterns of tricycles, and are, in fact, to be found in use on one or two types of American motor-bicycles, it may be worth while just to explain the principles of construction, etc., to our readers. In the first place, it may be stated that the use of the word "dry" is not strictly correct. The contents of a primary battery cannot be in a perfectly dry form, and give a current semi-dry, which would be a more correct form to put it. Let us just look at the construction of a dry cell. Its action is exactly the same as that of the well-known Leclanche battery used on every electric bell system. The only difference is in the disposition of the elements (carbon and zinc) and the chemicals (dioxide of manganese and sal-ammoniac). Instead of having a rod of zinc in a glass jar, we make the jar itself out of sheet zinc. The liquid sal-ammoniac is replaced by some absorbent material like plaster of Paris and oxide of zinc, which is saturated with the liquid, and forms a kind of stiff paste. In the centre of this is placed the carbon plate, which is surrounded with its depolarizing mixture of oxide of manganese. The whole thing is then sealed over with pitch or marine glue, and is ready to give a current. This current is decidedly stronger than that obtained from the ordinary zinc rod battery, for the simple reason that the strength of current depends to a large extent upon the amount of zinc surface exposed to the action of the sal-ammoniac. Remember, we get our electricity solely at the expense of the zinc being dissolved or burned away; as soon as the moisture necessary for the chemical action disappears the battery goes out of action.

#### Advantages Claimed.

The advantages claimed for a dry battery are:—Absence of an acid liquid with its corroding and burning action; freedom from charging up difficulties; and impossibility of having short circuiting of plates from vibration, as some accumulators are liable to. On the other hand, it is necessary to employ three or four separate cells of large size to get the necessary volts to work the coil, and in the limited space afforded in the frame of a motor-bicycle it is not possible to store a set of dry cells of sufficient capacity. Then as to their reliability. It may be accepted as a fact that a dry battery steadily de-

teriorates, whether in or out of action, owing to the drying up of the materials. At the same time, the "resistance" of the cell increases, weakening the current and producing misfires in the motor.

#### How an Exhausted Dry Battery can be Re-charged.

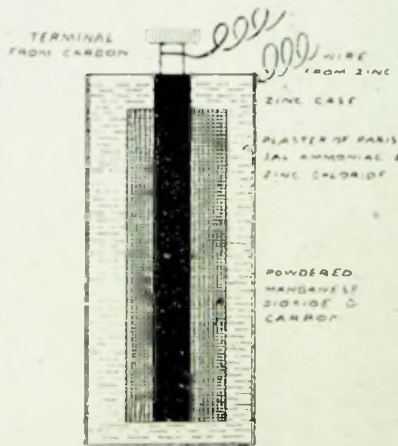
Here are a few hints that may be of considerable service to motorcyclists and motorists generally. When a set of dry cells are unable to give a sparking current, take them out of their cardboard cases and drill about a dozen small holes through the zinc-containing case; then obtain a quantity of sal-ammoniac and dissolve in some water contained in a vessel into which the batteries can be placed; then allow them to soak in the strong sal-ammoniac solution for 48 hours, take them out, drain them, and replace in their cases. In most cases, providing that the oxide of manganese is not all used up, the cells will give off full strength of current for a long period.

#### The Advantages of Accumulators.

These may be stated as being, firstly, their capability of giving a current of full strength and voltage; secondly, compactness and reliability; thirdly, no deterioration when not giving current, and also the ease with which they can be re-charged from the electric light supply of most towns and cities, an important consideration when touring.

#### Can the Explosive Power of Petrol be Increased?

There is a considerable amount of talk on this subject going on in motor circles at the present moment. It seems that some French experimenters have been trying the effect of dissolving picric acid in the petrol. The results obtained are said to be startling. This can be quite believed when it is considered that picric acid forms the basis of such destructive explosives as melinite and lyddite. The increase of power obtained is claimed to be from 30 to 50 per cent. The present form of cast iron cylinder, however, is quite unable to resist the force of the explosion, and a much stronger one of wrought steel has to be substituted. On the whole, we do not think that the idea will commend itself to motor-cycle designers. The results of a back fire or premature ignition of the charge would not be pleasant to contemplate.



INSIDE OF A DRY BATTERY.

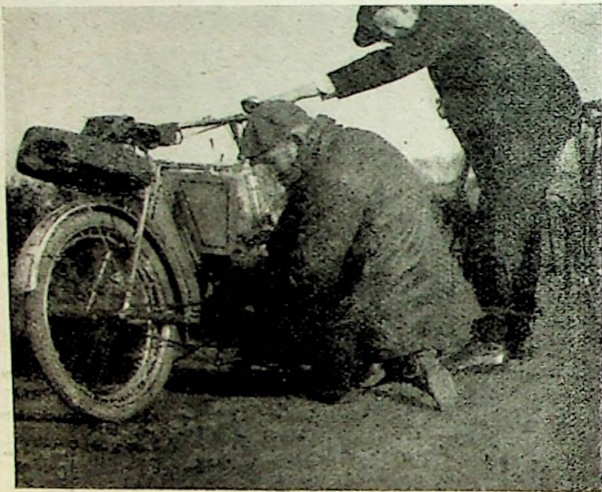


## A MISSIONARY TRIP.

By J. W. RUMNEY.

*The writer will be known to a large number of our readers as the Tourist Editor of "Cycling." He has not yet succumbed to the charms of motor-ing.*

Living, as I do, in the Back o' Beyond, it had not hitherto been my privilege to take a ride in company with a motor-cyclist, and I welcomed the opportunity of a fine breezy day following the Nottingham C.T.C. meeting to accompany a well-known motor-bicyclist over the first stage of his homeward way. Though I had voted against his "automobilist" motion on the previous evening, I certainly had no prejudice



*What can be the matter?*

inst the motorcycle on principle, and still less was there any a in my mind, such as seems yet to stick in that of some of the erans, that I was quite willing and able to "take on" any motorcyclist. Anyhow, my days of hurrying are long since past, and I must leave such challenges in the more capable hands of such perennial scorchers as James Lennox and W. G. Smyth.

Thus, with an open mind, I and another ordinary cyclist like unto myself ventured forth on the Saturday afternoon from Nottingham to Grantham by way of Belvoir Castle. After zigzagging across the trams and bumping down a long rutty street of commerce, we got on the fine open road at Trent Bridge and found we had a howling N.W. gale at our backs. This put heart into the ordinary cyclists, and, as the borrowed Raleighs rattled off the first twelve miles inside three-quarters of an hour, despite the riders' ordinary walking costumes, neither of them felt particularly envious of the leather-clad rider of the grey motor-cycle, who, by kindly use of his throttle, abstained from making a show of us. The road, so far, was practically level, and he had no pedalling to do and we no real work; and during one long easy descent it puzzled me how the freewheeling featherweight rapidly overhauled the motor; it was news to me that the engine could not remain absolutely neutral. I was agreeably surprised to find that the noise of the engine did not prohibit such conversation as the wind allowed of, and also that the horses seemed to have no particular objection to it—not even a spirited-looking cob driven by a man in livery.

It was somewhere about the fifteenth mile, just before we left the main road, that things began to happen which might have militated somewhat against our favourable opinion of the capabilities of the new machine. "It's only the belt!" was the cry of the motorist; but we had to wait some little time for him. Another half-mile on the decidedly inferior by-road we had now entered upon and the engine stopped. The door of the tin

box was opened, and a diagnosis proclaimed that the wiring was at fault—a voltmeter was produced, whose pointer stayed obstinately at zero, to the rider's amazement, as he calculated that he had enough for some hundreds of miles; and so he had. I fancy a bit of dirt or an oxidised wire was the cause; anyhow a whittle at the cable with a knife put all right, and off we went again. Hills now appeared, and pedalling was necessary at places, but not to any serious extent, and though we walked the last rise to Belvoir Castle, I doubt if it was any more necessary for the motorist than for myself. Dukes are the best natured of people, and we were kindly admitted and shown the fine rooms and pictures, even though one of us was clad in the shiny leather of the Associated Engineer and another had a six-inch circle of oil on the inside of his imperfectly clipped trouser. A fine sweep down the park to Dendon, and snap went the belt again. Another halt of five minutes, more piercing, holding up, backing, and 100 yards more and the same game all over again. But this time the repair is effective, and there is no more trouble as long as we are together. A long drag up from Dendon village shows us that motor-cycling gives the legs some exercise; but man plus motor get to the top a good deal quicker than we do, and, indeed, over the highly undulating remainder of the road into Grantham we are only in it on the sufferance of the motorist. Put crudely "three bursts of the band and one failure of electricity in 25 miles." Doesn't sound very encouraging, but these were, after all, trifles, and the ride showed one that the new machine can be got up tolerable hills, can be used at a moderate pace, does not make much disturbance with horses, does allow of some exercise, and on a dull stretch of road is practically as useful as a railway in saving time. The details of the motor adjuncts, however, seem to me to be somewhat in the rough as yet, about at the same stage as cycle fittings were in 1875. Indeed, the breaking of the belt reminded me very much of similar breakings in the cord that worked my back wheel brake in 1878. I did not



*Good night to Belvoir!*

then wait for cycles to be perfected, and, possibly, I may not wait now for motor-bicycles to get to the same pitch as the featherweight cycle I was on. When I got home to Back o' Beyond and told my story to my engineering expert, who likewise has not yet ridden the assisted cycle, he at once condemned the rawhide belt as being much more brittle than a tanned one, coated with castor oil, as used in all shops, and expressed his opinion that the chain was bound to come in time. I noticed that the flat belt has not all its own way even in the shops, for at Beeston one of the tools was worked by a chain:



## IN TRANSIT.

*Some Feelings and Experiences of a Cyclist in the Transition Stage.*

**A Drain Tap for the Carburetter.**

One is apt now and again to get the carburetter flooded, the result being that there is no surface of petrol to give off the needful vapour. Now, in the Minerva tank, there is only a plug with a hexagon head, screwing into the bottom of the carburetter and, by loosening this, the excess of petrol trickles out. But, to effect this slight operation, one has to undo one's wallet, get out a spanner and then suffer the petrol to run over one's hands or gloves. That is a detail, of course, but if one desires, on arriving home, to empty the carburetter and tank of petrol so as to prevent it getting stale, there is the dickens of a mess, because the spirit is all over engine and hands and floor before the plug can be entirely removed and a receptacle placed below the orifice to catch the liquid. What is wanted of course is a proper drain tap, such as is fitted to most carburetters, but I was not



[A HOME-MADE PETROL DRAIN TAP FOR MINERVA CARBURETTER.

able to get one anywhere that would screw into the place of the plug. Naturally, when such an obviously useful fitting was not provided, I wanted to know the reason, and I was told that it is difficult to make a tap that is petrol tight, but I can scarcely believe this, and I am certain that the drain tap on my Ariel tricycle never leaked.

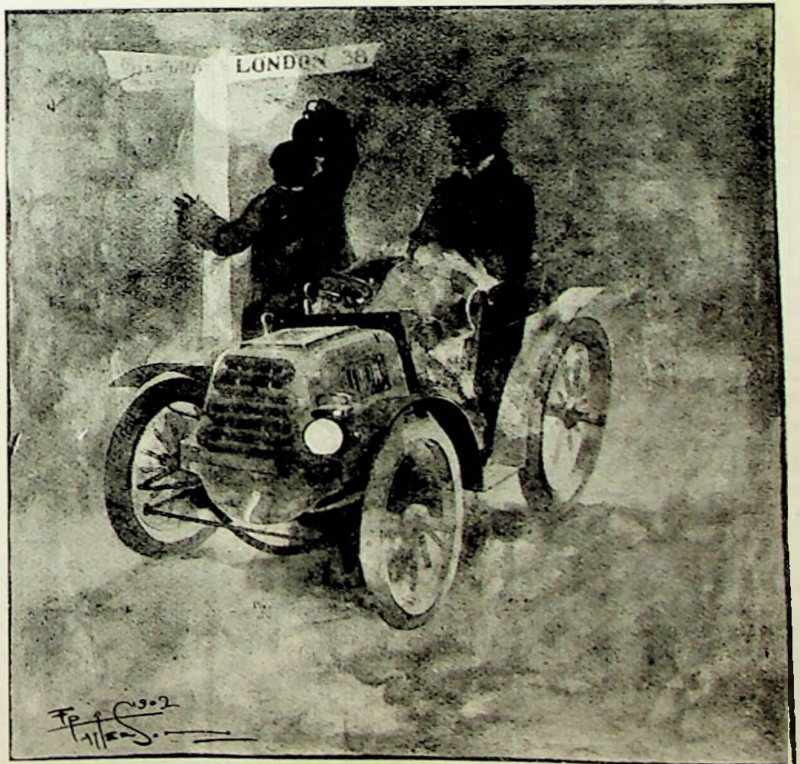
However, the required article not being purchasable, the only thing to do was to make it, and I managed it in this way: I bought a small drain tap from the United Motor Industries, the screwed part being about a quarter of an inch in diameter. On one face of the hexagon of the plug a hole was drilled and tapped, and the drain tap was screwed in and soldered. A short piece of three-sixteenth copper tube soldered to the nozzle of the tap completed the device. The tap could not be screwed into the bottom of the plug because in that position it would have fouled the silencer. The tap is open when the thumb-piece projects outwards, and it is closed when the latter is either upwards or downwards, so that it very conveniently lies snugly up against the side of the carburetter and does not catch the clothing at all. It required a little conjuring in order to get the device right, but its usefulness has repaid all the trouble, whilst the cost was a couple of shillings. I contend, however, that it ought not to be left to the rider to perfect all these little details.

\* \* \*

**The Yapping Dog.**

Will somebody kindly tell me of a short, sharp, and effective way of dealing with the dog that yaps incontinently at one's heels? It used to be bad enough on the cycle, when the revolving feet seemed to awaken all the bad instincts that lay dormant in the canine race,

but the motorcycle is ten times worse. Whether it is that the motorcycle appeals to the brutes as something too uncanny to be tolerated, or whether the pom-pomming from the silencer (wretched misnomer!) offends some innate sense of the beautiful, is a question which mere human beings like ourselves will never be able to solve, but certain it is that every dog seems to be having its day out when a motorcycle passes. I was placed in rather an awkward fix the other day. There was a queue of cyclists hanging to my back wheel, there was a lot of traffic about, and that in front requiring careful watching at the moment, when a miserable terrier shot out and snapped and barked at my left leg like a thing possessed. I could not increase my pace and drop the brute, or I should have courted disaster amongst the manoeuvring vehicles before me, and I could not slow down without endangering my kite tail of cyclists, but wickedness brought its own reward, because the dog got slightly in front; and a fortunately directed kick caught his nasal projection, and sent him howling into the gutter. Another experience I had was with a big black retriever, which ambled gently alongside, uttering a deep and ominous growl. Now, I haven't the slightest fear of dogs in the ordinary way, but I did not dare to make any strange movement, because the beast seemed to be waiting for something of the kind to aggravate it sufficiently to the biting point, and my legs were in a somewhat exposed position. However, it tired of the sport very quickly, or a cat attracted its attention, and I escaped. With the yapping dog, the buckjumping horse, and the terrified pedestrian, the life of the motorcyclist is far from being a continued state of calm serenity. I intend to try a kind of pepper-castor filled with French chalk on the next mongrel that snaps: it may divert the attention of the beast, especially if a few grains of pepper happen to be amongst the chalk. CYCLOMOT.



L.O.N.D.—! An incident in the passage of a belated car.



## THE MOTOR BICYCLE: WHAT WILL IT BECOME?

By "MAGNETO." (Continued.)

"Magneto" continues his criticisms and suggestions, dealing with such important points as ignition, carburetters, wheel sizes and tyres. Next week he will summarise briefly the views he has indicated in this and the preceding instalment.

In the diagram submitted last week the idea for a two-speed driving pulley is a fairly simple one. The pulley A is keyed to the shaft, and drives a small secondary shaft at the same speed through two gears; on the other pulley B we have a large gear run from the secondary shaft—in fact, very like the principles of the back gearing of a lathe—an extra bearing might be required to take the strain off the main bearing, but this would be rather an advantage than otherwise.

The gears are so proportioned that B runs at about three-fifths the speed of A, or a ratio of 900 to 1,500 revolutions, thus giving ample power. This gear would have negligible friction, especially if a ball bearing was adopted for pulley B and secondary axle. A narrow flat belt will transmit the power to the driving wheel. In conjunction with this gear a very simple belt shifting device will be required to put the belt on the fast or slow pulley, as required; this could readily be actuated from the handlebar.

### An Improved Belt Rim System Required.

The present arrangement for a round belt drive consists of a light rim clipped to the spokes of the back wheel; in building this up there is considerable trouble experienced in getting it concentric with the wheel rim. In some instances that came under the writer's notice, the spokes had been badly strained in getting the clips on. There is really no reason why a larger rim, a dead fit to the inside of the wheel rim, and attached thereto by small bolts passing through the wheel rim, should not be devised. This would relieve the hub and spokes of any strain, and take the drive right up to the tyre; the inside of the broad belt rim could be utilised as an excellent braking surface. Of course, all this would mean a radical alteration in the design of the back stays and forks, but the result would be a far stronger and more mechanical arrangement than at present. As we should now have a larger diameter belt rim, the motor pulley would have to be increased in diameter to keep the ratios the same as at present. This, in itself, is an advantage, giving us a good drive with moderate tension on the belt.

### Systems of Ignition.

At present it may be said that the high tension electric system is the one most favoured, although this system requires a somewhat complex arrangement of apparatus and wire circuits. When each of the different parts is kept in good order there is no doubt whatever as to its reliability. A move will probably be made in the direction of fitting a trembler on the coil itself, and a simple sliding make and break on the motor shaft. This ensures absolutely certain firing at as high a speed as 2,000 revolutions per minute. There are several grave drawbacks to the original De Dion contact breaker, such as its requiring very delicate adjustment, easily affected by a drop of oil getting

on the contacts, uncertainty of getting the maximum current through the coil at the make, etc. More care will have to be taken to ensure the coil from developing any faults such as a breakdown in the insulation, which would put the rider in a hopeless position. Then the majority of coils now fitted can hardly be termed effective for their size; far stronger sparks would be obtained if the windings were disposed in strict accord with the principles of electro-magnetism. Much of the rapid wearing of platinums can be traced to insufficient capacity in the condenser of the coil. To be sure of firing at high speeds, the coil must give at least a half inch spark in air. Another point at present overlooked is the marking in plain language of the terminal connections.

### Accumulators.

Accumulators are likely to hold the field for a long period. We are a long way from the perfect battery, however. In an accumulator, if we require lightness, it means sacrificing reliability, that is to say, we weaken the plates to some extent, so that the vibration of the machine in time buckles them, causing leakage and short circuits. Light weight is not so much to be sought after as large capacity for current and ability to hold the charge for several weeks. Just at present there is much complaining going on amongst riders as to the batteries running down in two or three days. This is either due to imperfectly formed plates, want of oxide surface, or terminal leakage going on. Some of the accumulators now fitted are rated very much above their actual holding capacity. A series of careful tests made by the writer with the aid of standard measuring instruments, proved that two patterns of 4 volt batteries, rated at 20 ampere hours capacity, possessed actually only 11 ampere hours even after repeated charging and discharging. Such rating is highly misleading, inasmuch as the rider is led to believe he has a supply of current for a big mileage instead of for a maximum distance of 300 miles. Before an accumulator is fitted to the machine it should be charged and discharged at least six times to bring it up to its maximum capacity; the actual ampere hours should then be tested and certified. This will at once remove a great source of disappointment to the rider, as he can now rely on his current within a certain mileage. Celluloid cases are much to be commended, as it enables one to judge of the condition of the plates. At present some trouble is experienced with the brass terminals becoming corroded and making imperfect contact. This might be avoided to a large extent by sheathing them in rubber or vulcanite.

### Ignition.

The magneto system of ignition is steadily gaining favour. In this system, of course, we have no coil or accumulator to give trouble. On the other hand, however, the increased

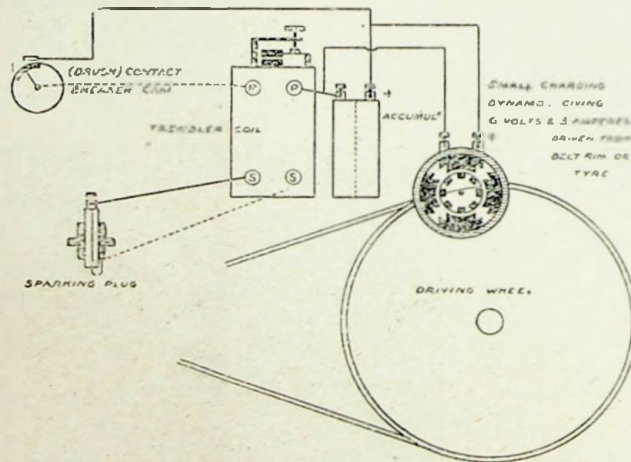


DIAGRAM ILLUSTRATING THE SUGGESTED IMPROVEMENT IN ELECTRICAL SYSTEM.



number of parts subject to wear and derangement has to be considered. The magnets of the dynamo also are in an unfavourable position for retaining their strength, but even with these drawbacks the system works well with intelligent handling.

Catalytic and other forms of automatic firing can at present only be regarded as in the experimental stage. A considerable amount of research has yet to be done to attain the much-to-be-desired features of absolute reliability of firing and the matter of advancing and retarding the ignition point.

#### **A Suggestion for a Combined Dynamo and Coil System.**

Although this would be in a sense more complicated than the present accumulator and coil system, yet it would present several distinct advantages. For instance, the difficulty of charging batteries would be overcome, and again, perfect regularity of firing at very high speeds could be assured. The arrangement consists of a small shunt wound dynamo giving 4 amperes current at 6 volts pressure. This would be driven either from the belt or by frictional contact with the tyre. In conjunction with this, a very small accumulator would be required to work the coil for starting and running at low speeds. When the motor had attained a speed of about ten miles per hour, the coil would take its current from the dynamo, and the higher the speed the stronger the sparking. The ordinary form of sparking-plug would of course be employed. The arrangement is only outlined in the foregoing; the diagram would assist in explaining the connections, etc., of the system suggested.

#### **Carburettors.**

There is a tendency this season to employ carburettors of the jet or spray form. These act, no doubt, better under unfavourable conditions of atmosphere, etc., than those of the surface type. At the same time, the fact that they are not by any means as economical in petrol consumption as the surface variety is being admitted by many experienced motorists. The difficulties in managing a surface carburettor under varying conditions of atmosphere and road surface should not be insurmountable. For tricycle work some excellent running has been obtained with them. A type of carburettor that has not received the amount of attention it deserves for motorcycle work is that of the wick or absorption pattern, in which a current of air is sucked through and over a series of cotton wicks, which absorb the petrol. Some experiments made by the writer in this direction have shown that such an arrangement works well even in cold weather, and the carburation is but little affected by uneven road surfaces—certainly far less than a simple tank carburettor. Improvements on the Minerva type of surface carburettor might be suggested by the fitting of an effective petrol warmer from the exhaust (as in the original De Dion), and a gauge or indicator glass to denote the amount of petrol in the supply tank.

#### **The Employment of Pedals—a Suggestion.**

Looked at from all points of view, it would appear most undesirable to dispense with the pedals. At present they are of vital importance for starting, and bicycle motors at times take a lot of starting, and then they can be used to give the merely nominal assistance to the motor required for riding steep and long hills. As rests for the feet they are perhaps not the best arrangement possible, but the one-time ordinary cyclist will in a sense always feel at home with his feet on the pedals. And again, one might view the question in a sentimental light, because it is doubtful if the large class of

motorists expected to be recruited from the cyclist ranks will materialise if we are going to metamorphose the lines of the present day motor-bicycle into those of a two-wheeled motorcar. In the writer's opinion, the pedal question could be solved by adopting what one might term (for want of a better word) a swinging pedal, which would mean fitting a very simple bit of mechanism in the box of one of the cranks, so that both pedals could be brought on to the same level. A simple move of the foot would at once bring the cranks into their driving position. In the former position the pedals would form ideal foot rests, the awkward "free-wheel" position of the legs being entirely avoided.

#### **Tyres and Size of Wheels.**

We have had plenty of experience in the making of tyres to be able to fit them with satisfactory results for a motor-bicycle. It appears only to be a question of employing stronger fabric and allowing a greater thickness of rubber on the tread. If this tread can be made still tougher than at present, so much the better—at any rate, a good tough and hard-wearing tread is required for the driving wheel. In the matter of air tubes, there is no reason whatever why every machine sold should not be fitted with self-sealing tubes. The writer is of opinion that the extra cost incurred in fitting them would not be worth considering when their reliability in holding air and freedom from the worries of punctures are taken into account. A bad puncture in the driving wheel of a motor-bicycle is by no means a pleasant job to tackle.

#### **Diameter of Wheels.**

This is another important point that will be mainly determined by the position adopted for the motor. With the front position increased stability and a more compact appearance will be obtained by employing 26 in. wheels. For other positions, 28 in. wheels are likely to be the standard size. There is undoubtedly rather less vibration with the increased diameter wheels, and this might have to be compensated for in the 26 in. by employing a slightly larger tyre—say 2 in. as against 1½ in.

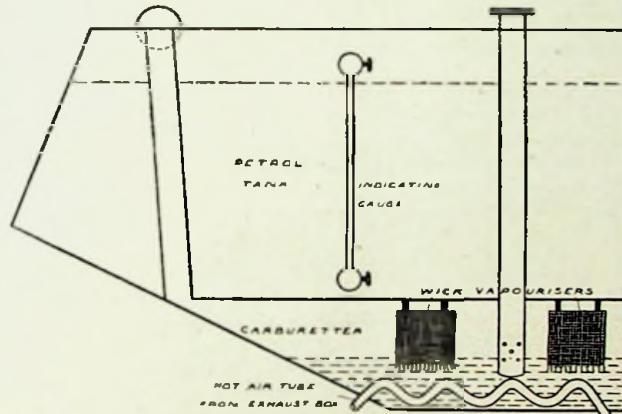
#### **Simplicity of Controlling Lever Systems.**

Practical engineers well understand that simplicity in construction and reduction in the number of controlling taps and levers in an engine does not by any means invariably go hand in hand with increased efficiency in working. The same rule will apply to the motor-bicycle; the conditions under which it has to work are very variable, and it is difficult to see how the best running is to be obtained unless the operations of gas and air regulation, spark advancing or retarding, throttle valve and electric circuit control can be performed quite independent of each other. To the motorist who merely wishes to be able to press a button and let the machine do the rest, as it were, without him having to use his brains in any way, no doubt a single lever or even no lever system at all would appeal greatly to him.

#### **The Question of Weight.**

This will have to be kept within strict bounds if we are to retain the charm of "handiness" which a true motor-bicycle must possess. It should be at least possible to handle the machine in awkward positions, such as getting it up a short flight of steps, and in and out of a railway van without an abnormal amount of labour. A limit of 80 lbs. for a single would be desirable. There is little doubt but that a 1½ h.p. machine could be got within this limit by judiciously employing steel and aluminium in construction.

(To be continued.)



SUGGESTED IMPROVEMENTS IN THE MINERVA CARBURETTOR.





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## OPINION.

### *The Position of the Engine.*

The views of our readers upon this debatable point are truly conflicting. It will be noticed this week in our correspondence pages that a thoughtful letter on the horizontal position appears from the pen of Mr. Strickland, while in next week's issue we shall have a special article, written by Mr. T. B. Browne, who also champions the same position. In regard to the vertical, it will be noticed that many interesting side issues are being brought out by our readers. The question naturally stirs up history from the earliest times of the locomotive; and it is evident that the discussion is being followed closely by those who, while not desiring to enter the field of combat, yet keenly peruse each week the views of others. The topic certainly appears to be one of absorbing interest.

### *The Trailer Question.*

There are several quaint clauses in the Light Locomotive Act of 1896 which might well be altered in these days of enlightenment, and one of the first affecting motorcyclists is a clear pronouncement as to the speed a motorcycle can travel at when it has a trailer attached. On Friday week last, at Yarmouth, a rider was summoned for furiously driving his motor-bicycle, and it was shown that a trailer was attached to the machine. Although the defendant argued that he was not exceeding the 12 miles an hour limit, the clerk ruled that, under the Act, a self-propelled machine could not draw another vehicle through a town at a greater speed than six miles an hour. The report does not state whether the Bench accepted this ruling, but, holding that the pace was to the danger of the public, inflicted a fine of 10s. and costs. It will be seen that in the above case the vexed question is raised of whether a motorcycle and trailer are separate machines, or whether they constitute a concrete whole. The point has been raised before, not only to get a ruling as to the amount of the licence to be paid, but also upon the vital question of speed. The Benches at Portsmouth and Weston, near Bath, have ruled them as one, but a recent decision at Chertsey reflects the other side of the question. We are decidedly of opinion that the trailer attached to a motorcycle should not constitute a separate machine, and we do not suppose that the framers of the Act had anything but heavy traction engines in their mind when they dealt with the matter. The whole question should be referred to the Local Government Board, and the uncertainty cleared up as soon as possible.

### *"Technical" Matter.*

We live in a mechanical age, and to understand anything of our surroundings a certain amount of mechanical knowledge is not only advantageous but necessary, and as time goes on such knowledge will prove to be indispensable. Cycling has done a great deal to initiate the uninitiated to a certain degree, and the ever-increasing complications of the cycle, with its balance gear, ball bearings, pneumatic tyres, free-wheel, variable speed, and other devices, has quietly but surely trained a vast army of cadets, who are ready to plunge into the more involved problems afforded by motoring; indeed, the majority of motorists have in the past been cyclists. But, despite all this, we are aware that amongst our readers there is a large number who shrink from reading matter which even appears on the surface to be technical, whilst a sectional drawing gives them the "creeps." It is to this class that we now address these remarks.

Whilst very little matter of a highly technical nature will appear in our columns, it will always be necessary to devote space to matter such as is now appearing; but we are confident that with only average intelligence and a little determination anyone will be able to understand every word, and in time to come will have every reason to rejoice at having settled down thoroughly to the new pastime, and at having mastered what after all are simple facts or theories, expressed as simply as is possible.

### *Seeking Information.*

One of the most striking features in connection with the large number of letters we daily receive from our fast growing circle of readers, is the intelligent interest we find they display in the various parts that go to make the motorcycle. Many confess that they are totally at sea on various points in connection with the machine they have but recently taken up, and to these we are always glad to afford information—but others show by their letters to us that they have studied carefully and thoughtfully the several vital points, and give the conclusions they arrive at. We are at all times pleased to hear from this class of reader. Another fact which we have repeatedly noticed, as evinced in our correspondents' letters, is that the elderly rider, who has up till now pedalled along on the ordinary cycle, is coming strongly into the motoring ranks. Some desire a motor-bicycle; others desire the more social quad, or some method of trailing a passenger, but all are keenly alive to the fact that the motor-cycle is the most suitable pattern for them to get.

### *The Old-Time Cyclist a Motorist.*

That the elderly rider is entering the ranks of the motorists, we find on every side. As we have already stated, we are obtaining evidence of this in our correspondence. Then, at meetings held for motorcycle discussion, upon the roads, at public resorts, and in other places, the fact is impressed upon us. The old rider finds that he cannot keep up with his youngsters, or that pedalling his cycle becomes too great a labour, especially if he lives in town and has to ride through the suburbs before getting to good roads. Then his mind instinctively turns to the channel we have indicated. Why not get a motorcycle? It would take him clear of the township without fatigue; it would be fast, thus enabling him to keep up with the younger generation; and the rides would, in the same ratio, be of a more lengthy character. Questions crop up, of course, which caused him to hesitate. Many of these questions we have answered from time to time in our pages. Is the motor-bicycle safe? has been answered in the affirmative; and we firmly believe that, providing reasonable care be taken, the motor-bicycle is a perfectly safe machine to handle. It does not exhibit that tendency to side-slip that some would have us believe, and the troubles arising from the ignition and mixing devices are not such as need frighten those who will take an intelligent interest in what is, indeed, a fascinating pastime. The cost of up-keep is not great, and in regard to the motor-bicycle the storage room required does not exceed that taken up by the ordinary bicycle, and, comparatively speaking, the space required for the tricycle or quad is not great.

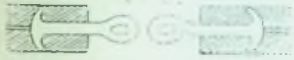


## INVENTION.

*The latest improvements in motors, motor cycles, and accessories.*

### Calvert's Patent Belt Fastener.

This consists of two steel stampings, identical in size, the only difference being that one has an eye on the end and the other a hook. The ends which engage in the belt are of an anchor form. The fastener is placed in the central hole, or core, running through all twisted hide belts, the two anchor prongs engaging on opposite sides of same, thus giving a hold on the full thickness of leather available. And, there being a central pull only between the belt and fastener, there is no possibility of fastener opening, as the strains are equally balanced. Moreover, the fastener is sheltered from any contact with the belt pulleys, thus preventing clicking as fastener passes over same.

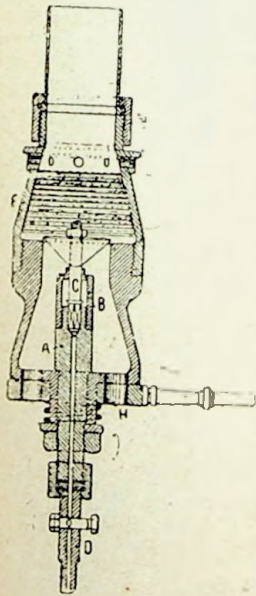


### The Feast Tyre Repair Band.

The Stanley Feast repair bands for tyres of cycles and motorcars are well known, so that it is really unnecessary at this date to explain their *modus operandi*. Messrs. Feast have now, however, placed an intermediate size on the market for use on motorcycle tyres. Its length is 5 3/4 inches and its width 3 inches, so that it is of ample size for use on the larger diameter tyres which are required for motorcycles. There is a good thickness of rubber on the tread of the band and the edges are splendidly tapered. A band of this description is an essential to every motorcyclist. It retails at one shilling.

### The Roubeau Carburetter.

The Roubeau carburetter is remarkable for its small dimensions, which do not interfere with achieving most excellent results. An explosive gas and air mixture requires two fundamental conditions, if good results are to be achieved; (1) the mixture must be perfect, and (2) it must be made in the right proportions. Every deviation from the proper proportions impairs the effect of the explosion, and is injurious to the working of the machinery. M. Roubeau has used for his invention the strong suction power of the petrol motor. Air and petrol in specified quantities are sucked in through a little injector; then they are mixed as perfectly as possible. The petrol flows through the tube, A, into the chamber, B, whose upper part has a slight perforation. A valve, C, closes the inlet tube, and is held in position by a spring, the guiding rod of which ends in a reversed cone, which disperses the air when it enters the carburetter. The petrol supply is regulated by a tap on the lower end of the tube, D. The bottom of the carburetter is perforated by six holes of 3/4-in. diameter, underneath which holes is a rotating disc, H. The disc has an equal number of perforations of equal diameter, to enable the



the total or partial closing of the air supply. On the bottom piece is a cone-shaped part, F, with numerous ribs, which permit a more perfect pulverisation of the petrol. Under this part is a loose ring with eight holes of 3 in. diameter, which ring can be moved by hand. As soon as air enters this part, the suction power is reduced and less petrol is taken up and consumed. The total weight of this very ingenious carburetter is only 13 ozs.

The celebrated Longuemare carburetter is now being made in a smaller and modified form for motors of from one to two horse power:

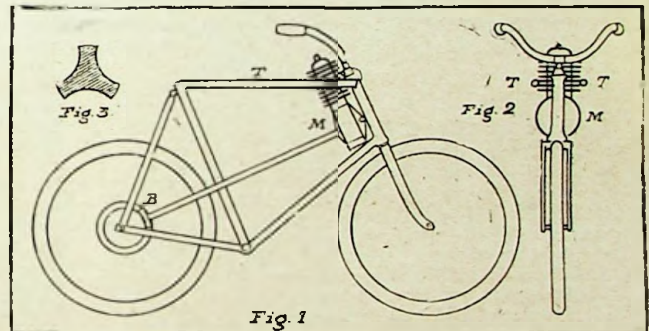
We are asked to state that the semi-automatic lubricating apparatus described and illustrated in a recent issue is the subject of provisional protection, and is the property of the owners of the Minerva patents.

### Royal Sovereign Motorcycle.

After a period of exhaustive trials and tests with practically every known kind of motorcycle, the London Machinists Co. are about to place upon the market their Royal Sovereign motorcycle. It differs in many respects from the usual type of motorcycle, inasmuch as the frame is of special design and of great strength. The engine is situated midway between crank bracket and front wheel, and being placed low down, side-slip is to a great extent minimised. It has many commendable features, and judging from a recent short spin, we should say it is eminently satisfactory, especially so as the one we tried had only just left the works and was very much in the rough. The engine is 1 1/2 h.p., and method of driving is by belt. We hope to be able to fully describe and illustrate this in an early issue.

### New Transmission Gear for Motor-Bicycles.

We illustrate a new transmission gear—an elastic shaft—which has just been protected by Mr. F. W. Aston, Tennal House, Harborne.



As will be seen from the diagrams, the motor is mounted just behind the steering pillar transversely with the frame, being clamped between the two members of the double top tube (TT, Fig. 2).

The power is transmitted direct through the shaft, MB, to the bevel, or worm gear, B, on one side of the rear hub.

The shaft, MB (provisionally protected March 7, 1902), is of considerable length, and being constructed with such cross section as that indicated in Fig. 3, possesses a very large torsional elasticity, and is so designed as to take up, by reason of that elasticity, the explosion shock of the motor drive, which has hitherto rendered direct driving without slip impossible on motor-bicycles.

A few advantages claimed for this design are:—Direct drive without loss of power due to the slip of belt or clutch; motor well away from mud and dust, in the best cooled and most get-able position on the frame, all the important parts being accessible from the saddle. No restriction to the length of bearings; simplicity and lightness of gear, which may be entirely enclosed and run in oil; and even distribution of weight.

Readers having ideas for Inventions can obtain free advice and particulars as to the best way to protect a patent, by communicating with this Journal. All letters should be addressed "Patent."



## NEWS.

The position of the engine.

See the interesting correspondence in this issue.

A summary of "Magneto's" views on the future type of motor-bicycle appears next week.

### The Motor C.C.'s Opening Run.

The bad weather with which, unfortunately, we were favoured at the week end did not tend to improve the attendance at the initial run of the Motor Cycle Club to Brighton on Saturday, but there was a fair muster of members and others at Purley Corner, and the arrangements were carried out without a hitch. There were a few cars on the road, and quite a number of notable faces were to be seen at Brighton on the Sunday.

### Fast Times at Nice.

In wretched weather, so wet and windy in fact that, after some time, racing was stopped, the competitions at Nice for 1 mile and 1 kilometre were commenced on Thursday. Osmont on a De Dior Bouton tricycle (8 h.p.) covered the mile in 1 min. 9 $\frac{1}{2}$  sec., beating his own time made at Deauville last year by no less than 5 $\frac{1}{2}$  sec. Williams on a 3 h.p. motor bicycle accomplished the distance in 1 min. 3 sec. Cissac's motor-bicycle record standing start was also beaten at Nice on Thursday by Williams, who on a Clément bicycle accomplished the distance in 1 min. 27 $\frac{1}{2}$  sec.

### Echoes of the C.P. Trials.

Mr. E. H. Arnott, of Werner Motors, Ltd., writes concerning the amount of pedalling done in the hill-climbing portion of the Crystal Palace trials, and adds: "I competed in these tests on a 1 $\frac{1}{2}$  h.p. New Werner, and the amount of pedalling I did was limited to, I should think, certainly not more than 5 per cent. of the distance. I rode every individual part of the hill without any assistance from the pedals, but did not make a complete climb owing to the carburettor of my machine having had a knock while on the journey from town, which caused it to leak very badly, and made it impossible to keep the mixture at all constant. If I had pedalled all the way up the hill, my times would have been very much faster.

Davis, Allen and Co., who handle the Mitchell, also wish to clear up wrong impressions. Mr. G. V. Rogers, who rode their machine, accomplished the 20 miles, they state, at the average rate of 39 $\frac{1}{2}$  miles per hour, reeling some of the miles off in 1.30 and 1.41. This rider, who has twice accomplished the mile in 1.16 on a special machine, did not go his best pace, but he passed all competitors frequently. In turning off for the hill-climbing contest, the crowd fouled him, and he dismounted, and further on he made another dismount, thus losing over a minute, which has evidently been taken into his time. Also, when being pulled off his bicycle before crossing the track, the jockey pulley was knocked down, thereby loosening the belt, which continually slipped in going up the hill. In consumption of petrol, the Mitchell was put down as third.

### Speed.

The Hon. C. S. Rolls, who is at present in Paris, has been trying the paces of his new 40 h.p. car, just delivered to him. Timed by MM. Rignelle and Gaudichard on Wednesday last, he succeeded in beating the flying kilometre time of M. Serpillet, made at Nice last year, by 6 $\frac{1}{2}$  secs., taking, on the fourth attempt, 35 $\frac{1}{2}$  secs. to cover the distance. He also accomplished a flying mile, with the wind, in 57 $\frac{1}{2}$  secs., and a similar distance, but with a standing start, in 1 min. 13 $\frac{1}{2}$  secs.

### Motor Cycles in the Woodford Meet.

In the forthcoming Woodford Meet, to be held over a five mile course on the roads through Epping Forest on June 7th next, a feature will no doubt be made of motor-cycles. A separate section for the motor driven vehicles will be arranged, so that they will not have to travel at the same pace as the cyclist section. Those who would like to take part in the ride are invited to drop a line to G. F. Sharp, at "MOTOR CYCLING'S" office, 7 to 15, Rosebery Avenue, E.C., during the course of the next few weeks. A note of the machine that will probably be ridden will be acceptable.

### Pedalling in the Motor Cycle Trials

The Automobile Club has issued a sort of official report on the motorcycle trials at the Palace recently, in which it merely states that on certain of the trials the rider "did not pedal on the steep greasy portion." This is very vague, and it leaves the matter open for the erroneous construction that machines may have been pedalled on other parts of the hill. We have had the correctness of our own report questioned by someone who "was told" that the Singers were pedalled on the hill, and we have therefore made enquiries and we find that neither Mr. Perks nor Mr. Birch had the slightest need for pedalling on any part of the hill. We are also told that a mistake of one minute has been made in the time of Mr. Perks' second attempt which must have been done in less than 2 min. 46 secs. stated, as it would be an impossibility for the engine to climb the hill at so low a speed as nine miles an hour.

"Major" Taylor, the negro racing cyclist, has been experimenting with a motor-bicycle.

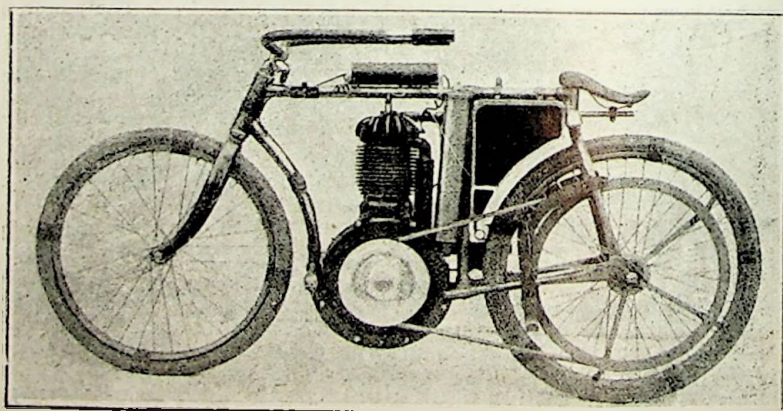
The Minerva ridden by W. Parry in the C.P. trials had the ordinary 1 $\frac{1}{2}$  h.p. engine, and not a 1 $\frac{1}{2}$  h.p. as stated in our report.

### Across France on Motor-bicycles.

We had an interesting chat with J. van Hooydonk last week, immediately he returned from a trip extending from Dieppe to Nice—across France, in short. He had accompanied Mr. Jo. Pennell on this interesting journey as far as Nice, whence that enthusiastic motist intended to continue to Florence by a devious route, making the journey one of over 1,000 miles. Hooydonk, who returned by train, owing to business calls, told us that the ride of 800 miles—801 miles, to be exact, shown by cyclometer—occupied exactly a week without any trouble, and only four fresh supplies of petrol being required en route, the spare tank being full on arrival at Nice. The start was made from Dieppe on March 31st, Mr. Pennell having ridden to Newhaven the night before. The first day was wet, and a stop was made at Evreux, about 100 miles distant, for the night. Next day, which was still wet, they went through Dreux to Chartres for lunch,

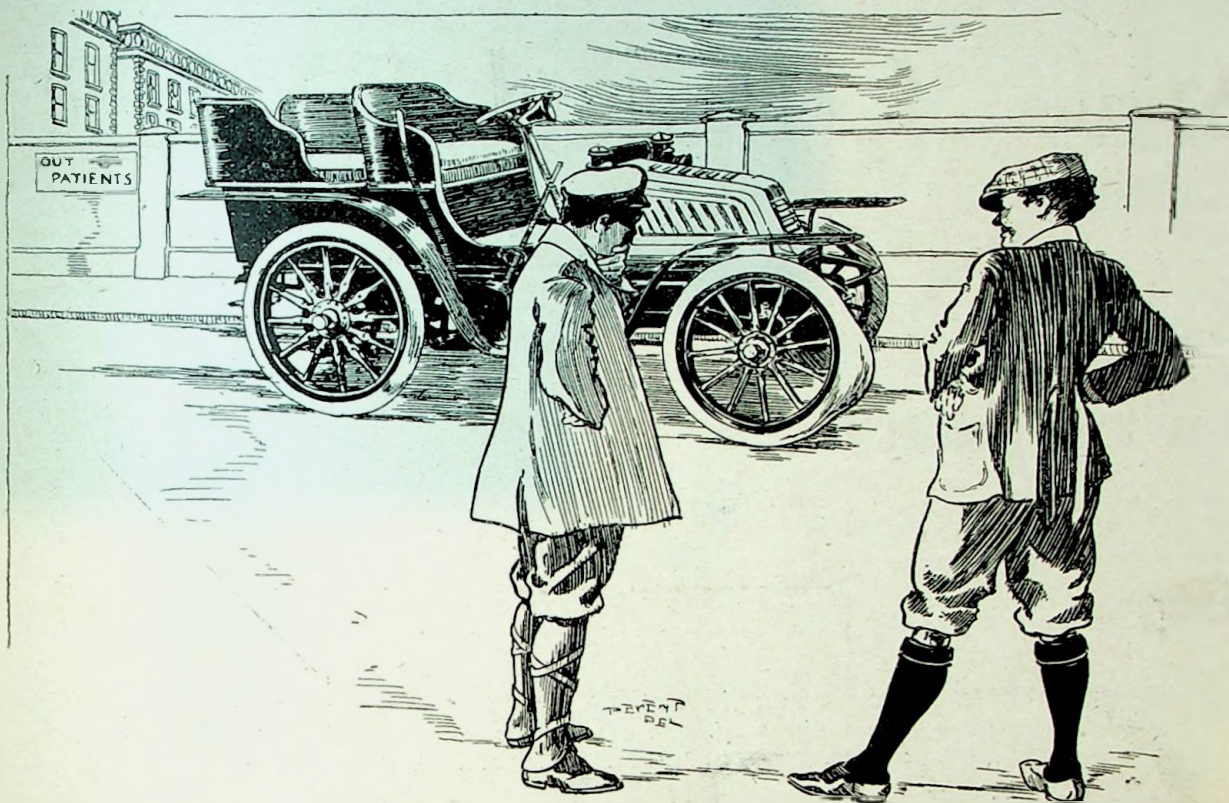
#### THE ROADS IMPROVING.

and finished up at Orleans for the night. The next day Gien, Cosne was passed, following the Louvre River, and so on to Nevers. Moulins was the objective next day, and en route they had a peculiar experience. The Allier river had overflowed for 300 yards, and it meant driving through three feet of water. At Moulins they had their first taste of hills. Entering La Pallisse they came upon a very steep hill, that was reminiscent of Devonshire, and then made for Roanne. Shortly after leaving this town, they started climbing Mont Tarrare, which seemed about 20 miles long without a break. A stop was made at Tarrare for the night, thus making the longest run—nearly 200 miles. The road was practically down hill to Lyons, where the accumulators were recharged, and the stopping place for the night was Valences. The further journey, via Orange, Frejus, and St. Maximin, was marked by heavy climbing and surmounting the Esterel ere they descended into Cannes. The arrival at Nice about twelve miles from the Italian frontier, was made at noon on the Sunday.



The Driver racing bicycle, which weighs 200 lbs. The motor develops 7 h.p. at 1,200 revolutions per minute, and, it is said, can be run as high as 1,600 R.P.M. The maker, W. Driver, Philadelphia, anticipates securing records with this machine.





*MOTISI (whose tyre has developed a swelling) : "What a wretched nuisance!"*

*FRIEND (who is a "medical") : "Yes, it is annoying, but still, hasn't it taken beautifully!"*

Two well-known American cycle racers, Arthur Gardiner and Earl Kiser, are going in for motor racing in future.

#### **An Electric Motor-Bicycle.**

One of the features of the Chicago Show was an electric bicycle, which is claimed by the maker to be capable of keeping up 14 miles an hour for 200 miles. The battery weighs 40 lbs., and the complete machine 67 lbs. This battery is a tight metallic construction without plates, acids or lead, and it acts without giving off fumes or jarring out of liquid. The little motor is incased and is fitted at the bottom bracket, driving direct to the back wheel by chain; there are no pedals. The makers are the North-Western Storage Battery Co., Chicago.

#### **Petrol for the Crank Chamber.**

The ignorance of many cycle agents on the subject of motor-bicycles would be amusing, if it were not lamentable that such men are idly neglecting opportunities of cultivating a remunerative branch of their business. The writer recently called upon an agent in a small town, not a hundred miles from Birmingham. Yes; he had some petrol. On emerging from the back part of the premises with a tin of petrol, the man of trade coolly struck a match to light his pipe and then, bending down by the bicycle, commenced to take the plug out of the crank chamber. What our man said is not recorded.

We are informed by the Clipper Tyre Co. that the arrangements existing between themselves and Michelin & Co. for the supply of Clipper Michelin tyres have not been terminated, although reports to this effect have been circulated. They are in a position to supply these tyres in all standard sizes.

#### **Why It Stopped.**

Strettons Ltd., Cheltenham, had a machine up for the trials at the Crystal Palace on Saturday week, but, unfortunately, it did not complete the distance, but came to a sudden stop. It was found that the accumulator had run down; probably caused by a short circuit. The machine has frequently done a twenty-mile non-stop run on the Cheltenham track, and a client of theirs (after one lesson) rode from Cheltenham to Stafford, 75 miles, in five hours without the slightest trouble. We give the above particulars in fairness to the company.

#### **A Midland Motor-bicycle Meet.**

Doubtless owing to the bad weather earlier in the year, and more recently the holidays, little has been heard of the suggested Midland Motorcycle Club. Now that the weather is waking up, it would be a good idea for those interested to meet at, say, Kenilworth or Warwick on a Saturday afternoon, when some idea could then be formed as to the strength of such an organisation. Our Midland representative will be pleased to hear from those who would attend. Letters should be sent to our Birmingham office.

#### **Storage in Birmingham.**

Some of our readers may be interested to learn that the Club Garage, Edmund Street, Birmingham, store cars or machines by the day, week, or month, at very reasonable rates. A motor-bicycle is stored for three-pence per day or night, or one shilling the week. Trikes or quads are charged four-pence per day or two shillings per week. Accumulators are charged, and other repairs done on the premises. Supplies of petrol and oil are also kept in stock.

#### **Large Tyres.**

It is to be hoped that economical or other reasons will not induce builders to use tyres of small diameter on motor bicycles. Nothing under two inches is tolerable. The greater weight and speed of these machines, as compared with ordinary bicycles, calls for increased cushioning; and when all is said and done, there is no simpler or more effective anti-vibrator than a large tyre. Excessively large tyres, however, increase the liability to skidding; and hence a happy mean should be followed.

#### **The Drain Taps.**

Is fitting a drain tap to either the crank chamber of engine or the tank carburetter, the tap should have a weighted handle, and be so constructed that the tap is open when the handle is in the horizontal position, so that, in the event of its working to a loose fit, the tap will at any rate be closed; or, if left open, it will tend to close with the vibration of the machine.





A Saturday or two ago, at Clapham Common, a football bounced into the tonneau of a very fast motorcar. An ever-increasing horde of "muddied oafs" were soon in pursuit, doing a wild sprint, but the odds were on the car, and it is doubtful whether they ever saw that car again.

#### **A Merry Crowd.**

If some of those people who belittle motor-cycles could only have been on the oventry road between Coventry and Stone-ridge on Tuesday night last they might have altered their opinion on the subject. Mr. Bayliss, jun., on a 2½ h.p. Excelsior, was towing a trailer with a 12 stone passenger on board, while two other 1½ h.p. bicycles were each towing cyclists on free-wheel mounts. Notwithstanding the extra weight the party sped along in capital style.

#### **Two Speeds Wanted.**

The great utility of a two-speed arrangement on motor-bicycles is recognised by everybody who has had the least experience of motoring. We were informed some months since that the Hub Two-speed Gear Company intended catering for the motor-cyclist in this respect, but this has not proved correct, apparently. We are pleased to hear that the Garrard Manufacturing Company are now perfecting a changeable gear, and we hope to be favoured with particulars at an early date.

#### **A Good Start.**

Motorcyclists would do well to so arrange that their carburetters (we speak of the surface type) are worked to emptiness at the end of each ride or a stop of any length. This can be easily managed, and the benefit is that on starting again the falling of the fresh petrol from the full tank will make plenty of gas to start with, even in the coldest weather, and the heat from the exhaust will rapidly keep it vapourising freely. One advantage of the surface carburettor is that in very hot weather a big lot of air can be given.

#### **A Motor-bicycle Handbook.**

We have received a copy of a booklet entitled "The Motor-Bicycle, its Mechanism and How to Manage it," by Mr. R. J. Mccredy. It is excellently compiled, and gives very clear instructions, shorn of technical language, about the Minerva type of engine. The booklet can be obtained, post-free, 1s. 1d., from the office of "Motor News," 2, Dame Court, Dame Street, Dublin.

#### **An Actual Comedy of to-day.**

Scene A lonely stretch of road between Newmarket and Thetford. The figure of a man is seen crouching in the hedge at the foot of the hill. Suddenly there is a rumble, and a highly-powered car goes past at "rather more than the legal limit." A few minutes elapse; another car comes into view and stops near the hidden figure in order to inflate a flabby tyre. Driver descends from the car and is accosted by "the figure."

"What a grand car that was that just went past. Do you happen to know the owner?" remarks the figure, insinuatingly.

"No. Never saw his features as he went by," responds the driver with a quiet smile.

"Should think that car could do 50, eh?"

"Don't know!"

"Where did that pass you?"

"Down the road."

"Are they going far?" persists the figure.

"Shouldn't wonder," replies the driver, as he replaces the pump and climbs into the car. "Best thing that you can do is to trot after the car and get his name and address at the next stopping place, good-day."

Car moves off. The figure is left pondering.

#### **Will Drive a Car.**

Gaste, the well-known French motor-cyclist, has definitely given up the three wheeler and will be seen in the Nice-Abbazia race on a light car with four cylinders, furnished with electric ignition and also a new system of magnetic ignition. The motor, a vertical one by the way, will give twenty horse power at 700 revolutions. Fifty-six entries have been received for the Nice fortnight up to Wednesday last.

#### **The Automobile Club Show.**

The annual motorcar show organised by Messrs. Cordingley and Co., under the auspices of the Automobile Club, will open its doors at the Agricultural Hall on Saturday of this week, and we hear that a special effort is being made to have the stands ready for the opening day—a most commendable hope. Over 250 exhibitors have taken space, so that there should be a most interesting display of cars, fittings, and appurtenances. The Prince of Wales will visit the show during the week. As we have already stated, the number of motorcycles is limited to a couple of dozen, and this number, we need hardly say, will be found on view. A special feature will be found in light cars of British make, illustrating the rapid progress which has been made in this direction. Wednesday will be club day, when a meeting of the Motor Union will be held. On that day, Dr. Lehweiss will leave the hall for his tour around the world on a motorcar; and it is also expected that on the Wednesday, Mr. Loxton Hunter, who is journeying from London to Land's End, John O'Groats and return, will finish his task at the doors of the Agricultural Hall.



## TO CROMER ON MOTOR-BICYCLES.

A short account of the Easter tour of two members of "Motor Cycling's" staff, by one of them.

It is a friend's privilege to be able to make nasty sarcastic remarks with impunity. But a line has to be drawn somewhere. And a more or less deserved reputation for veracity compels me to admit that when I casually informed a particular friend a few days prior to the holidays that I intended riding to Cromer on a motor-bicycle his reply—short as it was—served to raise in my breast a feeling of fiery indignation. His remark was: "Don't forget your Bradshaw!" I consoled myself, however, with the thought that this scoffer of the motor-propelled cycle would have to provide the speed for his bicycle. Perhaps it was a case of "sour grapes!" The party was to consist of four, but one decided to go on a car, so that left three, while another could not get away on Thursday evening only E. Perman was left of the London brigade, while I represented the Midlands. The Catfordian rode a Royal Enfield machine, as illustrated and described in a recent issue, while the writer bestrode a Quadrant bicycle fitted with a 14 h.p. Minerva engine and having the Birmingham firm's latest speciality—the one lever manipulation. Our meeting place was the Sun Hotel, Hitchin, and under that hospitable roof we foregathered on the Thursday night

It is part of the Easter programme to arrange to start at 8.30 on Friday morning, only to get clear away two hours later. So it was in our case, but we were not alone in this respect, if a long experience of touring is to be relied upon.

Leaving Hitchin about 11 o'clock, we sped along under a cloudless sky and over splendid roads until nearing Newmarket, when both of us were troubled with defective "sparking," caused, as we quickly ascertained, by oil getting on to the trembler. We were soon aboard again. After lunching at Newmarket we had a glorious run to Thetford, the 19 miles which separate these two places being covered well inside the hour.

At Thetford, in addition to a welcome cup of tea, we were able to replenish our supply of petrol. On leaving this picturesque township, we ran on to roads as nearly perfect as one can well desire at this season of the year, and made rapid progress until Perman had the misfortune to break the trembler blade, an accident which caused some 20 minutes' delay. It was nearly dark by the time we reached Wymondham, and the keen, bracing air having sharpened the cravings of the inner man we decided to stay the night, and comfortable indeed were our quarters at the Red Lion Hotel.

On Saturday morning we were early on the move, as we intended reaching Cromer in time for the motor trials at 11.30. The rain in the night had made the roads rather

sticky, but good progress was made to Norwich. Here we had a look round the ancient city, and started again soon after ten o'clock—Gunton Park, Lord Suffield's beautiful place, being reached at 11.30, although the roads for the last 12 miles were in an awful state—the result of metal patching and heavy rain.

The Marlborough House Hotel, at Cromer, is a capital headquarters for motists, as, in addition to being well attended to in every respect, both petrol and lubricating oil may be obtained in any quantity; the proprietor of the hotel, Mr. F. W. Rogers, always keeping a large supply in stock. That is however, by the way.

Sunday was an ideal Spring day, and under the most pleasant conditions we commenced our return journey. This was made via Fakenham to King's Lynn, where we parted company, Perman journeying on to Ely, and then through Cambridge to town, while the writer proceeded by way of Spalding to Nottingham, and thence to Birmingham.

Perman covered a distance of 310 miles, while my total was some 40 miles more. During the whole journey the troubles we experienced were only of a trifling nature, while the average mileage per hour was very good considering the heavy wind which faced us for at least two days.

It was an ideal holiday, and our only regret was that it came so soon to a close.



A NEW VERSION OF "BEAUTY AND THE BEAST."

HE (soliloquising): "Um! By Jove, how nice!"

SHE (ditto): "How Horrid!"



## THE EXCELSIOR.

One of the first Motor-Bicycles placed on the English market is described in this Article.

Messrs. Bayliss, Thomas and Co., Ltd., of Coventry, are one of the oldest firms in the cycle trade of this country, but the extent of their experience, contrary to the usual run of things, has not caused them to adopt and remain in one groove, or to oppose any new method or novel form of locomotion. They were probably the first in this country to recognise the merits of the Minerva system of constructing a motor-bicycle, and to put that system into effect.

The Excelsior motor-bicycle was placed on the market early last year, and the experience gained has been turned to good account. The frame of the bicycle has received special attention. Stout-gauge tubes are used throughout, with strong lugs of ample length and suitable liners. The Hyde free-wheel clutch is fitted, and two brakes are provided; one a pull-up rim brake, acting on the front wheel, and a Bowden brake acting on the rear wheel.

FIG. 1.—SPECIAL BOLT AND NUT ATTACHMENT OF DRIVING BELT RIM TO SPOKE.

A large, roomy saddle is supplied, whilst the design and general arrangement of the whole machine are such as conduce to every comfort. The need for the absorption of vibration arising from road shocks has received considerable attention, and on the present patterns a spring head is being fitted. The wheels are substantial, and on to the spokes of the rear wheel is clamped the rim for the driving belt. The front forks and fork crown seem to be amply strong for the work they have to do. The machine is efficiently protected by mudguards.

So much for the bicycle frame; the engine and its essential accompaniments demand more detailed description.

The motor occupies the well-known Minerva position, attached below the down tube, the weight being low and the cylinder being fully exposed to the rush of cooling air—a point which is being overlooked by some makers, who have adopted more sheltered positions. The nominal horse-power is  $1\frac{1}{2}$ , and is usually sufficient to carry machine and rider up most ordinary gradients, without the latter being called upon to pedal; but ever so little help from the rider is an advantage, as the motor is able to maintain its speed, and, therefore, its efficiency. Moreover, it does not overheat.

The carburettor case is so arranged as to form (1) the carburettor; (2) the petrol tank, and to provide storage room for the accumulator, the induction coil, and the oil reservoir. The carburettor is of the surface type, and never causes trouble, the mixture being entirely under the control of the rider through the mixture tap. A throttle valve is fitted, so that on hills full gas may be given to the engine, and on favourable stretches

the supply of gas can be cut down to the effective minimum, power being obtained by advancing the sparking. The exhaust box now fitted is of large capacity, and it effectually silences the exhaust without checking the expulsion of the burnt gases. The necessary taps and levers are conveniently placed, the current being switched on and off by the act of twisting the left handle grip. The gas lever and speed lever, the only two that are required for actual driving being controlled by the right hand. The mixture lever and compression

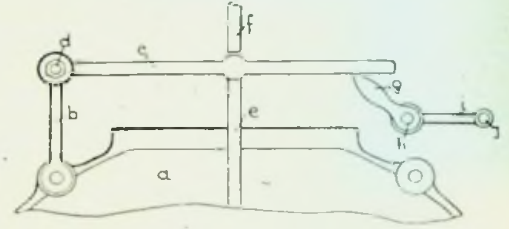


FIG. 2.—THE EXCELSIOR EXHAUST VALVE.

tap lever are on the left. In the later patterns the compression tap is dispensed with, a plug taking its place; this only needs to be undone when the cylinder requires its occasional washing with paraffin. Instead of the compression tap, the much more convenient and useful exhaust valve lifter is fitted, a contrivance which is greatly appreciated when driving the motorcycle through traffic. It has this advantage, that when the exhaust valve is lifted the suction of the piston is too small to open the inlet valve, so that petrol is economised. The lever system for lifting the exhaust valve is shown in

Fig. 2. In this illustration *a* is the crank case, *b* an upright piece on which the cross arm *c* is pivoted at *d*. The stem of the exhaust valve *f* is raised at the exhaust stroke by the plunger *e*. But by means of the lever *i* and the trigger *g* the driver can hold the exhaust valve open by lifting the arm *c*.

Lubrication of the engine is effected from the oil reservoir by means of a small hand-pump attached below the saddle. The plunger rod being lifted, the barrel of the pump fills with air. Then the valve between the pump

and the reservoir being opened, the air is forced into the reservoir, whence oil is driven out by air pressure and so fills the pump barrel. When the plunger has risen to the top, the three-way tap is turned over, thus closing the valve from the reservoir and opening the one into the crank chamber of the engine, into which the oil may now be expelled. This operation, performed once every 20 or 25 miles, provides perfect lubrication, provided the best quality oil be used.

Ignition is effected by electrical currents, the primary

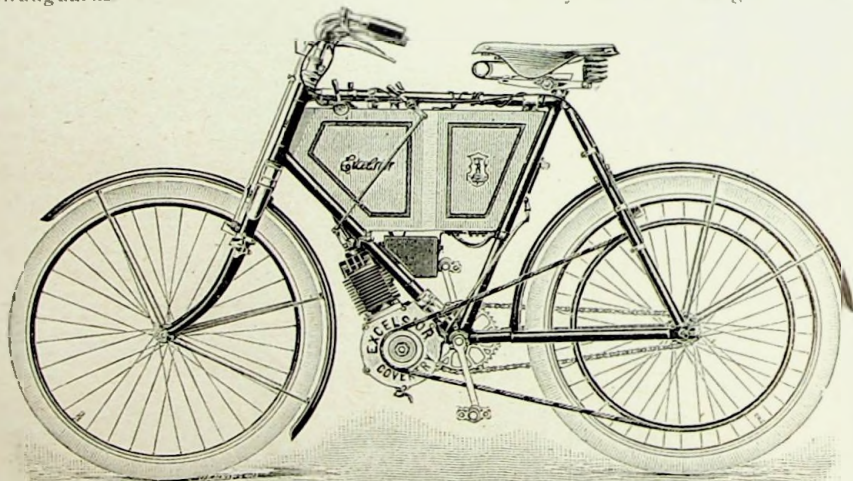


FIG. 3.—THE STANDARD EXCELSIOR  $1\frac{1}{2}$  HORSE-POWER.



current being obtained from a pair of accumulators, which register 4.4 volts. The coil is of a modern type, by which the system is greatly simplified. The one high-tension wire passes from the coil through the metal case and goes direct to the sparking-plug, so that the wire which is most liable to short circuit can be quickly run over in case a defect is suspected.

Belt transmission is utilised, and the method of taking up any slackness is simplicity itself. The belt is unhooked at the joint and is twisted one or two turns and again hooked up, the operation not taking a minute.

The belt driving rim is fastened to the spokes of the rear wheel by means of the metal attachment illustrated in Fig. 1. This little fitting firmly bolts the driving rim to the wheel in a neat manner, besides overcoming all possibility of the rim pulling out of truth, and should be appreciated.



H. Martin and the 2½ h.p. Excelsior, upon which he has accomplished so many excellent performances lately.

Messrs. Bayliss, Thomas and Co. are this year marketing a higher-powered machine, which is shown, with Mr. H. Martin, in the accompanying illustration. The motor is placed in the low position favoured by this firm, the frame of the bicycle being engthened and raised in order to provide the necessary space for the larger motor. The motor nominally develops 2½ h.p., and is air-cooled. Large valves and sufficiently wide bearings are provided, and generally, the machine has proved of very high efficiency. For racing purposes, for hilly districts, and for those who require to attain more speed than the 1½ h.p. vehicle permits, this pattern will prove very acceptable, especially as the increase in cost is not very great. The steadiness in running of the 2½ h.p. was noticeable in the races held at various tracks, but for general work the 1½ h.p. is found to give ample power.

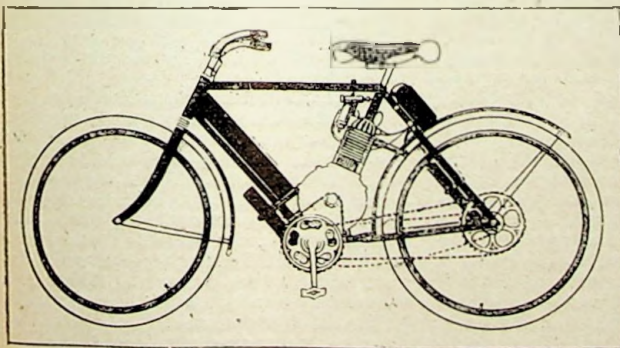
**Some American Types.**

One of the most enterprising makers in the States is the Buffalo Automobile and Auto-Bi Co., which will be better known under their old name of the E. R. Thomas Co. They have made some fresh departures this season from their old model, in which the engine was placed at the back of the head and parallel with the lower frame. In the new type, the engine takes the place of a down tube, and is therefore a real motor-bicycle, and not a bicycle with a motor fitted to it. The petrol tank is now carried on the lower tube, and the top tube is used for carrying the lubricating oil, which is pumped into the crank case. The other model is chain driven on the left side, and this pattern we illustrate. The engine is of 2½ h.p., with large diameter and thin drop forged fly wheel. The company have simplified the one lever attachment. In fact, a switch on the right handle starts and stops the motor, advances and retards the spark, and lifts the compression valve. All unsightly wires, levers, and switches have been done away with. A new

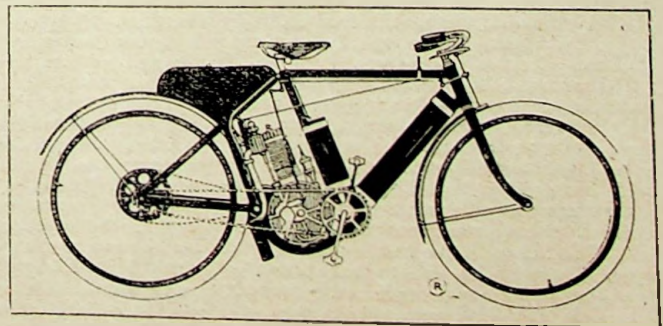
silencer is fitted, which is so constructed that a turn of the lever turns the exhaust into the open air instead of into the silencer. It is claimed that this gives more power for hill climbing.

**A New Pattern.**

The American Cycle Manufacturing Co. (American Bicycle Co.) have placed a new motor-bicycle on the market, and it will be noticed that the engine is placed well back behind the down tube. This engine is of 2½ h.p., the cylinder being 2¾ ins. by 3 ins. stroke. Transmission is by chain to a large chain wheel on the left hand side. The popular "carrier" style of petrol tank is carried over the back wheel, battery and coil rest on the down tube, and lubricating oil on the saddle pillar tube. Control is by a single lever, which allows control of a machine without removing the hands from the handles. In starting, a method has been devised to allow the power to be gradual so as to prevent excessive jerking and the breakage of chain. The petrol tank carries sufficient for 100 miles. The wheel base is 53 ins., frame 22 ins., and weight 115 lbs.



Auto-Bi Chain Drive.—The Switch controls all the Work.



American Cycle Manufacturing Co.'s New Model.—Control is by a Single Lever.



## OTHER PEOPLE'S VIEWS.

### *A Spray Carburetter.*

Sir,—Allow me to give a hint to those riders who use spray carburetters on motor-cycles. The dusty season will soon be with us, and it is necessary that dust should be excluded, as it has a tendency to gum up the holes and prevent effective working. Cover up the wire gauze (air screen) with fine muslin, and the two screens working conjointly will prove an admirable filter.

The same remedy can be applied to the air lever on Minerva engines.

Yours faithfully,

SPEEDWELL.

### *Mr. Edge touches on Carburetters.*

Sir,—In regard to your reference to my using a surface carburetter in motor-tricycles or bicycles which I have ridden. The reason that I generally used a surface carburetter for racing purposes was, that the engine gave a little more power with it, and that it started easier, which was rather an important point in the old racing tricycle days, but I think for general road use the spray carburetter is to be preferred as it is more economical with petrol, besides using up every drop that one has, and not leaving any residue of almost useless petrol like the surface carburetter sometimes does.

Yours truly,

S. F. EDGE.

### *A Steam Bicycle.*

Sir,—I read with interest V. O. Smith's letter, and I am thinking of making one with four cycles, of 3 h.p., on the same lines as the "Holden" with "Flash" boiler, which can be put in a shaped place. I am writing to Messrs. W. H. Buxton and Co., Bold Street, Liverpool, who have brought out an apparatus for dispensing with condensers which only costs a few shillings. A steam bicycle would be more reliable in many ways, as one would not be "hung up" with ignition, which is one of the chief failures of the present types.

Yours faithfully,

P. G. G.

### *A Hint to the Novice.*

Sir,—When walking along the Embankment this afternoon, my attention was drawn to a gentleman upon a new motor-bicycle, who appeared to be somewhat in difficulties, for he could, on no account, get his engine to work.

My proffered services were courteously accepted, and my query as to whether he had removed the cover of the contact-breaker to see if any oil or dirt had found its way therein was answered in the negative. Thereupon, this was taken off, when, as I surmised, there was a "nice mess" to be seen in the shape of oil and grit mixed into a paste.

No sooner was this wiped off than the engine started away merrily—at any rate, I think the rider reached his destination, instead of having to return his machine to the maker as he, in his despondency, proposed.

I address this as a gentle hint (but important) to the many inexperienced buyers of the new machine. I have seen numberless instances of this kind directly due to the same simple cause. There is no doubt that half the "troubles" of the novice are in reality "trifles light as air," therefore, he should not despair—but, I am not a spring poet.—Yours faithfully,

E. HUGH OWEN.

### *Motor Licenses.*

Sir,—Some of your correspondents seem to be in a difficulty about their licenses. Two years ago, it was decided in this county (Hants) that a tricycle and a trailer were two separate vehicles, and the tax for each to be fifteen shillings—a very commonsense view of the subject. At the same time it is most unjust to tax a motor-bicycle or tricycle or a little trailer at the same rate as a high dogcart, or a four-wheel cab. The charges require revision; 7/6 would be a fair tax for motor-bicycles, tricycles, rickshaws, and trailers. They do no injury to the roads, and take up very little space.—Yours truly,

W. A. S.

### *POSITION OF THE ENGINE.*

#### *Valves to be Vertical.*

Sir,—I should like to add a few remarks relative to the position of the engine, as it appears to me that the principal point is being lost sight of. I believe that it is a matter of small moment whether the cylinder is vertical or horizontal (particularly in the case under consideration viz., the explosive engine, in which the power is exerted on one side of the piston only) providing the valves are arranged to work in a vertical position. Your correspondent A. N. R., whose letter appears in your issue of March 19th, touches on a matter having an important bearing upon the position of the engine, but he does not go deeply enough into the subject.



By reference to the above diagram, which illustrates the position of cylinder in the typical gas engine in every day use, it will be observed that the engine is usually arranged to run so that the resistance at the crank in the forward movement of the piston tends, by the obliquity of the connecting rod, to press the piston against the upper surface of the cylinder, and thus, to a great extent, counterbalances the weight of the piston on the under surface of the cylinder and ensures a fairly uniform wear over the whole surface of the cylinder.

As regards lubrication of a cylinder in this position, the oil being admitted at the top naturally runs down the walls and certainly fulfils its purpose.

By far the larger number of engines in use on land are of the horizontal type, while practically all those fitted in ships are vertical, showing that the position of cylinder is really a negligible factor, generally determined by the local requirements.

The necessary valves in an explosive engine are undoubtedly best placed in a vertical position, and are usually so in the stationary engine before referred to, and as long as this point is observed on the motor-bicycle, I incline to the opinion that the position of the cylinder is unimportant, but as the construction of the bicycle motor is simplified by keeping the axes of cylinder and valves in the same plane, then my conclusion is that the best position of the existing bicycle engine is vertical.—Yours faithfully,

WILLIAM HUCKS, JUN.

### *Locomotive Engines.*

Sir,—The reason the engines in a locomotive are put in a horizontal position are two-fold. First, the machinery can be stowed away in an otherwise empty space under the boiler, where it is somewhat protected from dirt, and so making the thing more compact. The most important, however, is that, unlike the motorcycle, the connecting rod is fastened to the road (or, rather, rail) axle itself; and this axle, in going over crossings at a fast speed, frequently jumps up in the frames from 1 in. to 1 1/2 in. There is generally less than 1 in. play between the piston and cylinder cover when at the end of the stroke, so it will be easily seen that, if the engine was placed vertically, and connected directly to axle; the piston would soon be through the end of cylinder.

As a matter of fact, all cylinders (as far as the cylinder is concerned) are much best placed vertically, as when placed horizontally the cylinder wears oval. On the Midland Railway, most engine brake cylinders are placed horizontally, and most of them blow; on the tenders, the cylinder is nearly always placed vertically, and these rarely blow. This, I think, will speak for itself.

Yours faithfully,

LOCO. ENGINE DRIVER.

### *Lubrication.*

Sir,—I think Mr. Duncan, with other correspondents, is making a mistake which seems pretty general viz. on the matter of lubrication—that is, it is stated, that in a vertical engine the piston gets lubricated equally all round. Now, although agreeing generally in regard to a vertical engine, is not the following the real action? The forward cylinder wall must receive all the oil thrown by fly wheels, which immediately tends to fall to the lowest point by the action of gravity, while in a horizontal engine, if it is fed by a lubricator, or thrown by the fly wheels, would be thrown on top of the cylinder wall, thereby placing oil, at the highest point from which it naturally flows by gravity, round cylinder until it meets at the lowest point, thereby having covered the whole of cylinder walls. Although no doubt it eventually does so in a vertical engine, it cannot do so perfectly as in the case of a horizontal engine.

Yours faithfully,

F. W. PRINCE.

### *Claims of the Horizontal.*

Sir,—I must join issue with Mr. Duncan on several points in his letter of this week.

1st.—"Nature shows us that vertical position is universal." Not accurate, as by far the greater part of natural moving things are horizontal.

Now, as to past experience in other engines, it is no doubt true that a certain amount of vertical engines have been made, and that one firm is building some vertical engines of considerable size. There are, however, a very much larger number of firms who prefer the horizontal, most of them makers of far greater experience; several of whom have tried vertical. Further, I observe that for superheated steam, where the difficulties of cylinder lubrication is of importance, the horizontal engine is usual.

As to steam engines. I see that of the engines illustrated in the advertisements of the



"Engineer," 62 are horizontal and 34 vertical. As Mr. Duncan says, all the early steam engines were vertical, so they have had a fair trial and have been abandoned by the majority.

As to the actual performances of vertical and horizontal, Mr. Duncan claims that, 1st.—The vertical is in practice faster, and 2nd.—That it has proved more durable. As to 1st, it is simply inaccurate, as locomotives are practically run faster than any vertical engine of the same stroke in daily work. In fact, they are often run, in daily work, faster even than torpedo boat engines on their trial trips.

As to the durability, locomotives are far more durable than most vertical high-speed engines have yet proved. Also in most kinds of engines where durability is of first importance, such as portable traction engines, mill engines, etc., the horizontal form is pretty universal.

It is quite true that marine engines are made vertical where they drive a screw, for the simple reason that in most cases it is quite impossible to get a horizontal engine in. It is also true that vertical engines are often used for stationary work where space is of importance. These are, however, reasons that have nothing to do with motor-cycles.

### The Future Position.

What will be the future position of engines on cars and cycles seems to me to be a matter entirely for future experience. So far, none of the vertical motors, either steam or oil, have had a long trial. What we want is, to see them run every day for, say, five years, and we shall then see whether they will stand it as the horizontal ones have proved to do. So far, when put into public service, most of them have failed to do this. I do not quite follow Mr. Duncan's last argument.

1.—If it is true that the top side of a horizontal cylinder is too far above the crank chamber to get enough lubrication, the vertical cylinder, which is higher, can get more.

2nd and 3rd.—I do not see what effect the position of the cylinder has on the valves.

I have been much interested in Mr. Westlake's able articles. As I understand you welcome discussion thereon, there are several points I will raise. As to the two-stroke motor, Mr. Westlake speaks of its immense power for its size and weight. Is this referring to an actual engine? All those that I have seen were heavier than the four-stroke motors and I have always understood that it was difficult or impossible to make them as light owing to practical considerations. I do not quite see the advantages of the two gear motor suggested by Mr. Westlake, over one or two cranks. The former has three extra wearing parts and two extra rods or levers; even then it is not so well balanced, as the weight of one piston and set of rods is greater than the other. As to water and air-cooled engines, can Mr. Westlake tell me which is the most powerful for an equal weight? We all know that water cooling a given sized engine will increase the power maintained. And so will making it bigger. I suppose a 1½ h.p. water-cooled engine, tank and radiator, would weigh as much as a 3 h.p. air-cooled. Which will maintain the greatest power? My own idea is that the 3 h.p. air-cooled would.

Re steam bicycle, I fear Mr. Smith will not get anything to suit him. The water and petrol for, say, a 40 mile run, would weigh more than a complete petrol bicycle.—Yours truly,  
F. STRICKLAND.

[Mr. Strickland, it will be seen, has touched upon many interesting points which invite discussion.—ED.]

### Railway Rates.

Sir,—I have read with interest the letters re Railway rates for motor-cycles. Possibly my experience may be of use to you in this matter.

In two instances on the L. and N. W. main line a friend and self travelled with a motor-cycle, taking an ordinary cycle ticket and nothing whatever being said or demanded—only in one case the usual signature was given absolving the company from any loss in case of damage.

The next time I had occasion to take the rail, I asked for a cycle ticket as usual. The petrol being out and belt off, I signed the usual form. On putting machine into guard's van, I was asked to pay 100 per cent. over the cycle ticket, which was taken from me. I refused to do so—although several others who travelled by the same train, did so. On arriving at destination, I was asked for over 200 per cent. over and above the cycle ticket I had paid for—although others with much heavier motors had only paid the extra 100 per cent. Another instance. A friend brought his machine from London to Coventry, for which he was charged 3/; taking the same machine back he was charged 6/-. I may say I have not paid the sum demanded, but am awaiting further information, as there seems so much diversity of opinion and lack of knowledge on the part of the Railway officials themselves. Is there no organisation that could make a test case, or must it be left for the individual?

Trusting to get further information on the subject,

I am, dear sir, yours truly,

S. EVERITT.

### Charging Accumulators.

Sir,—Re letters on this subject. (1) Mr. E. Bumpstead, in his criticism of "H.E.S.'s" letter, neglects the words "in one's house from the electric lighting service." Unfortunately, when one takes current from the supply company's mains, the charge is based upon the product of ampere-hours by voltage, or watt hours; consequently, with a supply at 220 volts, the cost of charging a 4-volt battery of 35 ampere hour capacity at 5 ampere rate works out as follows:—

$$220 \text{ volts} \times 5 \text{ amperes} \times 7 \text{ hours} \times 8d. = 5/14d. \\ 1000 \text{ watt hours}$$

and for 110 volt supply half this amount = 2/6½d. If only two cells are charged (voltage = 2 × 2.5 approx) the useful power = 5 × 5 × 7 = 175 watt hours total power used = 220 × 5 × 7 = 7700 watt hours, therefore the difference = 7700 - 175 = 7525 watt hours, 55 cells (v. = 55 × 2.5) take 137.5 × 5 × 7 = 4812.5 the difference = 7700 - 4812.5 = 2887.5 watt-hours. The latter quantity in each case is wasted on heating the resistances, wires, etc. (2) If the supply station were anxious to do so, in most cases they could charge these small accumulators off their own cells, but as a rule the station staff is quite occupied in more profitable work.—Yours truly,  
A.N.R.

Sir,—I did not see letter by "H.E.S." but if he meant that the cost of charging two or three cells in series from the lighting mains was the same as for one cell, he is quite correct in spite of "E. Bumpstead's" ideas. This gentleman's calculation has nothing whatever to do with the question in its present form. You pay for the current from the town mains as you find it at a certain voltage; you pass it through a lamp of suitable candle power to

reduce the current passing to the amperes required to charge the accumulator—say, 4 amperes—but the whole voltage or pressure is behind that current to force it through the accumulator (less the small "counter E.M.F." of the accumulator) and you pay for the current of 4 amperes at 100 volts, or 400 watts for, say, 10 hours = 4000 watt-hours, or 4 units.

You can, if necessary, place 40 single cells (not sets of accumulators) in series and charge them at the same time with that 4 amperes at 100 volts, and at the same cost. If you wish to charge an accumulator at your own house from the continuous current lighting mains at (practically) no cost, you can do it by putting it in series with a lamp of slightly lower voltage (say 90 volts on a 100 volt circuit) which lamp is used for lighting the room at the same time.—Yours faithfully,  
M.I.E.E.

### The Quadrant Single Control.

Sir,—The description of the Quadrant "Single Tap" is interesting, but the question in your article thereupon and the replies thereto do not convince me of the wisdom of sacrificing the control of the throttle valve involved.

To refer to the so-called "test" as conclusive, is merely futile, and the account I have seen of it brings the following points into prominence.

1st.—That both machines suffered with constant electrical break-downs, and that in each the carburetter became flooded.

2nd.—That the chosen journey was very hilly.

3rd.—That the roads were very heavy.

It is clear that the trouble suffered may or may not have handicapped one or other machine sufficiently to far overshadow the 4% saving shown by the Quadrant.

Then a hilly road and one in a heavy condition is obviously one on which the throttle would never be used on any machine, and on the four-lever one used, it is fairly safe to assume that it stood full open all the time.

Where saving comes in is on easy slopes, etc., as pointed out in your questions, and to refer to such a "test" as that which has been held is simple evasion. Let a trial be run over 50 to 60 miles of good, flat road with occasional hills, such as the average high roads of the country show, and on a fair day, preferably not very cold either, and if a very much greater difference than 4% in favour of full control is not shown, I for one shall be much surprised, and shall begin to think that "elaborate theories" are indeed required to explain such a fact.

The saving of a few pence is, of course, not the object of sparing petrol. It is only that the supply carried gives one a larger free radius of action; no inconsiderable advantage.

I would not wish to be thought to have any interest adverse to the "Single Tap." It is a very clever contrivance, and might easily be combined with a means of having power over the throttle should the rider so wish. At the same time, I do not fancy that anyone too unmechanical to acquire the skill to use the ordinary levers with ease, will ever find even a Quadrant motor-cycle anything than a source of constant worry, for ever prone to mysterious attacks of helplessness.

Faithfully yours,

PHILO-THROTTLE



## OUR INFORMATION BUREAU.

A large number of replies have been dealt with through the post. Information on all subjects pertaining to Motors, Motorcycles, and Motoring generally, will be given to readers who seek such information or advice. Any reader who desires to ask a question with a view of ascertaining the views of other riders based upon actual experience should send his query, which will be inserted, and replies to such questions will duly appear, if of general interest; if not, a reply will be sent by post; a stamp, therefore must always be enclosed.

E.W. (Ramsgate).—We have not at hand the address of the New York firm selling a 1½ h.p. motor for six guineas.

### Motors in Theobalds Park.

H. George Morris writes: "It may interest some of your readers to know that a few days ago, when driving my quad through Theobalds Park, Waltham Cross, I was stopped by an excited official farm hand and told that by her ladyship's orders, 'them motor things is not allowed through the Park.'

"Possibly it may escape the notice of others, as it did mine, that there is a notice board at the entrance gates with this restriction displayed thereon."

### Fast, Powerful, and Durable.

P.M.E.I. (Bognor) asks:—(1) "What motorcycle may be relied upon as being fast, powerful, and good for running long stretches? (2) also do we advise a friend of his to have a Derby fitted to an existing roadster? (3) a book dealing with moting and motor-cycling."

1.—The Excelsior 1½ h.p. is an ideal long distance machine. But you would not be far wrong in selecting any standard make, as advertised in these columns.

2.—Better not fit a motor to an ordinary frame; there is considerable risk run owing to the greater strain and vibration set up. Get a special frame built and have a Derby motor fitted, and you will get satisfactory results.

3.—Get the new handbook, "The Excelsior Motor-Bicycle: its Mechanism and how to manage it," by R. J. Macredy. Price 1/-; from R. J. Macredy and Co., Ltd., 2, Dame Court, Dame Street, Dublin.

### Converting an Ordinary Bicycle.

A. E. (Barnsbury, N.) is a mechanical engineer who is desirous of converting a good roadster bicycle into a motor-driven machine. We do not recommend the use of existing frames except when they receive very special attention as to strengthening, etc. It pays better to get a specially built one; the average bicycle frame has too low a factor of safety to withstand the strains of a motor for long periods. (2) Asks if the Dorman Engineering Company, Nottingham, can be recommended for motor sets. The parts are as good as any in quality and efficiency. (3) Do we publish any work that will assist him in his task of building a motor? Not at present; but the articles will appear in due course. He could get a good deal of information from a series of articles that were published in the "English Mechanic" a year or so ago on "Motor-building."

### Some Advantages of the Motor-bicycle.

"Petrol" (Bath).—The chief advantages of the motor-bicycle, to our mind, are: Low price, easy to store, economical in use, and comparatively easy to pedal home if the occasion arises. The question of storage is an important one to those who are limited in regard to space; and there are a good many who do not feel disposed to pay for storage away from their own domicile. In regard to cost of up keep, this all depends on circumstances. At the C.T.C. meeting, held at the Society of Arts recently, a man in the trade said it cost him under a sovereign a year, but, of course, he would be able to put right many a little job on the road which would not be possible on the part of the ordinary rider, but the up keep is not great.



Mr. M. S. Napier finding a seat for Countess Russell at Gunton Park.

### Fittings Required.

W. P. (Clapham, S.W.) asks where he can obtain all the electrical details of the motor-bicycle mentioned in No. 2 of "MOTOR CYCLING." The article states that the price of all the articles, together with acids, etc., amounts to 12s. 6d. These can be obtained at Whitney's, The Electrical Stores, 114, City Road, E.C.

### "The Ideal Motor."

C. T. C. 8,258 (Gateshead-on-Tyne) has been deeply interested in the views of Mr. Westlake, and particularly his two-stroke motor suggestion. It appears to him one of the most promising of recent developments. His suggestion is as follows: "Do you think that it would be worth while to put a small air-inlet valve on inlet tube L, close to cylinder? A small quantity of air would enter it at each stroke, and it might serve to scavenge the cylinder and save the small waste of vapour referred to by Mr. Westlake. I hope next year to have a motor-cycle, and shall look with great interest for further information as to the development of this design, and hope to find it in 'MOTOR CYCLING.'"

### A Combination Tandem.

"Enquirer" (Aberdeen) finds our paper exceedingly interesting. He has read all the numbers with great care, and this has created an irresistible desire to possess himself of a motor bicycle. He asks (1) Having a well-built tandem, is it practicable or advisable to fit upon it a Simms-Bosch motor as a front driver, after suitably strengthening. There is risk attached to fitting a motor to a strengthened frame, and adopting the front position. It would be more feasible to fit the motor in the rear (diamond, and drive on to the back wheel. But in either case the cost of altering, etc., would hardly be commensurate with results likely to be obtained. (2) Can we recommend any combination tandem with high tension electric ignition? Yes, the Phoenix tandem, advertised in these columns, would suit you exactly.

### Motor Licences for the Trade.

A. W. & Co. (Alton) has read in our paper that anyone in the cycle trade was at liberty to use a motor-cycle for business purposes without requiring to pay a tax. "Would you kindly inform us," they write "if this was a case tried in court, and also the town it was tried in. The reason we ask you this question is that the Excise have been at us several times asking us to pay the 15s., and we have refused until we know definitely whether we are entitled to pay or not." The case we referred to indirectly was tried at Northampton, when a well-known member of a firm of coachbuilders was defendant. We have not the actual particulars before us, but, if we remember aright, it was decided that defendant had used a motorcar for experimental purposes to and fro to his private house, and so had to pay the licence. If the motor-cycle is used or likely to be used for pleasure, it is better, in our opinion, to pay up, pending a clearer decision.

### A Mixed Pattern.

H. J. (Edinburgh), while congratulating us on the very practical nature of our paper, continues:—"I feel certain that it has altered the whole trend of the trade towards bicycles. Everything seemed to point to the pressing forward of the three-track tricycle, but your persistent attitude towards improving bicycles has formed public opinion fairly decidedly—excuse this appreciative preface.

"I write to ask you if you can inform me what machines are constructed with a Simms engine and ignition, band brakes, and free engine. The former, I imagine, will suit out of the way parts of the country better than a coil and accumulator; rim brakes I deplore; and a free engine, I think, will also suit hilly country and out of the way parts where oil is scarce. I think I must want a mixture of the Progress, Enfield, and Derby machines. Price is no object, but economy and reliability are desirable aims.

"The Singer would suit fairly well, but, is there a valve lifter?"

There is not a machine on the market yet that would meet your exact requirements. The Progress motor-bicycle is the nearest—and would give satisfaction.

The Singer has not a valve lifter fitted, but has compensating advantages.