The Motor
INCORPORATING Motor Cycling & Motoring
Vol. 4, No. 92,
November 11th, 1903.

BELT TRANSMISSION: HOW TO IMPROVE IT.

By MERVYN O'GORMAN.

It is not, I suspect, a matter of general knowledge amongst motorists that two members of the Automobile Club some years ago measured the horse-power needed to pull a man on a bicycle at 20 miles per hour on smooth ground and on the level. They mounted a tandem, and took a third man in tow, transmitting the pull through a long rope (to avoid sheltering him from the wind) and through a spring balance. The speed in feet per minute was timed, and the pull in pounds on the balance was noted; and from these data the power (which worked out at ¾ h.p., if I remember rightly) was calculated. The formula is obviously—

$$\text{H.P.} = \frac{\text{pull in lbs. x feet per minute}}{33{,}000}$$

i.e., in the experiment alluded to:

$$\text{H.P.} = \frac{1{\cdot}41 \text{ lbs. x } 1{,}740 \text{ feet per minute}}{33{,}000} = \tfrac{3}{4} \text{ H.P.}$$

The interest of this experiment is that it shows how small a power is really needed, if we could only get it on the road wheel through the transmission.

CHAIN DRIVE.

The chief requisites for an efficient transmission gear on a motor bicycle are:—

1.—A single reduction of speed if possible, e.g., the absence of a countershaft with its attendant 15 per cent. loss.

2.—A transmission which does not allow of a slip (save in the extreme case of back-firing, or of a deadlock through breakage inside the engine).

No. 1 is usually secured with belt drives at the expense of a greater loss under No. 2. No. 2 is obtained with chain drives, though frequently by sacrificing No. 1.

THE COMBINATION OF THESE REQUISITES IS ONLY APPROXIMATED TO BY A FEW MAKERS,

who use a single chain; and by one maker who employs a single reduction by gear wheels (generally epicyclic and carefully enclosed).

The provision for the slip which is, unfortunately, necessary to save the chain or gear wheels from breakage, or the back tyre from being ripped on the road, and the shins of the rider from a blow with the pedal, may be made either (i) in a controlled clutch (which is at present unusual), or (ii) in the method of fastening the engine pinion by a grip which can slip a little, or (iii) by the belt drive which must, in this particular, be given credit for the virtue of its defect of slip. The twisted raw hide belt is the cheapest, the easiest to shorten, to lengthen and drill, or to joint and replace; and at the speed of 2,200 feet per minute, which is about the maximum speed of small motor-bicycle belts (with the machine running at 30 m.p.h.), such a transmission for 1½ h.p. should be very excellent and reliable. When the engine falls off in speed at full load, as on a hill, it also falls off in power; and one might be led astray to conclude that at half the speed, or 15 m.p.h., because the power is only ¾-h.p., therefore the belt ought still to suffice. From the point of view of the belt, however, there has not been a simple falling off from transmitting 1½ h.p. to transmitting ¾-h.p.; there has been a change in the frequency at which strong impulses of undiminished vigour are delivered to it. The explosion of the engine, which occurs only every two revolutions, may give nearly if not quite as vigorous a jerk past the belt, if the fly wheel be small, when the engine is running slowly as when it is running fast.

HENCE THE RATE AT WHICH THE ENGINE WORKS ON THE BELT DURING EACH EXPLOSION MAY BE NEARLY UNALTERED,

while the belt's capacity to transmit that power is halved. Experience shows that with 1½ h.p. the twisted belt is adequate when dry; beyond this size of engine, with the usual design, there seems no doubt that the energy of the explosion is not very largely absorbed by the fly wheel, hence a rapid belt stretch, followed by a slip, occurs at each explosion. If this continues, there very shortly follows a condition in which the elongation becomes for the moment quasi-permanent; the belt surface gets polished, and, lastly, a permanent state of slip is established. It is in this respect, and in its stretching, that a belt is so inferior to a chain in its efficiency; while the evil is aggravated by the greasy surface of the leather, and permanent elongation induced by exposure to the wet and mud, which occurs because most belts are run within 3 inches of the ground in current practice. Nevertheless there is so much to be said for belts with smaller engines that it is not likely they will be abandoned on motor-cycles. For instance, the results of the inevitable irregularity of the single cylinder explosion engines, and their spasmodic efforts to advance, are prevented from reaching the tyre in full force by the elasticity and slip of the belt. This elasticity, therefore,

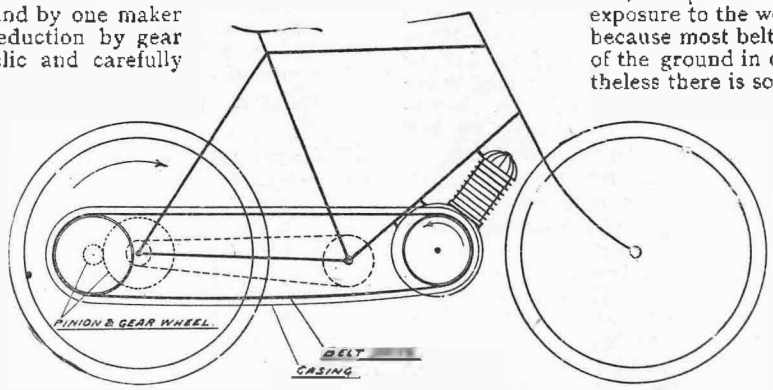
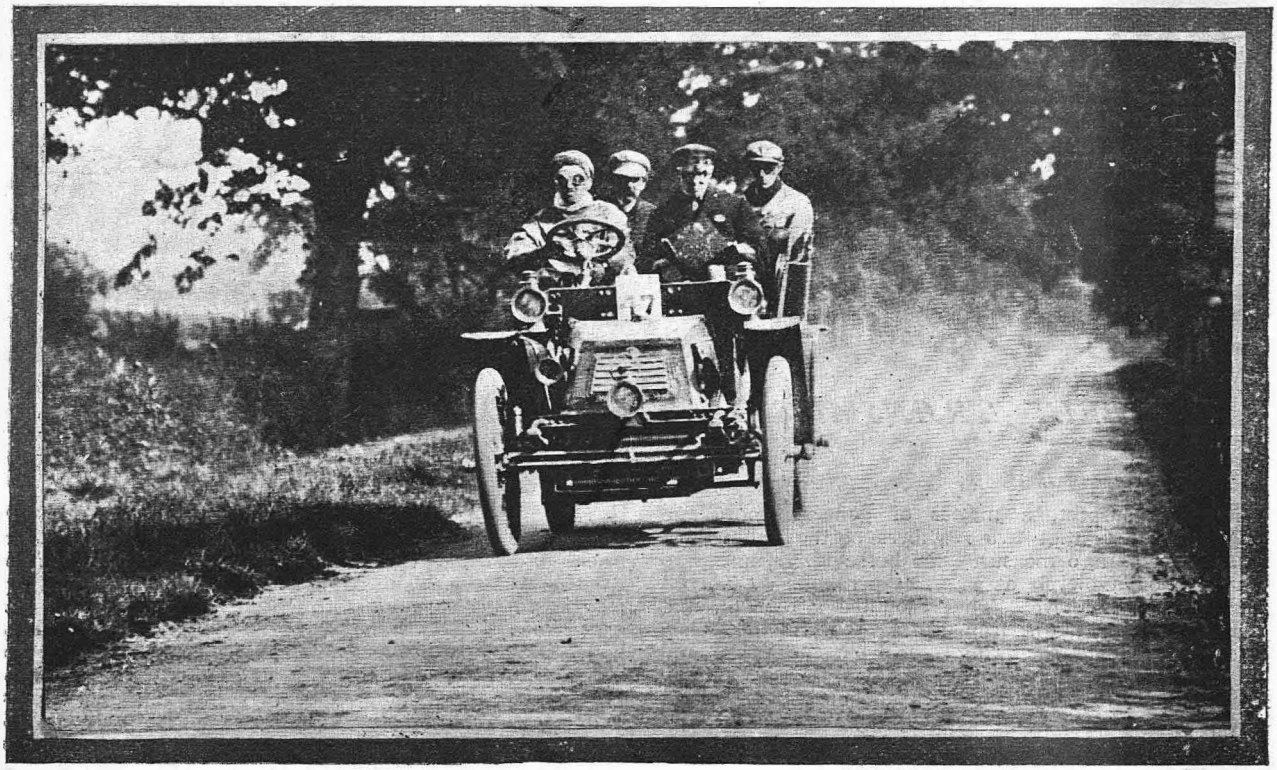


Diagram illustrating the Author's method of transmitting power.



IN THE RELIABILITY TRIALS.
An enlargement from a snap-shot of James and Brown car taken during the recent 1,000 miles trial.

is a safeguard against side-slip, as well as a buffer between the rider's body and the blows of the engine; not only is it a more comfortable and more silent drive, but

IT INCIDENTALLY SAFEGUARDS THE DRIVEN WHEEL TYRE FROM BEING RIPPED BY A SHARP FLINT,

and entirely obviates the hateful rattle of the chain (which is particularly noticeable when there are two chains and, therefore, a double amount of back-lash to be taken up at each explosion when travelling slowly). It is true the belt breaks more often than the chain, but then it is a much easier matter to mend, particularly with the use of some of the modern belt fasteners. Were there no such thing as wet roads, a belt would probably be universally preferred for machines up to 2½ h.p. Even for fairly stiff gradients, such as 1 in 10, we have seen the remarkable performances of the Ormonde, Phœnix, and other cycles up to 4 h.p., fitted with good large belts, at Castlewellan. But the sunniest day will not protect us from the effects of 100 yards of a heavily watered road. Wet leather stretches at once, and drives so slowly that it is necessary to dismount and go through the dirty process of belt shortening. It is here that the V and flat belts are eclipsed by the round belt; the two former generally require a piece to be cut out, while the latter merely requires a couple of extra twists. If the belt be too tight, the untwisting process is as nothing to the trouble of inserting a short bit and making two joints. Something should, I think, be done to retain not only the belt generally by making a case in which it can run dry, but

TO RETAIN THIS PARTICULAR TYPE OF TWISTED BELT BY SUITABLY DIMINISHING THE TORQUE TO BE TRANSMITTED.

I would suggest the combination shewn in the figure, based on four facts and three points of experience:—

(A) It is well-known that a belt of given dimensions will transmit more power in proportion as it travels faster, provided the linear speed be not so great that the belt tends to fly clear of the pulley by centrifugal action (I think a speed of 3,000 feet per minute is allowable, but it must not rise to 4,000 feet with leather).

(B) A belt, if properly treated and kept clear of water or damp, and if not transmitting a pull in excess of its strength, will run for many weeks without being tightened.

(C) A round belt in a V groove is an accepted and thoroughly reliable contrivance well approved by engineers, provided the ordinary rules named below be kept to.

(D) The particular form of round belt made by twisting a raw hide is far the easiest of the various belts before the public to tighten, loosen, and repair or joint.

The rules of experience to which I allude above for all belt drives are, (a) to keep the belt as *long* as possible; (b) to put the slack side of the belt on top; (c) to keep to an angle of lap of at least 170 degrees. Therefore, to get the belt to travel faster *double the diameter of the engine pulley*; to keep the angle of lap over 185 degrees, *make a one to one ratio belt drive*; to keep the slack side on top, *turn the engine in the inverse direction to that now usual*; to keep the belt clear of both water and oil, *case it in*; to keep the drive long, *put the gear wheel behind the centre of the road wheel hub, and the engine well forward.*

The method is not perfect;

FOR EXAMPLE, THE OBJECTION TO OPENING THE BELT CASE TO SHORTEN THE BELT

will at once occur to the reader, but this objection is chiefly based on experience with gear cases on pedal bicycles, where every ounce has been saved even to the point of sacrificing ease of removal.

When we remember that there is a machine on the market which first gears down and then attempts to transmit the increased torque by belt (!); when we remember that the slack side is almost invariably below; and, finally, that even with chain machines of the most successful type a double reduction with two chains has been used, it may be thought that the above scheme presents some simple advantages in spite of its imperfections.

A MOTOR-BICYCLE TRIP THROUGH NORMANDY.

.. .. By "MAGNETO." .. ..

The problem of finding a new district in which to go a-touring this August I finally solved, after much consideration, by deciding to give Normandy a trial. Tourists who have done the trip have sung the praises and dwelt much upon the splendid character of the roads—a point, after all, which the cyclist and motorist chiefly take into consideration. The country, one hears, has an unequalled wealth of beautiful scenery, and is dotted all over with the quaintest of old-world cities and towns. Hence it came about that on a Tuesday morning, in the early part of August, I joined company with a friend—who, by the way, was mounted on a light pedal-driven machine, the idea being that I should tow him the majority of the distance—and we made, firstly, for Brighton via Wimbledon, Merton, and across Mitcham Common, joining the main London-Brighton road at Croydon. It is, perhaps, hardly necessary to say that I had got my machine into the best possible order, and carried a small spare accumulator well charged up, spare belt, inlet and exhaust valves, trembler, sparking plug, and the usual line of minor accessories, and also a litre can of petrol. For towing purposes I had arranged a stout strap on the saddle pillar, with an elastic cord so arranged as to take up the slack and keep it clear of the wheel when released by the towee. Beyond Croydon and right on to Crawley we

AVERAGED ABOUT 15 MILES AN HOUR, AND THE HILLS WE TOOK

at a good pace with the easiest bit of pedalling. From Crawley, after an hour's stop for lunch, a good run was made to within a few miles of Brighton, when a perfect deluge of rain came on suddenly, and made us dismount for shelter. This abated somewhat after half-an-hour, when we mounted again and rode slowly through the flooded streets into Brighton. We put up here for the night, and next morning saw us at about ten o'clock making for Newhaven to catch the cross-Channel boat to Dieppe. The coast road starts at the farthest end east of the promenade, and the first eight miles are of a veritably switchback character, the hill at the commencement being a "teaser" of the first order. The surface is good, however, and the view out towards the sea very fine. Newhaven is sighted, deep down in a hollow, immediately the last hill of the series is crested. There is a fairly rapid descent for a mile or so, and then the road gets dangerously steep into the town, and it required the two brakes hard on and engine compression to keep the machine in hand. Across in the harbour the "Tamise" was waiting for us, and we soon had our machines on board, taking care to run off the small residue of petrol from the tank, as the company will not take the machine otherwise. In twenty minutes we were heading for "la Belle France." The Channel was in a peaceful mood and dealt kindly with us, but we were none the less glad to see the cliffs of Gaul looming nearer.

3½ HOURS AFTER LEAVING NEWHAVEN WE ENTERED DIEPPE HARBOUR,

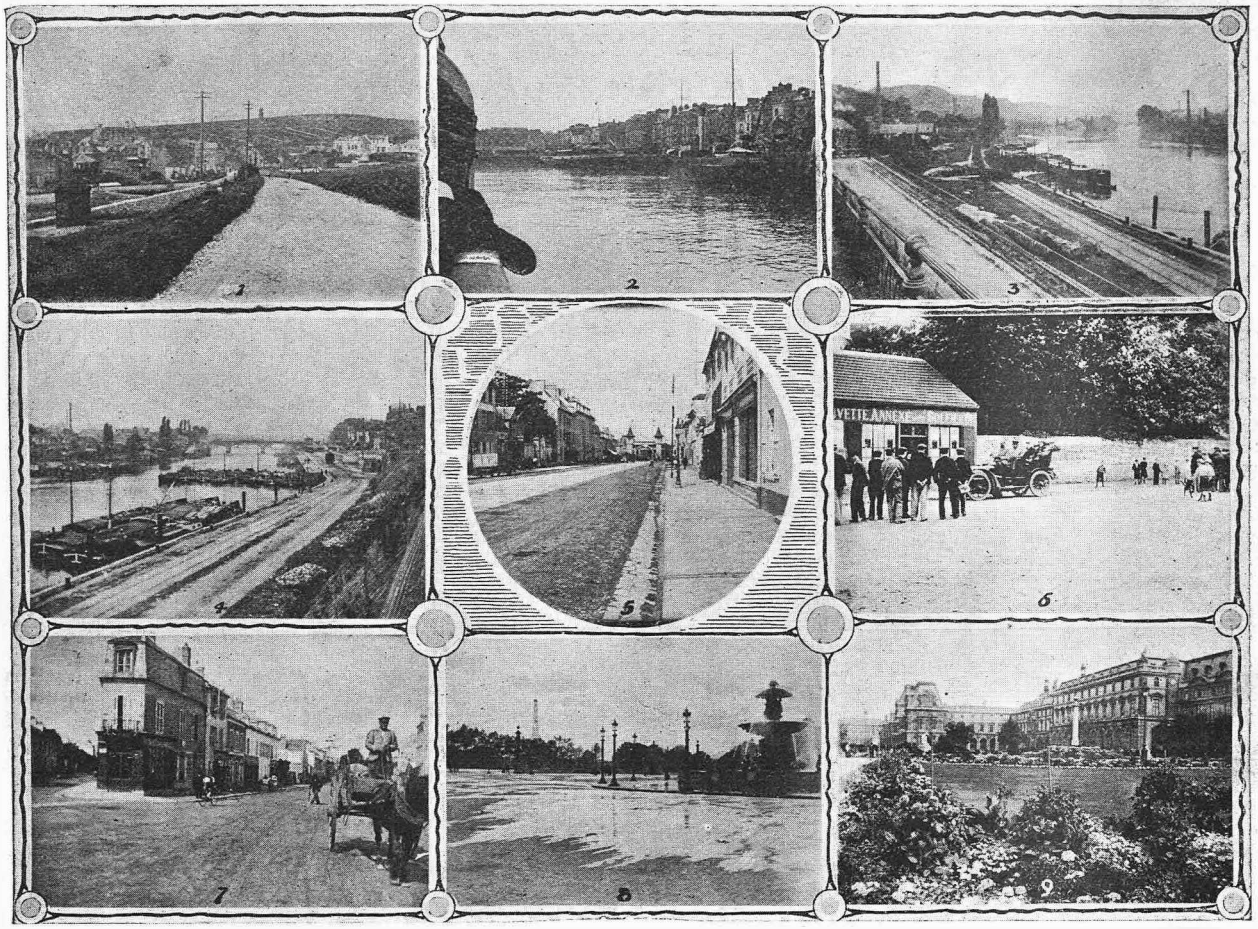
the quaint town and the fine expanse of the "plage," or lawn-covered sea-front, looking delightfully picturesque in the sunshine. Our machines were hidden somewhere in the recesses of the ship, and it was not till some time after all the passengers and their baggage had been got off the ship that we noticed them swinging high in the air at the end of the crane rope. As soon as they were placed on the quay the fun began. We had to get them through the Customs, a procedure about which the experiences of former travellers differ greatly. Some claim to have got their machines through without the slightest trouble on showing a C.T.C. card, or, in fact, any club card or badge that will show they are *bonâ fide* cycle tourists. We found, however, that there was no possibility of getting ours through without depositing the duty. Our protests that we should only be in the country eight or ten days and a display of our club cards, etc., were of no use. A fussy official promptly ran the cycles round to the weighing machine and marked the weight on the saddle, then on again to a bureau, when another fussy official took us in hand, his assistants gravely reading out the weight, number and maker's name, which were entered on the official receipt. We paid £4 deposit on the motor-bicycle and 30s. on the pedal machine, signed the receipt, and then, thank goodness, all the fuss was over. The receipt for the two machines had to be taken great care of; if we had lost this we should have had small chance of ever getting our £5 10s. back at the port of departure from the country. We made straight for the Hotel Grande du Globe, engaged a room for the night, and then went out for a look round the town.

THERE IS MUCH OF INTEREST IN DIEPPE TO SEE.

Everything is so quaint and so different from an English seaside town. The streets are curiously narrow and lined with old-fashioned houses. There are two very fine churches, namely, St. Jacques, finished in the fifteenth century, and St. Reme, dating from the sixteenth century: the interiors are filled with fine lace-pattern sculpture and carving, and the stained glass is of very rich colouring. The castle occupies a commanding position on the cliffs at the east end of the "plage." This latter is a special feature of Dieppe, and has a charm of its own for English visitors. When lit up in the evening it forms a picture that it would be hard to equal. The Casino is of course one of the "lions" of Dieppe, and a couple of hours were profitably spent listening to the really fine orchestra in the concert room. Next morning we were early astir and had a stroll along the Grande Rue. This street has some very good shops, and it is possible to get practically anything required in the motor or cycle line. Motorcars and cycles are met with all over the place in far greater numbers than in an English seaside resort of the same size. We made a start for Rouen at 10.30 A.M.,

FIRST PURCHASING A COUPLE OF LITRES OF PETROL,

or moto-naphtha, as it is called in France. Our route lay along by the quays and past the post office. All the town streets are paved with great stone setts, or *pavé*, as the French term it. This we took at a very slow speed, just switching on the spark for a moment every few yards. At last we came to the end of the pavé, and there, right in front of us, lay the great motor road to Paris. I say "motor" road because, with the exception of a few cyclists and a farmer's cart or two, we met no wheeled traffic but the motor. At the commencement of the road we saw the first of those most excellent sign-posts, put up by the Touring Club of France; these give the fullest directions and distances to fractions of a kilometre, and the veriest duffer who can read could not miss his way. The road is of great width and rises sharply for about half a mile. The grade looks equal to 1 in 10, but with a few touches of the pedals now and again the little Clément motor puffed merrily to the top, and there away in front was the road visible for miles, gently undulating like a white ribbon in the sunlight. And what a surface to travel on; no racing track could have a better. It is no



1.—On the Brighton Road. 2.—Arriving at Dieppe. 3.—Rouen, looking East. 4.—Rouen, looking West. 5.—Entering Mantes. 6.—A touring car arrives at Mantes. 7.—Another view, Mantes. 8.—Place de la Concorde, Paris. 9.—The Tuileries, Paris.

exaggeration to say that this was the finest road we had ever wheeled over. We bowled along at a good pace through Maison Blanche, and the pretty little hamlets of St. Aubin-sur-Scie, Sauqueville, Omonsville, Biville, and stopped at Totes. This is a fair sized village,

THE CHIEF ATTRACTION BEING A MEDIÆVAL INN,

named the "Auberge du Cygne." We had a look through this and found it wonderfully interesting; no tourist should miss it; the quaint old kitchen in particular struck our fancy. We were soon off again, the road running as straight as an arrow as far as the eye could follow it. There are no hedges as on our English roads, but on our right and left stretched rich pasture lands, and away in the distance could be seen here and there a tiny village clustered round a church spire. In this clear air it is easy to see for 15 or 20 miles. We ran through Val-Martin and Les Cambres, the road in parts rising to a considerable height; suddenly it drops, and down in a valley we spied the manufacturing town of Malaunay. The descent is a dangerous one, and has a sharp right angle turn which no vehicle could negotiate at speed. The Automobile Club of France have placed several warning boards at the top. An antiquated electric tramway runs through the town, and the road surface deteriorates a little; after two or three miles of this we reached Maromme and struck the pavé once more. Then for several miles through a sort of semi-rural town, still on the pavé, until the spire of Rouen Cathedral came into sight, and we approached the town by a wide boulevard through the octroi gates.

THE FIRST IMPRESSION OF ROUEN

is that it is a seaport town, the masts of the shipping and the high swingbridge being visible for a long distance. The pavé is so bad that we found riding at any speed impossible; something would have smashed for certain, so oft came the belt and we walked to the "Hotel du Dauphin," where, as we intended having a good look round the city, we engaged a room for the night. The city is most picturesquely situated amid high hills. The main thoroughfare skirts the Seine and is of great width. From this road run three very fine streets, lined with shops that would do credit to London or Paris. Off these three streets runs a network of smaller streets, full of curious old shops and houses that one might spend hours in exploring. The great cathedral, with its world-renowned spire, and the numerous churches, museums, monuments, squares, and the great boulevard that practically encloses the city in a semi-circle, took up some hours of our time, but so wonderfully interesting is Rouen that one could profitably spend several days and not exhaust its treasures. In the morning when we went round, the place was as bustling as a miniature London or New York. Motor-cars and motorcycles are met with everywhere, and there are several large depots and repair shops should the tourist require assistance. There are plenty of excellent hotels with motor garages, and no motorist on tour should fail to spend some time here. About mid-day, and all too soon, we took leave of Rouen; the pavé, however, stretches for a mile or two beyond the town, and as we pedalled gingerly over this, we noticed a rider on a Quadrant motor-bicycle trying to negotiate it with his motor going. We did not envy him.

SHORTLY THE PAVÉ DISAPPEARED FROM THE SIDE OF THE ROAD,

and in a few minutes we struck the splendid surface again. We put on speed, keeping a sharp look out for the electric trams, which run a long way out from Rouen. We were now

really in the valley of the Seine, and the scenery got grander every mile; passing through Le Port, St. Oken, and Igoville, we were soon in Pont de L'Arche, another beautifully situated town, with a large church out of all proportion to the size of the place. We made excellent running for some miles, with the river in view. Then the road winds up and up round a wooded hill for several kilometres. The grading and surface are perfect, and a couple of motorcars dashed past at full speed. The road undulates considerably, and a few kilometres ahead there is a hill which is about the most deceptive thing of its kind we have ever come across. It looks a mere 200 yards dip in the road, but in reality is a most formidable hill, each side of which cannot measure much less than a mile. A very large car passed us, labouring heavily up on the low gear; then, shortly, a small car, grinding its way up with the occupants running alongside. The little motor-bicycle pluckily struggled up, but overheating halfway we walked the rest. We had some good running to Vironvay, and

SHORTLY REACHED THE SUMMIT OF GAILLON HILL.

This was dangerously steep and the surface very bad, being worn into channels with the rain, so that it was necessary to keep the brakes hard on. At the foot of the hill is the village of Gaillon; the pave here was fearful, and we walked. We hazarded a conjecture that the idea of leaving the pave in the villages is to keep down the speed of the motorcars to a safe point; a more effective plan could not be devised. No car going more than eight miles an hour could avoid a smashed axle. We soon mounted again and had a splendid run on to Vernon, a charming little place approached by a long wide avenue of fine trees. The town is very historical, and was the scene of some fierce conflicts in the war of 1870: it has a monument erected to the soldiers who fell in the defence of the town. There are several good hotels here with ample motor accommodation and supplies. Beyond Vernon the road keeps parallel with the Western Railway, and is almost dead level and close to the river. The scenery is so fine that

WE WERE LOTH TO GO ANY FASTER THAN 10 MILES AN HOUR.

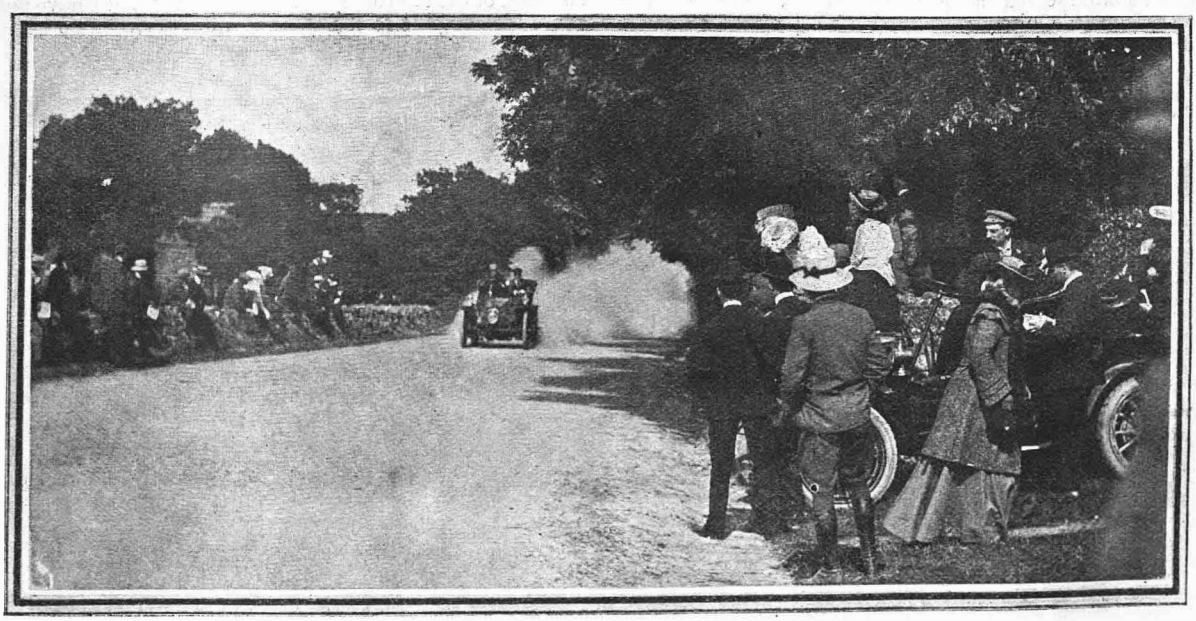
A goodly number of cars and motorcycles passed us, going in the opposite direction—evidently tourists making for the coast, judging by the amount of luggage carried. Shortly after leaving Vernon we had a narrow escape from disaster through unconsciously veering over to the left side of the road. The toot-toot of a motorcar warned us that we were in the way; curiously enough we thought the car was coming along on the wrong side, and, for an instant, we made no effort to move from the left; the car still hugged the left, and only when it was within a few yards of us did we swing over to the right, and simultaneously the car driver swung out to clear us, hence the narrow squeak. This came about through force of habit in keeping to the left on English roads. We passed through Port-Villez, Jeujosse and Bonnières, this latter being a smart little town. A long stretch of the road was being re-metalled beyond here and was unrideable, but we found a narrow path through the grass at the side, which was quite practicable at a slow speed, and saved us a lengthy walk. We got an idea on this stretch how the French road makers get such a perfect cement-like surface. The work is done infinitely more thoroughly than on our roads. The "metal" is broken up quite small, and is not at all like the granite used here—it is of a brownish colour, and is rolled in with a very heavy steam roller. Over this foundation much smaller metal still is used, and

THIS APPEARS TO BE LITERALLY CEMENTED OVER

with a kind of limestone material made semi-liquid. The points that had been finished off looked just like a wet cement surface as prepared for wood paving. It must, however, be a disadvantage to the motor traffic to have so great a length of road under repair at one time. In this instance there seemed to be, roughly, about 1½ miles. Very effective warning boards were put up giving notice that the road was under repair. We soon got on to the hard road again, and ran through Rollebois and Rosny, and in the distance saw, in the twilight, the numerous red and green lights of a big railway junction, and in a few minutes we ran into the important town of Mantes on the Seine. There is much to see here, so we stayed the night. Next morning, the sun shone with great power as we strolled out of the hotel. Mantes, like all Normandy towns, is most picturesque, and it looked more so on this occasion, as some fêtes were coming off, and triumphal arches and flags were all over the place. The shops are surprisingly numerous for a town of 8,000 people, and there are several motor and cycle depots such as would be hard to find in an English town of similar size. The main street is very wide, and from the end of this starts the Rue Nationale, which crosses the river: this is a very busy and prosperous looking thoroughfare. The cathedral is a fine structure, built in the 13th century, and should not be missed. From the town, important roads radiate in all directions.

WE HAD AN OPPORTUNITY HERE OF SEEING A FRENCH CYCLE ROAD RACE

in operation. Some of the competitors were being paced by motorcars, and most of them were clad in path racing costume; many of the riders carried a couple of spare tyres hung over their shoulders. *(To be concluded).*



A memory of the Irish Fortnight. One of the cars finishing at Ballyshannon.

CYCLOMOT'S CAUSERIE.

A Comprehensive Demand.

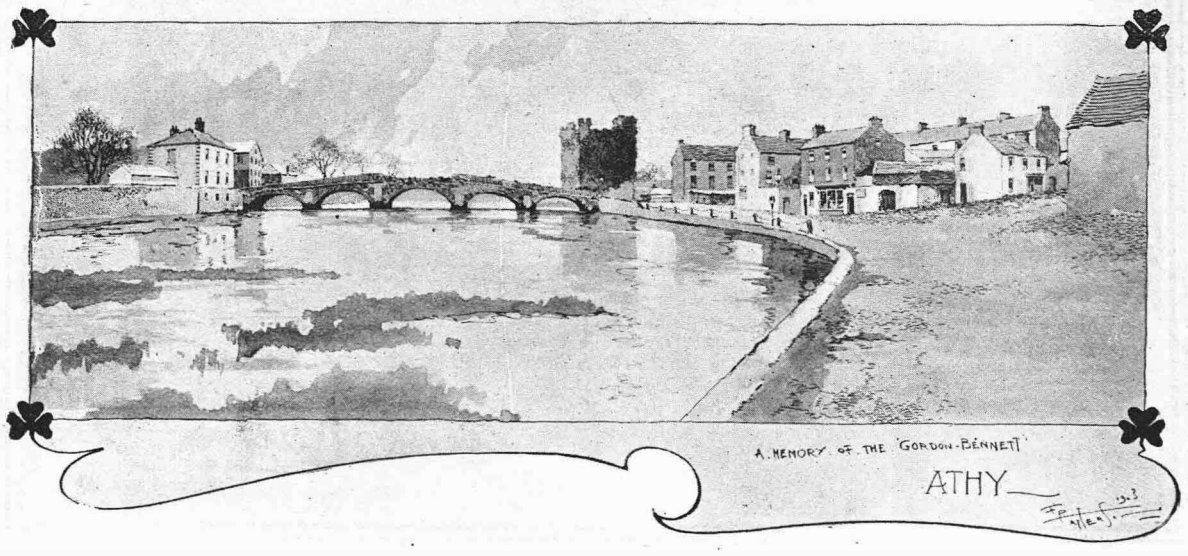
Reading "Agra's" letter in our issue of the week before last, I was fain, on the spur of the moment, to mutter to myself, "Blessed is he that wants a lot, because he stands a chance of getting some of it." I, too, my fear "Agra," would like the Local Government Board to agree to accept your comprehensive definition of a motorcycle as a "mechanically-propelled vehicle having five wheels or less, and to have a total length of 14 feet." With such liberality in those two particulars, I am afraid your modesty in putting the weight at 3 cwt. and the width at 3 feet will not avail you! I have just come hot and fresh from my second meeting, in which different committees have considered the Local Government Board's draft regulations (those on registration and licensing alone run to some 18 pages, foolscap size), and, as before those meetings I had examined the proposals of the Board with a microscope and a fine comb, and had almost ruined the petty cash box of the company by buying copies of Acts of Parliament and the Orders issued by various authorities, I guess I am somewhat qualified to assure "Agra" that his idea won't spark. Of all the soulless concerns a Government department is the worst; and from recent experiences I have come to the conclusion that for a relentless determination to apply any screw placed in its hands by Parliament, the Local Government Board would beat the Spanish Inquisition. A motorcycle being a motorcar in the meaning of the Act, we can expect nothing from the Local Government Board except in those matters where the Act has played lightly with us. In matters of detail, such as size and position of marks, the method of illuminating them, and so forth, we may be able to do something, if tact and diplomacy be exercised to their fullest extent. Otherwise, future generations will marvel at twentieth-century ignorance.

Trailer Speed: Good News.

As a result of ruining the week's petty cash, I secured enlightenment on one important matter, and, as this is quite apart from the Local Government Board's new Order, I may refer to it, all the new regulations having so far been communicated to me in confidence. The new Act under section 8 definitely repeals section 4 of the principal Act of 1896, which imposed speed limitation of 14 miles an hour, or such less speed as the Local Government Board should permit. All the speed regulations from the 12 miles an hour limit permitted to cars down to the 5 miles an hour for heavy lorries, including the 6 miles an hour limit for a motor vehicle drawing a trailer, were imposed under section 4 of the Act, and as the new Act repeals that section it follows that, from January 1st a motorcycle and trailer may legally travel at 20 miles an hour. So far as I can see, the Local Government Board cannot limit the speed of such vehicles, or combinations of vehicles, unless the combined weight exceeds two tons—at least, that is the only construction to be placed on section 12 of the new Act; but there is, of course, the 10 miles per hour limit which may be imposed in towns and such places. Moreover, it is quite clear that the trailer does not come under either of the Motor Cars Acts, because it is not a motor vehicle, consequently there is no registration fee to be paid, the only impost to which it is subjected being the carriage tax of 15s. per annum. But, as I read the law, it must carry a number (the rear number of the vehicle by which it is being drawn), and that number must be illuminated at night.

Concessions for Motorcyclists.

To go back to "Agra's" letter, which had the agra-vating effect of causing my pen to wander away upon side issues, there is, so it appears, only one safe definition of a motorcycle. We all know that a cycle has either two or three wheels, and is of light weight. If we try to ring in any dimensions that might be common to both the car and the cycle, and to give ourselves as many wheels as—or even more than—the car, we obliterate our line of demarcation, and then good-bye to any chance of securing different treatment to that accorded to the more expensive vehicle. Moreover, there is no need to count the wheels of a trailer or an extra separate vehicle which is pushed or drawn, because it is the motor vehicle itself which is subjected to the main clauses of the Act, and not any vehicle drawn or pushed by it. This being so, if someone should invent a two-wheeled tractor and trail a two-wheeled carriage, he might get a chance of ringing the changes somewhere; but I have had so much of the microscope and comb lately that I have pitched those instruments to the back of a drawer, and do not want to see them again, otherwise I would work it out.



THE SHOWS.

Some Novel Features to be looked for in 1904 Machines and Accessories.

The Stanley Show, Agricultural Hall, Islington, and the National Cycle and Motor Show, Crystal Palace, Sydenham, both open their doors to the public on Friday, November 20th and close on Saturday night, November 28th. Motor-Bicycles will be numerously exhibited at both Shows, and Light Motorcars will be on view at the Crystal Palace.

At the Stanley Show, Bradbury and Co., Ltd., will show "Peerless" motor-bicycles. These will be fitted with 2¾ h.p. motors instead of 2½ h.p. as formerly. Two accumulators will be fitted also an improved contact breaker, ratchet levers and many small detail improvements.

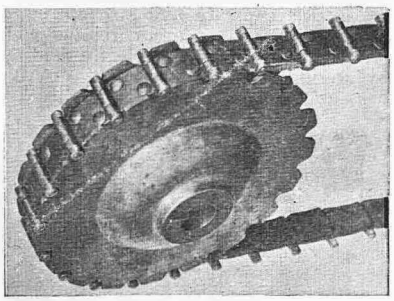
Bransom, Kent and Company will exhibit their novelties at the Stanley. The new Longuemare carburetter with automatic air regulator will be a strong line, and the firm are also showing an automatic air regulator that can easily be attached to existing carburetters. The BK auto-trembler for converting non-trembler coil to trembler is a speciality and also dead beat voltmeters will be shown.

Phœnix Novelties for 1904.

The new patent two-speed gear and free engine will be the firm's leading item in the way of novelties. This gear is claimed to be the simplest form of two-speed gear yet made. It is entirely dust-proof, but every part is easily accessible. In the many severe tests which have been given to the gear it has always kept absolutely cool: in fact, after a five miles' run on the low gear all the time the gear was cold. It is, of course, doubtful whether the gear would be continually run, under any circumstances, for such a period, but the test was given in order to prove the question of the heating of the gear. In the "Phœnix" special spray carburetter it is impossible for any dust to penetrate to the interior. All the air necessary for the carburetter is drawn in through one gauzed funnel, running close to the engine. The adjustment of mixture and throttle is automatic, while the spraying nozzle is made adjustable. The petrol and oil gauges (registered) are let into the side of the tank, enabling the rider to see at once the quantity of oil and petrol in the tanks. The improved combined stand, carrier and mud-guard answers the usual purpose of carrier, but, when in use as a stand, it carries with it the top of the mud-guard, thus leaving the tyre easy of access for repair. The improved paraffin injection valve will enable the easy starting of any motor, and affords a double check on loss of compression. Foot and hand applied band brakes and spring seat pillars will be embodied in the new machines. The two-speed gear was illustrated in "THE MOTOR" last week. The Phœnix machines will be on view at the Stanley, and the exhibit of this go-ahead firm will be full of interesting new features.

The Ormonde Company's New Chain-Belt Transmission.

As the result of exhaustive experiments the Ormonde Motor Company with their customary enterprise are placing on the market for the 1904 season an entirely new system of transmission in addition to their standard belt drive. We have closely inspected the new system and it struck us as being one of the best things in transmission yet brought out. As its name suggests, the system is a combination of belt and chain. The chain-belt consists

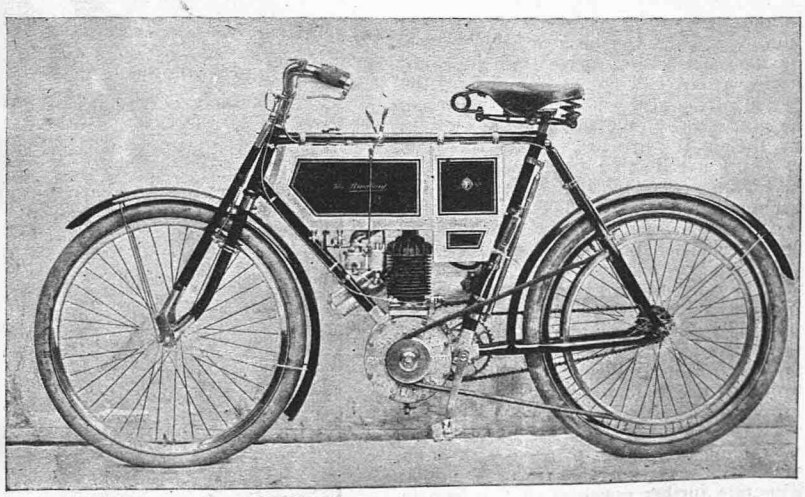


The Ormonde Chain-Belt Transmission.

of a series of flat hinged steel plates on the inner side of which is a leather face. At each hinge there is a projecting pin which will be fitted with a steel roller on each side. The idea, as will be readily grasped from the illustration of the actual gear, is that on the engine pulley a positive drive is obtained by the rollers running in the teeth provided in the flanges of the pulley. On the driving wheel rim the chain-belt drives exactly as a flat belt. It will be quite obvious that there can be no slip whatever on the engine pulley, no matter what the conditions of the belt, be it wet or greasy, but on the driving wheel pulley there is just that necessary amount of slip available which saves the machine and tyres from the ill-effects of the explosive impulses. Especially will this form of transmission be applicable to fore-carriage and high-powered engine drives. Another advantage is that the attention it would require would be practically nil. The company will exhibit at the Stanley.

The Raglan Motor-Bicycle.

The Raglan Cycle Co., Ltd., are introducing a motorcycle for 1904 which, by reason of its many good points and special features, promises to rank amongst the first flight. It has a 2¾ h.p. engine, a special float feed spray carburetter, and belt transmission. It is worked by two levers situated on the top tube, actuating the throttle and the ignition, which is by wipe contact. An exhaust valve lifter is fitted and actuated through the medium of a Bowden wire terminating in a pull-up lever under the right handle. An extra tank is fitted into the back part of the frame, which will contain a gallon of petrol. This exhibit will be at the Stanley.



The 1904 Bradbury Motor-Bicycle.

Lake and Elliott have recently introduced a new lifting jack. This is known as the Type D. It is provided with a long handle giving quick adjustment and long range from 8½in. to 21½in. Stands and carriers and all classes of tools for constructing motorcycles will be shown at the Stanley.

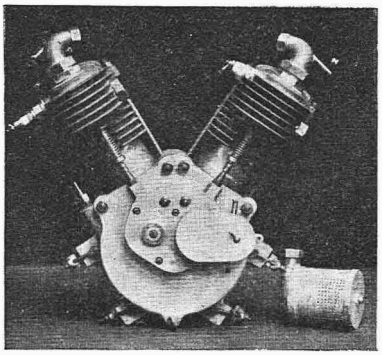
Bowden Improvements for 1904.

The Bowden Patents Syndicate will be showing a large variety of improvements especially connected with the Bowden motor-bicycle. The special feature about this machine is the Bowden chain drive and friction clutch which has proved so successful, and is still further improved for 1904. The firm's handlebar control system by the Bowden wire transmission is certain to prove a highly interesting exhibit. The illustration we give of part of the machine shows how various parts of the motor gear are controlled. Thus, there is the throttle valve, spark advance, and valve lifter. The front and rear wheel brakes and clutch and automatic circuit breaker are also wire controlled. A clever development of the Bowden principle is the firm's new flexible tube for oil or petrol connections. This entirely obviates the nuisance caused by the fracture of rigid copper pipes by vibration. The 1904 F.N. engine of 3 h.p. will be fitted as shown. This has several new features. There is an air passage between the cylinder and valve box improving the cooling. The inlet valve has a new paraffin injector (Bowden patent) and it also frees the valve automatically. The lubricating system has also been improved, and a very efficient vacuum valve fitted. A new brake acting on the belt rim will also be shown, as also will the firm's two-speed gear. The details of this gear are as follows:—It consists of a two-speed Hub worked on the well-known sun and planet motion, the spindle of the hub is rigidly held in the back fork ends, so as to prevent any possibility of it turning. On this spindle is a spur wheel fitted with a roller clutch; the chain wheel which is fitted with a spring drive, has an internal tooth gear wheel, which by the aid of a pair of small pinions, gears into the spur wheel on the axle, the chain wheel fitting has also a cone which is capable of being forced into the hub and locked there, so that the chain then drives the hub as one solid piece, the spur wheel on the axle acting as a free-wheel, and running round with the gear. On releasing the cone friction drive from the hub, the two-speed gear comes into action, the motion of the gear wheels being reversed, the spur wheel on the axle remains stationary, the small gear wheels revolving round it, giving a reduction of 40 per cent. on the high gear. When in the low gear, the machine can be wheeled along, and will overrun the engine, as in the Humber, and can be wheeled backwards and forwards by lifting the exhaust valve. The gear must be put into the high gear to start the motor, but when in the high gear, it can only be wheeled forward with the exhaust valve lifter up, as owing to the action of the free-wheel spur gear it is impossible to wheel the machine backwards. This exhibit will be found at the Stanley, and visitors will find sufficient here in the way of novel features to occupy their attention for a considerable time. We shall illustrate further novelties of this firm in our Show Number.

D2

A Twin-Cylinder Motor.

Chas. Peacock and Co., 35, Clerkenwell Road, London, E.C., have many novelties for 1904. We illustrate a new 4½ h.p. motor, with twin cylinders, they are introducing. This will be very suitable for driving fore-carriages. The workmanship throughout is very substantial. The crank case is provided with clamps for attachment to a loop frame. A new style



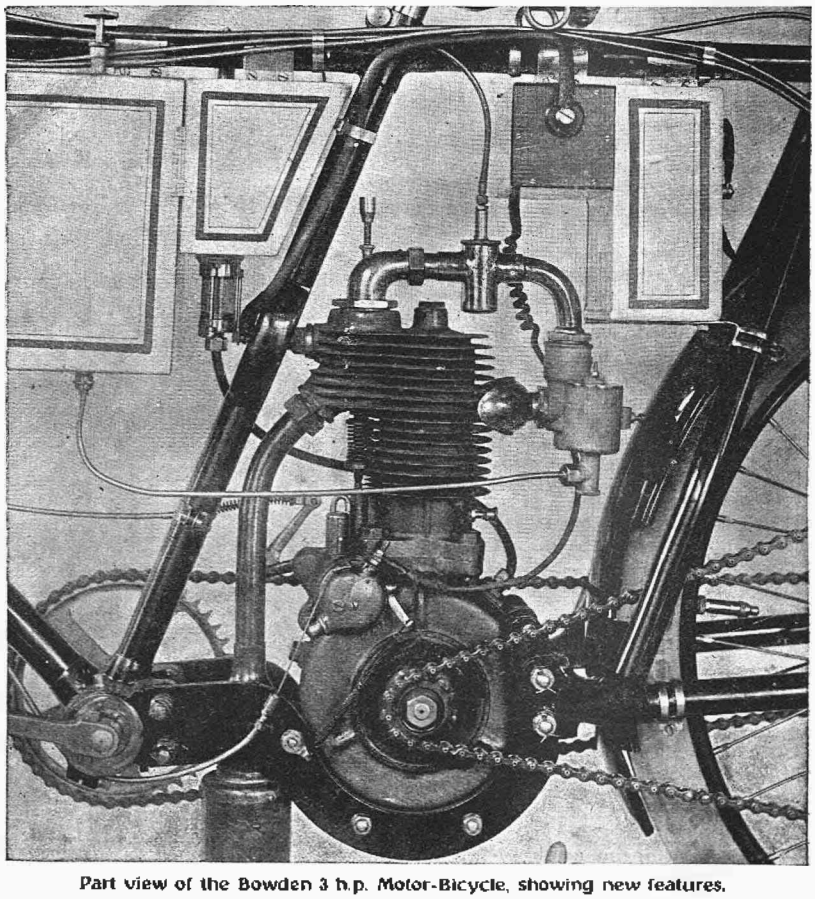
New 4½ h.p. Twin Cylinder Motor, by Chas. Peacock and Co.

of accumulator will also be shown. This has many good points; for instance, the positive plate is of a deep ribbed section, and formed by the Plante process, giving very great capacity and strength. The terminals are of a non-corrosive metal, and the vent is made perfectly acid-tight by an ingenious arrangement. A dead beat voltmeter is another speciality. In this the needle at once comes to rest at the figure indicating the voltage. Then we have a new contact maker designed for use with a trembler coil.

A revolving disc, which is made of steel, is provided with a small plunger, working against a spring. This rubs against a hardened steel contact piece, this, of course, being insulated by fibre and connected to a terminal. Thus a perfect connection is made through the coil at each revolution of the plunger, and the working parts being hard steel there is practically no wear and tear. The firm have other novelties in the way of switches, lamps, cell testers, electrical heaters, etc.

Clarke, Cluley and Co.'s Specialities.

The motor exhibits of Clarke, Cluley and Co., Globe Works, Coventry, will include one of the well-known Globe motor-bicycles, fitted with a vertical 3½ h.p. Globe engine, Longuemare spray carburetter, double accumulator connected with switch, and large tank giving ample petrol space. Another of these machines, similarly fitted, will also be shown, to which will be attached a patent Trimo fore-carriage, with wide front axle, patent band brakes on both front wheels, and powerful back brake. It is fitted with a large cane fore-carriage, upholstered in best style. The exhibit will also include a trailer designed with special frame work for use with motorcycles. It is fitted with 2 in. Dunlop Multicycle tyres, and the firm's patent ball socket joint. The firm will be found at the Stanley.



Part view of the Bowden 3 h.p. Motor-Bicycle, showing new features.

"THE MOTOR" and kindred publications will be on sale at Stands 181 (Arcade) and 156 (ground floor) at the Stanley; and at Stand 44 (near great organ) National Show.

The Booth Motor-Bicycle.

The Booth motorcycle which will be exhibited at the National Show will have many improvements upon the 1903 pattern. Petrol capacity is increased to two gallons. More lubricant can be carried. Two accumulators (with two-way switch) are supplied, the total capacity being 1,800 miles. A free-wheel hub is fitted so that no dirt can interfere with the working. Less than a foot of wire is to be seen on machine, practically the whole of the wiring being in accumulator box. The exhaust is controlled by lever from handlebar, and this also breaks the ignition circuit, and an auxiliary lever holds this in position when desired, for descending hills. The whole constitutes a great advance upon this year's machine.

The Ariel Exhibit.

One of the special features of the Ariel exhibit will be the new 3½ h.p. Ariel engine, with the mechanically operated valves. This model has been specially designed for use in conjunction with side-carriage or fore-carriage. The engine is up to the usual well-known Ariel standard, and bristles with good points, a few being extra large phosphor bronze bearings, increased weight of fly-wheels, new design of contact breaker with transparent celluloid face, 2 to 1 gear, rotated by worm drive, entirely detachable, without disturbing crank case. The 3½ h.p. motor-bicycle will be fitted with duplex front forks, Longuemare spray carburetter, two accumulators, with two-way switch, exhaust valve lifter, and combined cut-out to operate from handlebar. The Ariel 2¾ h.p. model at 45 guineas will be on similar lines, but fitted with surface carburetter, as this type has been found the most suitable for an engine of this power.

A very interesting link with the past will be found on the company's stand in the shape of an Ariel motor-tricycle and quad, in which class of machine the Ariel Company held practically a monopoly a few seasons ago; they are still open to supply these in limited quantities. The Ariel will be at the Stanley.

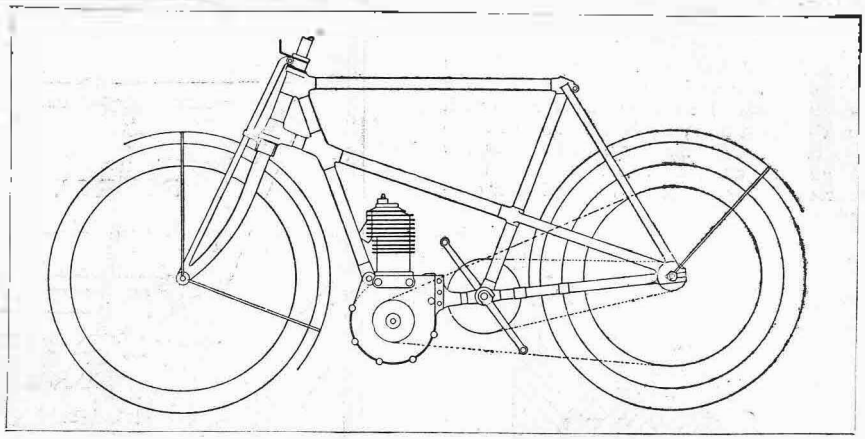


Diagram showing the lines of the 1904 Crypto Motor-Bicycle.

The Crypto Exhibits.

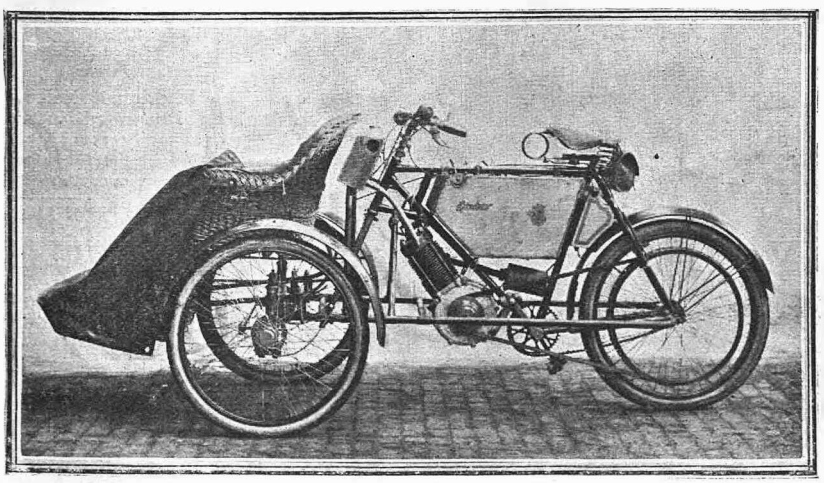
The exhibit of motorcycles on the Crypto Works Co.'s stand will consist of three specimens of two different model motor-bicycles, and two specimens of the Crypto tri-car.

The Crypto tri-car is a practical light motor vehicle for two riders. The frame is built of large diameter tubing, and the steering is of the differential type. The special features of this machine are its expanding band brakes on the front wheels, the length of the belt drive, and the strong construction throughout. The front seat of one specimen to be shown has a very fine coach-built bucket seat, and the other is of upholstered cane; 2½in. tyres are fitted to the back wheels; the engines used are 3½ h.p. M.M.C. The new pattern Crypto bicycle, as illustrated herewith, has been designed to fill the present-day requirements for a comparatively light bicycle, with ample engine power. The frame, which has been duly protected, is exceptionally strong and symmetrical. The engine fitted is a 2½ h.p. Peugeot. The whole machine weighs 100 lbs. The other motor-bicycle will be of the now well-known Crypto type, fitted with a 3½ h.p. M.M.C. engine. This machine is specially suitable for racing and for trailer and fore-carriage work. This exhibit will be at the Stanley Show, and we shall further illustrate the firm's novelties in our Show Special.

The Excelsior Exhibits.

The 1904 pattern 2¾ h.p. Excelsior motor-bicycle although remaining practically the same as the 1903 pattern, as far as the engine is concerned, has been altered in many respects in other details. In lieu of the make and break contact, the makers are now fitting the well-known Basse Michel wipe contact and trembler coil. Last season an extra charge was made for spray carburetter, as the surface was the standard pattern, but now, owing to the increased demand for the former type, either surface or Longuemare will be fitted. Another important point which will appeal to tourists and long distance riders is the increased petrol capacity of the spare tank; this is now made so that a ride of 140 miles can be accomplished without replenishing. Two accumulators are fitted and connected with a two-way switch, so that when one accumulator is exhausted, by simply removing the interrupter plug from one hole to another, a connection is made with the fully-charged accumulator remaining; this can be done instantly, and without disconnecting any wires. The two-way switch and interrupter block are combined, and instead of fitting on the handlebar, as before, are now placed in a slide at the back of accumulator and coil compartment. It is very easy to get at, and does away with disfiguring the handlebar. The coil and accumulator compartment have been considerably improved, and to obviate any chance of the coil or accumulator rattling or getting out of position, they are now enclosed in hinged straps, which pass through the base of the compartment, and are held secure by wing nuts. The silencer has been altered in shape and design, and is now far more effective, the engine running practically silent.

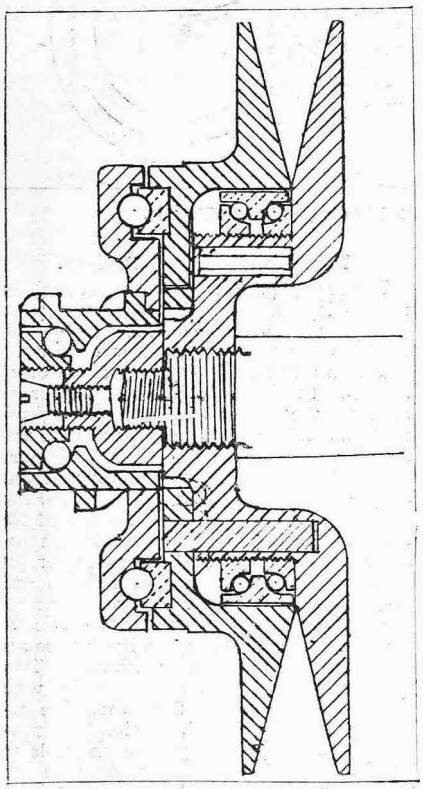
The Excelsior fore-carriage shown in the illustration is an entirely new design from last season. The main tubes or frame are carried to back axle of motor-bicycle, thus giving greater strength and rigidity. The steering, instead of being by means of the ordinary front fork, is now done by a direct post running from the socket, giving a sensitive steering, at the same time is a secure attachment. The side mudguards are now much wider than before. The Excelsior exhibit will be at the National Show, and our Show Special will contain a full report of the Excelsiors.



The 1904 Excelsior Motor-Bicycle with fore-carriage.

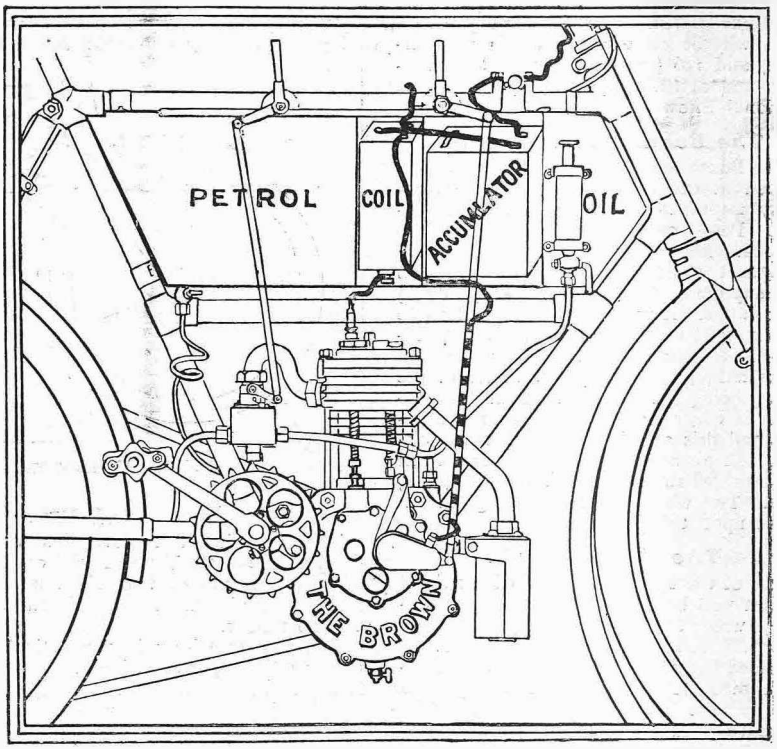
The Princeps Variable Speed Gear.

A special feature of the 1904 Princeps machine is a variable speed gear and free engine pulley for belt driving for use with a V pattern belt; it gives a ratio of 25 to 30 per cent. in the gear, and allows the engine or cycle to run free. The lever for operating the gear is placed in a convenient position on the handlebar. The



The Princeps Variable Speed Gear.

pulley flanges are made in two parts, the inner one being fixed to the shaft and the outer one allowed to move laterally on four studs by means of a 2in. pitch triple-threaded worm operated by a ratchet lever on the handlebar. By moving the lever so that the flanges of the pulley come together, it gives a large diameter driving pulley and consequently a high gear, and by allowing the flanges to separate, the diameter of the gripping surface of the pulley is decreased, giving a reduced gear. By separating the flanges to their full extent, the belt drops on to a loose ring and allows the engine to run quite freely, or the machine can run with the engine stationary. By this arrangement the rider is enabled to reduce the gear according to the work the engine is required to do. This is a distinct advantage over other two-speed gears, as in this case the low gear has to be low enough to take the stiffest of hills. A good feature of this variable gear is its comparative simplicity and certainty of action. The accompanying illustration will show the working of the gear which we shall describe fully after inspection.



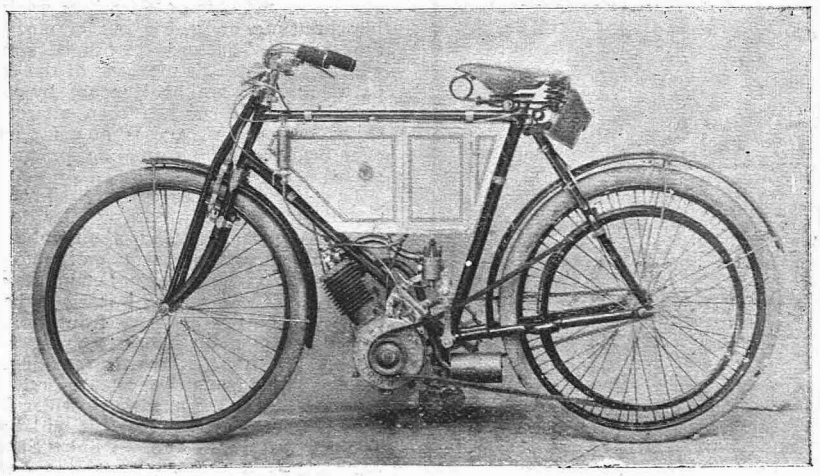
Part view of the 1904 Brown Motor-Bicycle.

Brown Bros'. Specialities for 1904.

The 1904 Brown motor-bicycle will be made in three powers, viz., 2 h.p. (64 by 70 mm.), 2¾ h.p. (74 by 80 mm.), and 3½ h.p. (82 by 90 mm.). The prices of these will be £38, £42, and £49 respectively. The motors are fitted with mechanically operated valves, and the fly-wheels are ¾ in. larger in diameter than formerly. The new Longuemare carburetter is fitted, and also an improved exhaust lifter. The machines are all fitted with a combined girder and triple head. The driving rim is secured by a special system of spoking. There are many improvements in the tank details, and an additional compartment is provided for a spare battery. The silencer is also made on improved lines. The firm will exhibit at the Stanley.

The Noble Motor-Bicycle.

Perhaps the lowest priced motor-bicycle yet introduced is the £29 machine manufactured by the Noble Motor Company, of Pocock Street, Blackfriars, S.E. The engine of 2½ h.p., is of original design, and has already been illustrated in "The Motor." Petrol capacity is 1¾ gallons, and room is provided in the tank for two accumulators. L'Eclair trembler coil is fitted, and wipe contact. The carburetter is a D. and R. fitted with throttle which is regulated by a lever easily reached by the rider. The lubricating pump can also be easily operated while driving. An efficient silencer of special design is supplied, and any pattern tyres to order. A V belt is used, and the control is by exhaust lift from handlebar by Bowden lever and wire, the electrical ignition being operated by Mason and Brown switch on handlebar. The machine is well finished in black enamel, or aluminium finish can be had for an extra 10s. The exhibit will be at the Stanley.



The 1904 Noble Motor-Bicycle.

The Whitley Motor Co. will show at the Stanley a variety of motors, including 2¾, 3¼ and 4 h.p. air-cooled, and 4 and 5 h.p. water-cooled.

The Star Motor-Bicycle.

This machine will be shown at the Stanley. There will be two patterns, viz., 2½ and 3 h.p. motors, fitted vertically, and with 26 and 28 inch wheels respectively. The carburetter is of the Longuemare type, and ignition by coil and accumulator. Special attention has been given to the construction of the tanks, which are of ample strength, being made of 18s gauge sheet brass. The price of the 2½ h.p. machine will be 40 guineas, and 3 h.p. 46 guineas.

The Singer Exhibit.

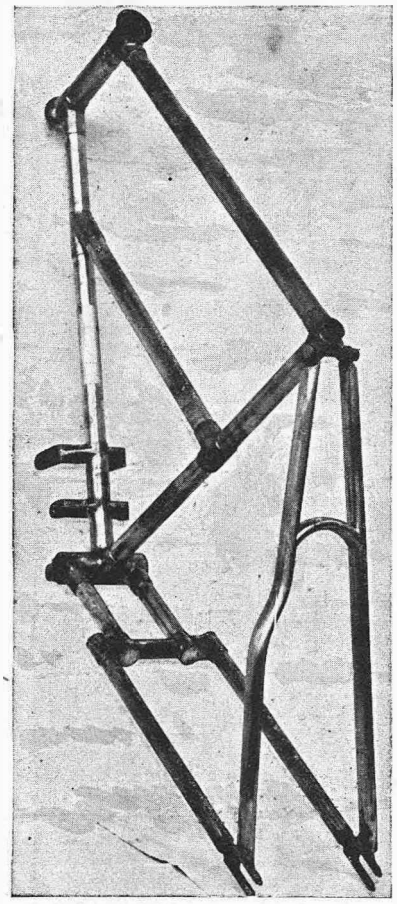
A large display of Singer machines will be made at the National. These comprise patterns of belt, chain and gear drivers. The new belt drive is 3 h.p., with the motor mounted in the frame. All types of Singers will have handlebar control and magneto ignition. The compensating wedge rim brakes have been revised and made more powerful. The chain drive machines will be made in 2 and 3 h.p. sizes, in both lady's and gent's types of frame. The 3 h.p. machine will have 28in. wheels. The gear drive machines will have 2 and 2½ h.p. motors. The Singer motor tandem tricycle will be a strong line for 1904. It will have a drop rear frame, and 2½ h.p. engine, and is a capital mount for two riders. The Governess car, Trivoiturette and fore-carriage will be shown. The fore-carriage is a new type for 1904. This will be fitted to the 2½ and 3 h.p. gear and chain driver respectively. Two band brakes are provided, and operated from the handlebar, and a comfortable footboard can also be fitted.

The Rover Motor-Bicycle.

The Rover Cycle Co. will show their 1904 motor bicycle at the Stanley. It has a 3 h.p. motor fitted vertically in a special cradle. The inletvalve is mechanically operated. The ignition is by brush contact and trembler coil and two accumulators are provided, the two way switch being fitted on the forward part of the horizontal tube. Transmission is by V shape belt. The frame, as will be observed, is exceptionally well-stayed by a double down tube, and a series of tubes at the crank bracket. The front forks are of the duplex pattern. The motor cylinder and head are cast in one piece, and a special paraffin valve is fitted. The carburetter is of the spray pattern, and the control levers have ratchet adjustments. The sparking plug is placed vertically over the inlet valve. The case at the rear of the frame carries the accumulator and also the coil

The Eadie Motor-Bicycle.

This machine will be exhibited at the Stanley. The special feature is the design of the frame. The chain stays are quite straight, without any lugs, giving great strength, and enabling the wheel to be easily removed. Another advantage is that it is easy for the assembler to manipulate the fittings, as there are no cranked lugs to braze and ample clearance for the belt drive is also provided within the stays. It will be observed from the illustration that the large panel of the frame is well stayed, and should prove exceptionally rigid.



New Eadie Motor-Bicycle frame.

Lintine's Accessories, etc.

Lintine and Company will exhibit at the Stanley a large collection of motor fittings and accessories. They have also several specialities including a patent spark intensifier and interrupter switch of neat and simple design.

Trafalgar Side-carriage, etc.

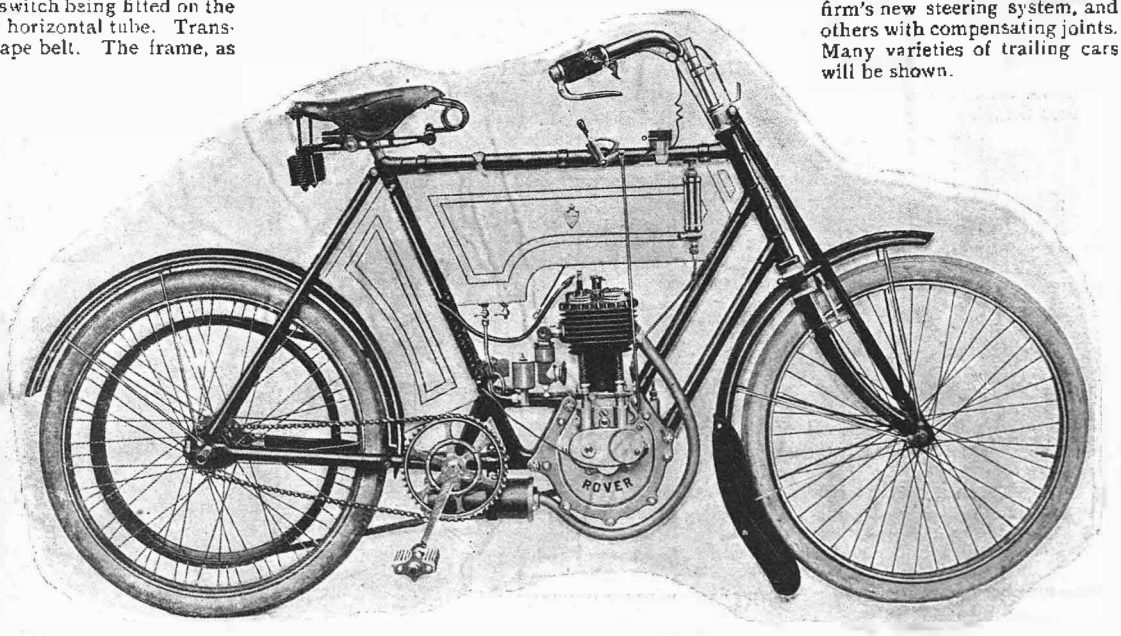
Messrs. Geo. Lyons and Company will exhibit at the Stanley several motor-bicycles fitted with 3¼ h.p. motors. They have their patent flexible side-carriage attached to these machines. The attachment of these cars is effected by the screwing up of two bolts only, and the makers claim it can be attached and detached under two minutes. A special shape basket will be provided to carry petrol and other supplies.

W. King and Co.'s Exhibits.

This firm will have six motorcycles on show at the Stanley. Five of these will have M.M.C. engines and one will be fitted with a 3¼ h.p. water-cooled motor. There will also be a King "Twocar" fitted with two band brakes. Another machine will have a chain drive and two-speed gear allowing of a free engine. Amongst the novelties will be shown a combined stand and luggage carrier, a petrol gauge and drain tap, water tank and special radiator, etc.

Mills and Fulford's Exhibit.

This firm will have a large and interesting display of side-cars, fore-cars and trailers at the National. There will be several new designs of fore-cars with improved steering on the lines of a motor-car. An entirely new pattern will be one intended for tradesmen's use, fitted with a box or hamper for the delivery of goods. Side-cars will be shown fitted with the firm's new steering system, and others with compensating joints. Many varieties of trailing cars will be shown.

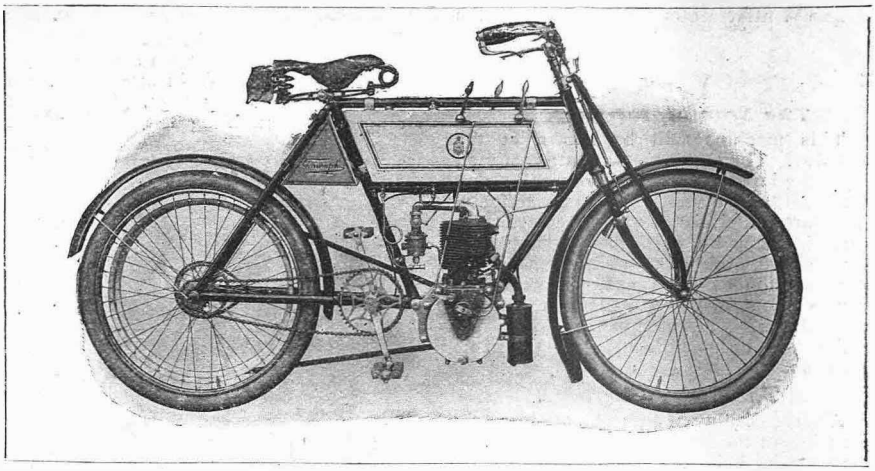


The 1904 Rover Motor-Bicycle.

The County Chemical Company are showing at the Stanley, and will have a very complete exhibit of lubricating oils, calcium carbide, celluloid cement, picric acid, rubber solution, enamels, lacquers, motor grease, belt dressings, and a new searchlight inspection lamp; and, in fact, all materials for motor purposes.

The Westfield Autobike.

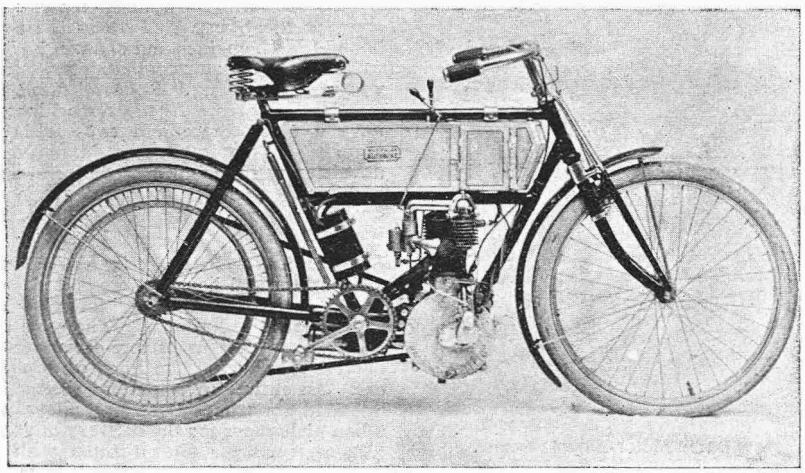
The Rising Sun Motor Company will be exhibiting at the National. Amongst the motorcycles the Westfield Autobike will occupy a prominent position. This has a motor with cylinder 74 by 78 mm. 2¾ h.p., large fly-wheels and long bearings. The regulating gear is controlled from the handles. The silencer is of special design and two brakes are fitted, viz., a band brake in rear hub and rim brake on front wheel. The front forks are duplex and of great strength. Two inch Clipper motor tyres are used, and extra wide mud-guards with front extension. The makers can supply a variety of sizes of driving pulley to suit various classes of work such as fore-carriage work, ordinary road work and racing. These pulleys are interchangeable and detachable. A special 3½ h.p. model is also made.



The 1901 Triumph Motor-Bicycle.

At the stands of "THE MOTOR" at the Stanley Show and National Show visitors who are readers of "THE MOTOR" will be able to get for the asking a copy of a little booklet entitled "Hints and Wrinkles."

A motor-bicycle fitted with a 5½ h.p. air-cooled De Dion engine will be shown at Stand No. 171 in the Arcade, Agricultural Hall. It is especially built for fore-carriage work. Bicycles built from Chater Lea fittings, and fitted with 3 h.p. Fafnir engines, will also be exhibited. These are retailed at 30 guineas by Messrs. May Brothers, of 324, Clapham Road, London, who will occupy the stand mentioned.



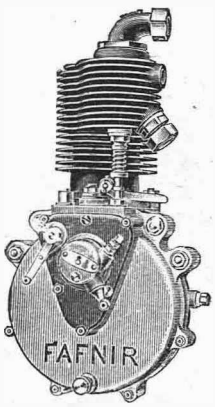
The 1904 Westfield Motor-Bicycle.

The Triumph Motorcycles.

The Triumph motorcycles will be shown at the Stanley. These will include 2½ h.p. and 3 h.p. machines, and also a fore-carriage with water-cooled motor. The standard pattern machine is shown in the illustration. The motor is 70 by 76 mm. and provided with a Dunlop silencer and exhaust valve lifter. Twin accumulators with two-way switch and Bassée Michel coil are used. Transmission is by V belt. Wheel base is extra long and girder forks are fitted, the weight comes out at 120 lbs. The 3 h.p. machine designed for heavy riders and hilly countries has a motor 75 by 80 mm. and Longuemare carburetter. Transmission is by a V belt. Two accumulators and double switch are fitted. The contact is an improved make and break pattern. The motor is fitted in a low central position, and a rear band brake and front rim brake are provided. The wheels are built up with extra stout spokes and fitted with 26 by 2¼in. Clincher tyres. The petrol capacity is equal to 1½ gallons. All control levers have ratchet adjustment. The fore-carriage motor will be provided with a honeycomb radiator.

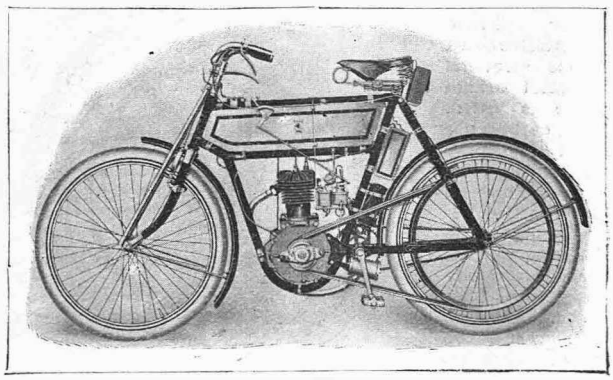
The Fafnir Motor.

Messrs. Strauss and Co., of 211, Upper Thames Street, London, E.C., will be exhibiting the Fafnir motor at the Stanley. It is a well designed motor, as will be seen from the illustration. It is made in two sizes for motorcycles, viz., 2¾ and 3 h.p., these being 70 by 75 and 75 by 80 mm. bore and stroke. The exhaust valve is fitted with a governor, as will be seen. The cooling ribs are larger and more numerous than usual, and cylinder and head are in one piece. The ignition is by a plain make and break. The F.N. carburetter is fitted, and also an extra silencer. The weight of the 2¾ h.p. is 38lbs., 3 h.p. 40lbs.



The Clarendon Exhibit.

The Clarendon Motor Car and Bicycle Co., Ltd., of Coventry, will exhibit 12 of their 3 h.p. "Clarendon" motor-bicycles at Stand 69, National Show, having decided to make this machine a standard pattern for 1904. All machines made by this firm will be fitted with their patent adjustable outside pulley bearing which has been improved for next season. A specially designed 3 h.p. engine is fitted, the bore and stroke being 77 by 81 mm. respectively. A mechanical inlet valve is one of the improvements for next season, also an effective silencer. No alteration in frame design has been made as the firm finds that their registered design has met with the entire approval of their numerous agents and customers.



The 1904 Clarendon.

The Jehu Motor Company will show at the Stanley the Jehu Trimo fitted with a 3 h.p. motor 75 by 80 mm., chain-driven, free engine clutch, two accumulators, and two-way switch. Petrol capacity 1½ gallons. There is also an exhaust governor. Also a number of motor-bicycles fitted with both belt and chain drive.

Umpire Accumulators.

Messrs. Sutherland and Marcuson will exhibit at Stand No. 198, Stanley Show, their well known "Umpire" storage batteries, in which porous separators occupy the entire space between the plates, preventing short circuits and loss of active material. The great advantage of "Umpire" cells is the ease with which they can be repaired, owing to their solidity and the absence of complications and small pieces. In addition to the usual transparent celluloid cells they are showing "Accessible" batteries, in which the lid can be removed and replaced in a few minutes, so that all the elements can be removed, washed, replaced and resealed in the shortest time possible and with least expense.

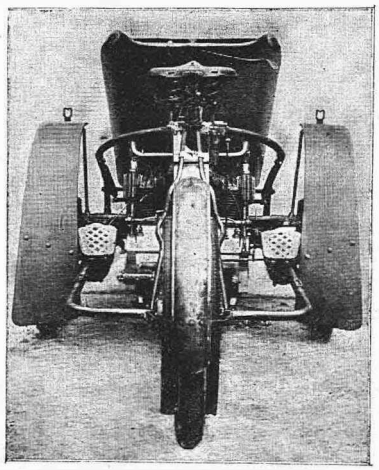
Alldays' Improvements for 1904.

Messrs. Alldays and Onions will have an interesting exhibit of their new pattern motorcycles and fore-carriages at Stand 95, Stanley Show. They are also showing their latest pattern "Traveller Voiturette." The motor-bicycle is made throughout by Messrs. Alldays and Onions, and all parts are interchangeable. The frame is designed with a special cradle (registered) for carrying the motor in an upright position. Lugs are provided on the crank case which correspond with faces on the cradle, and are securely held by four bolts. This invention affords great strength to the frame and rigidity of the motor, and obviates the necessity of clamping to or bending tubes. The tank has compartments for two accumulators, coil, lubricating oil, and sufficient petrol for 160 miles. A float register is provided and always visible for showing the quantity of petrol in the tank. The weight of the machine complete does not exceed 110lbs. The machines fitted with fore-carriages are strongly built, and a specially designed frame is constructed for carrying a well-finished and smartly upholstered bucket seat. The "Traveller" voiturette is one that particularly appeals to the man of moderate means.

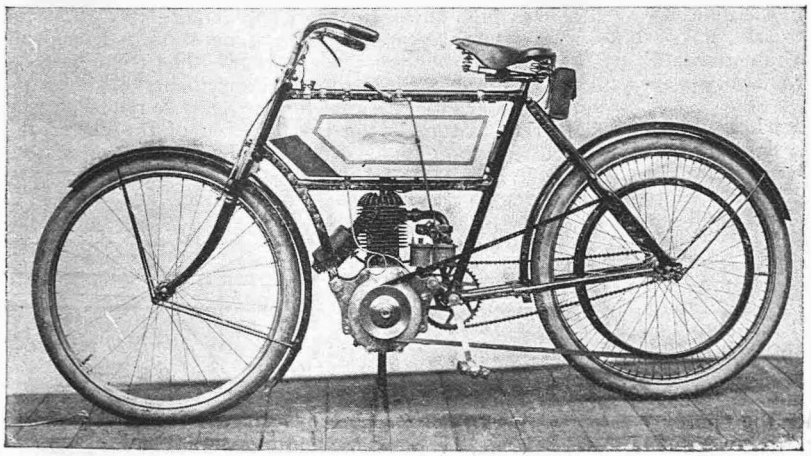
The Bichrone motor will be shown by J. C. Hencke in the Minor Hall at the Stanley. There will be motors of 2¼ and 3½ h.p., a Bichrone motor-bicycle and fore-carriage, Invicta accumulators, Dary coils, tanks and other accessories will also be shown.

The Quadrant Tri-Car.

The illustration shows a back view of the Quadrant Tri-car. A distinctly novel feature is the use of two separate motors of 2½ h.p. which can be run singly or together simply by moving a foot lever. This feature of employing two motors gets over the difficulty of cooling a large single motor. The transmission is by means of a V belt from each motor driving on to each side of the back wheel. The carburetter used is the "Quadrant" surface type, and has a capacity for two gallons of petrol. Twin accumulators are used. The back wheel has a Quadrant back pedal brake and the side wheels have band brakes actuated by Bowden wires. The driving tyre is 2½in. and side wheel tyres 2in. diameter. The front carriage is coach built and is suspended on extension coil springs. The principal spring is adjustable to different weights. Foot rests with rubber mats are provided. This machine will be found at the National, and is certain to cause a great amount of interest from its many novel features.



The Quadrant Tri-Car.



The 1904 Enfield Motor-Bicycle.

The Enfield Exhibit.

The Enfield Cycle Co., Ltd., have now equipped an entirely separate factory for the production of motorcars and motor-bicycles, and from this it will be seen that the Enfield Company do not look upon motor-bicycles as a "side line." In placing cars upon the market this company is bringing to its aid the experience gained during the last few years in the building of motor quadricycles, tricycles and bicycles. The Royal Enfield 10 h.p. car is fitted with a double cylinder engine manufactured throughout by the Enfield Company; it has three speeds and reverse, a four-seated tonneau body, artillery wheels, spray carburetter, and is equipped with one foot brake, and also two brakes operated by one lever. The Royal Enfield 6 h.p. car has a De Dion engine, two-seated body, spray carburetter, one foot brake and two tyre brakes actuated by a lever; this car has also three speeds forward and reverse. The Royal Enfield belt driven motor-bicycle is equipped either with 2¾ or 3½ h.p. vertical engine, spray carburetter and specially large silencer. Great attention has been devoted to the strength of the frame and front forks, and the bicycle has a very handsome appearance. The Royal Enfield chain-driven motor-bicycle is a machine which attracted so much attention at last year's Show; the engine which is made by the Enfield Company is of the vertical type 2½ h.p., and one of the chief features of this bicycle is that only a single driving chain is employed. The firm will exhibit at the Stanley.

The Werner Exhibit.

Werner Motors, Ltd., will exhibit their new models for 1904 at the Stanley Show, Stand No. 121. Their exhibit is always looked forward to with special interest, as having been engaged in the trade from its very commencement, they are responsible for the introduction of many of the leading features now adopted in the generality of motorcycles. Originality has always been a remarkable feature in their productions, and this year 12 distinct improvements will be introduced, several of which are of a very important character. Two types of machines will be marketed of 2½ and 3¼ h.p. respectively. The engines are of an entirely new design, and are fitted with large fly-wheels and a new style of carburetter which is automatic in action and gives remarkable results. An entirely new device for providing a free engine will be a conspicuous feature of these machines, and a special arrangement of the engine pulley will render the possibility of belt slip very remote. The frame of the machine is longer than in last year's patterns, and the front forks are stayed on the girder principle. Special attention has been paid to the brakes and a new system for the one on the back wheel will be shown. The new silencer is of larger dimensions and of different internal construction in order to give maximum efficiency with the higher powered engines. As soon as protection is completed, we shall illustrate and describe in detail the 1904 Werner specialities, which indicate that no effort is being spared to keep this well-known make in the prominent position it has so long occupied. Visitors to the Agricultural Hall will find plenty to interest them at the stand where Werner motor-bicycles will be exhibited.

The Motor
INCORPORATING Motor Cycling & Motoring

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

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OPINION

The Club and "The Motor."

We deal fully elsewhere with the incidents that have led to the abandonment of the Light Car Run Round London, but we must here emphasise our opinion of the inconsistency and absolute lack of sincerity which has been displayed by the Automobile Club over this matter. In our last issue we stated that the Club had given our scheme its approval. Anybody reading the Editorial (which embodies only the Club Committee's resolution) in the "Club Journal" would rightly regard us as wilful perverters of the truth. The correspondence which we are forced to publish elsewhere, irrespective of all regard to its confidential character, will show that once more the "Club Journal" has shown its lack of all conception of what is honourable in journalism by withholding all reference to the previous decision of the Executive Committee to allow the run to proceed under the Club's rules, and with the Club's distinct approval. The fair and honourable course would have been for the "Journal" to give the decision of both its Executive and Club Committees, pointing out that the later resolution of the latter stultified the resolution of the former. This course, whilst it would certainly have shown the strange inconsistencies which characterise the Club's proceedings, would have proved that our statements of last week were made in good faith and with good reason. Unfortunately we have had ample evidence, in the treatment of the Parliamentary party, in connection with the Government Bill, that the "Club Journal" is in the hands of those who either will not or cannot appreciate the duties of the Editorial position.

As to the action of the Club Committee, the whole matter is very fully dealt with in another part of the paper, and it is not necessary to comment at length here upon the strangely vacillating policy which the Club has seen fit to adopt. We think it will be generally agreed, now all the facts are before our readers, that we have a distinct grievance against the Club for its *mala fides* in this matter. The correspondence will show that upon receiving intimation of the decision of the Executive Committee to allow the Run to be held under A.C.G.B.I. rules we were justified in going forward with the organisation of the event, and in making the statement that the Club approved of the Run. The action of the "Club Journal" in recording only the later decision of the Club Committee, and ignoring altogether the approval of the event previously given by the Executive, we must regard as an effort to gloss over the indecisions of the Club; but as this effort to hide its own shortcomings throws the gravest doubt upon our own good faith, we can only characterise it as an act unworthy of a journal whose duty it should be to faithfully record the doings of the Club it represents.

The Future of High Speed Travelling.

The recent experiments made on the military electric railway at Zossen in Germany have proved that, given a suitable track and motors of immense power, it is easily possible to attain velocities which up to quite recently were deemed a physical impossibility. Locomotive engineers of high repute have often stated that, in their opinion, 80 miles per hour was the utmost limit of speed that could be attained by a steam propelled train for runs of any length. The petrol driven road car has proved that it can, on a suitable road, touch and exceed this high rate of speed, as witness the speeds reached by Gabriel in the ill-fated Paris-Madrid race. But from 80 or 90 miles per hour to jump to 130 miles per hour is, indeed, a sensational achievement, and one which it is doubtful if the public have yet fully appreciated. The power by which this tremendous velocity was attained was neither steam nor petroleum, but the wondrous power of electricity, which is so rapidly revolutionising the social and economic conditions of our everyday life. It cannot be considered a false prophecy to say that the days of steam as a tractive power are numbered. In the not distant future the electric train and petroleum driven motorcar will hold the field. The electrifying of our great trunk lines of railway is certainly only a matter of time, although we may expect the steam locomotive to die hard. For the specially high speed service of trains between distant towns it will, doubtless, be necessary to build overhead tracks practically dead straight. The existence of a curve of small radius is quite impossible for a high speed railway track. The saving of time and the gain both commercially and socially will be immense. The time taken now by our fastest expresses will be reduced to less than half. Given better surfaced and straighter roads and the exclusion of slow and effete horse traffic to the bye-roads, there is a magnificent future for the petrol driven car as a means of transit on a large commercial scale, and where the 'bus and tram now serve to take the public a few miles out of a large city or town, the fast motorcar of the future will take them 20 or 30 miles. The rapid growth of our great cities and towns render faster and more comfortable means of travelling imperative in the near future. When we look back on the small and long forgotten beginnings which have led up through the course of the past century to the marvellous achievements just recorded, it is safe to say that the world owes a great debt to the genius of Michael Faraday the English physicist whose patient and persevering experiments 70 years ago laid the very foundation stone, as it were, upon which the dynamo machine was built up. But England left it to her strenuous rivals, namely, the United States, Germany and France to develop the principles laid down by Faraday. Hence it is that these sensational achievements in the generation and application of electrical power are made abroad. The technical details as to how these high speed achievements have been accomplished are too intricate for the average reader to grasp. The great feature is the transmission of the power at an enormous voltage along overhead wires, which power supply the train draws upon as it travels. The current, it is interesting to note, is an alternating one.

"The Motor" Show Specials.

In this issue we give preliminary details of a number of new features to be looked for at the Shows. We shall continue these in a greatly enlarged edition next week; and the week following, "The Motor" will contain a fully illustrated report of both Shows.

NEWS.

After one committee of the Automobile Club had sanctioned our light car run another one forced its abandonment.

The makers of the Gobron-Brillie car intend to place a motor-bicycle on the market. This will be known as the Gobron-Minerva.

To our knowledge, many improvements introduced in 1904 patterns will be the outcome of experience gained in the 1,000 Miles Reliability Trials.

Miss Dorothy Levitt, whose car was overturned by a G.P.O. mail van in Rosebery Avenue, some time ago, has recovered £35 damages in the law courts.

A grand motor launch race will be held next summer at the fashionable Belgian watering place, Ostende. Prizes to the value of £1,000 will be offered. July 17th is the date fixed.

A contemporary says "There is a section in the Act which permits the closing of highways to motorcars *if they are less than 16 feet wide*." Most modern cars come within this limit of width.

Storero, Lancia and Felice, three of the foremost chauffeurs in Italy, have just been nominated by the Italian Automobile Club for next year's Gordon-Bennett. They will drive specially constructed 70 h.p. Fiat racers.

A motor and cycle show will be held in the Engineers' Drill Hall, Claypit Lane, Leeds, from Friday, January 15th to 23rd inclusive. This show will be held under the auspices of the Leeds Cycle and Motor Trades Association.

Phœnix Motors, Ltd., inform us that they have just placed on the market a specially designed lamp for the side lights of fore-carriages. These are supplied with brackets and back plates for fixing. The price for a pair, with back red light and brackets, is 21s.

As a result of the attack of the Belgian sporting Press on the municipal authorities of Brussels who decreed a five kilometres (three miles) an hour speed for motor vehicles in the City of Brussels, M. Anspach-Puissant, the president of the Motor Club of Belgium has resigned. Belgian motorists are congratulating themselves on this event, on the ground that M. Anspach-Puissant was not a practical motorist

The Automobile Club of Algiers has invited the Automobile Club of France to hold the eliminatory trials for the Gordon-Bennett in Algeria. It is pointed out that the difficulty of securing a suitable course in France without inconveniencing the public, and the inducement which such an arrangement would offer for tourists to visit the French colony are good reasons for the acceptance of the invitation.

Coming Events.

Nov 12. Paper at A.C. on "The Limitation of Cylinder Capacity," by Mr. C. W. S. Crawley.

,, 20 to 28 Stanley Show of Cycles and Motorcycles, Agricultural Hall, Islington.

,, 20 to 28 National Cycle and Motor Show, Crystal Palace.

Westrumite has found its way into France. Experiments are to be made with this promising dust-layer at Biarritz.

The Mayor of Lisieux (northern France) has imposed a limit of 6 kilometres (3¾ miles) per hour on all vehicles in his district.

Messrs. J. Lucas, of Birmingham, have just opened a new London office and show room at 224, Shafteshury Avenue, London, W.C., at which a full line of their specialities will be shown.

Three additional firms have resolved to compete in the eliminatory trials in Germany to decide which shall be the third car to represent the nation in the Gordon-Bennett. They are the Protos Motor Manufacturers, of Berlin; Abler, of Frankfort; and the New Automobile Company, Berlin.

The "Automobile Club Journal" again shows its lack of all sense of fairness by only recording the resolution of the club committee in regard to our light car run, and withholding all reference to the previous decision of the executive committee to allow it to proceed. We deal editorially with this matter.

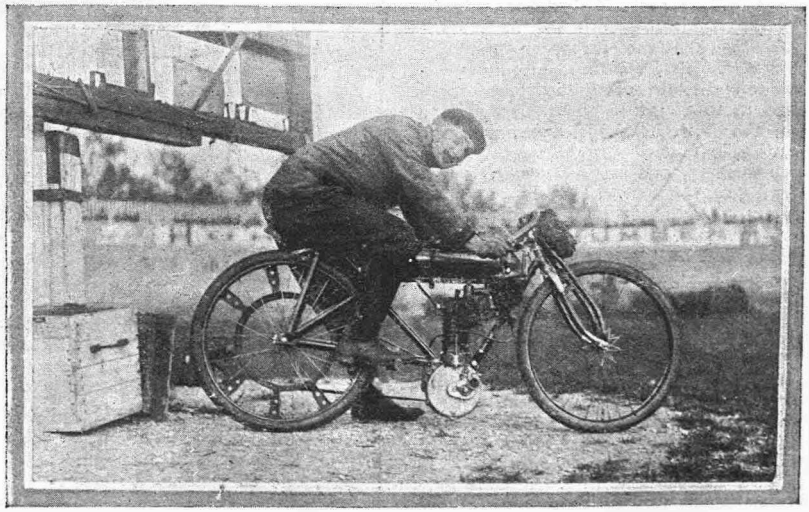
An automobile club has been formed in Mexico. President Diaz is said to be a member. The number of motor vehicles at present in the country is reckoned at from 100 to 150.

The Belgian eliminatory trials for next year's Gordon-Bennett will be run off one month before the date of the race for the cup. The three first cars will represent the nation in the big event.

In this issue we give some preliminary details of novel features in motorcycles to be looked for at the Shows. Next week we shall continue these, adding some interesting details of light car exhibits at the National.

It is pointed out by a French scientist that when the pressure of the atmosphere is high the chronometer travels more slowly than when pressure is low. Record-breakers, therefore, would do well to study the barometer before making their attempts.

The City of Brussels is agitated over the legal limit question. The Burgomaster of Brussels recently introduced a bye-law limiting motor vehicles to a speed of three miles an hour in certain parts of the city. Subsequently a certain judge pronounced this bye-law illegal. Now a higher tribunal has upset the judge's decision, and confirmed the Burgomaster in his burgomastery, so to speak. The highest tribunal of all, the Cour de Cassation, has not yet spoken.



A RECORD BREAKER.

Fossier, the French motorcyclist, has recently been accomplishing some fine performances on the track. His latest achievements were the lowering of the 10 Kilometres and the 100 Kilometres records at the Parc des Princes track in Paris. On the latter occasion, he rode a Werner machine weighing 48 Kilos. (106 lbs.), and covered 98 Kilometres (just over 60 miles) in the hour.

The Local Government Board's Draft Regulations.

The president of the Local Government Board a fortnight ago distributed to the various automobile bodies and to individuals who have taken the trouble to provide him with workable suggestions for putting the new Act into operation, draft copies of the proposed regulations asking for criticisms. It was distinctly understood that the draft was issued in confidence and thus, whilst we ourselves respected that confidence, we were astounded to find that other automobile papers have made copy by discussing the proposals in their columns. There was no necessity whatever for this breach of faith and there were two very cogent reasons why the matter should not be publicly discussed. The first reason was that the regulations have been drafted on a basis which clearly shows that the Board has gone to the utmost extreme in applying the Act. "Liberal interpretation" has evidently been the instruction given to the staff of the Board, and to the Law Officers of the Crown, and thus we find regulations so harsh as to prove a very severe menace to the pastime of motoring. And it is not difficult to observe the logic of this course. The Board is compelled to apply the Act, and so in drafting its regulations, it behaves sensibly in including every provision and stretching to the utmost every meaning in the Act, and then with everything contained in the regulations it is easy to secure objections and criticisms, and also to make concessions and to keep within the letter of the law. This being so, it will be obvious that the draft regulations will be altered and amended considerably and, therefore, it was better to keep them quiet until they are issued in their final form. The second reason was this: Mr. Long had issued them in confidence, and the refusal of some papers to respect that confidence may cause Mr. Long to take umbrage and to vary his intentions in the matter of the concessions he was willing to give.

FROM THE MOTORCYCLIST'S POINT OF VIEW

the regulations are stiff because only in very minor matters is there any distinction drawn between the motorcar and the motorcycle. In fact, the regulations describe our little vehicles as "motorcars being motorcycles." The Auto-Cycle Club, the N.C.U., the C.T.C., and the Motor Cycle Trades' Association are working in concert, and have objected to the following requirements: (1) The carrying of two number tablets; (2) the size of the proposed tablet (of the minimum height of 5 in., and an average length of about 5½in). A concession has already been made to motorcyclists in that the dimensions of the tablet to be carried by them are to be one-half those of the car tablet—thus making the tablet a quarter of the car size; (3) the proposal to charge for the number tablets; (4) the instruction to illuminate number tablets at night time. We understand that the police have made experiments and have advised the Home Office, which has advised the L.G.B. that to illuminate the plates is quite practicable, and not dangerous. It is being represented that this statement is contrary to fact, and a proposal has been made to the Board so as to meet the difficulty. Representations have also been made in order to get the following points made clear: (1) that all speed regulations made under the old Act are repealed—this includes the six miles an hour limit on the trailer; (2) that the license to drive a car permits the holder to drive a motorcycle—a prejudiced magistrate could, from the phrasing of the regulations hold that they did not give this power. The Board is also being asked to define a motorcycle as a two or three-wheeled vehicle weighing less than 3 cwt.

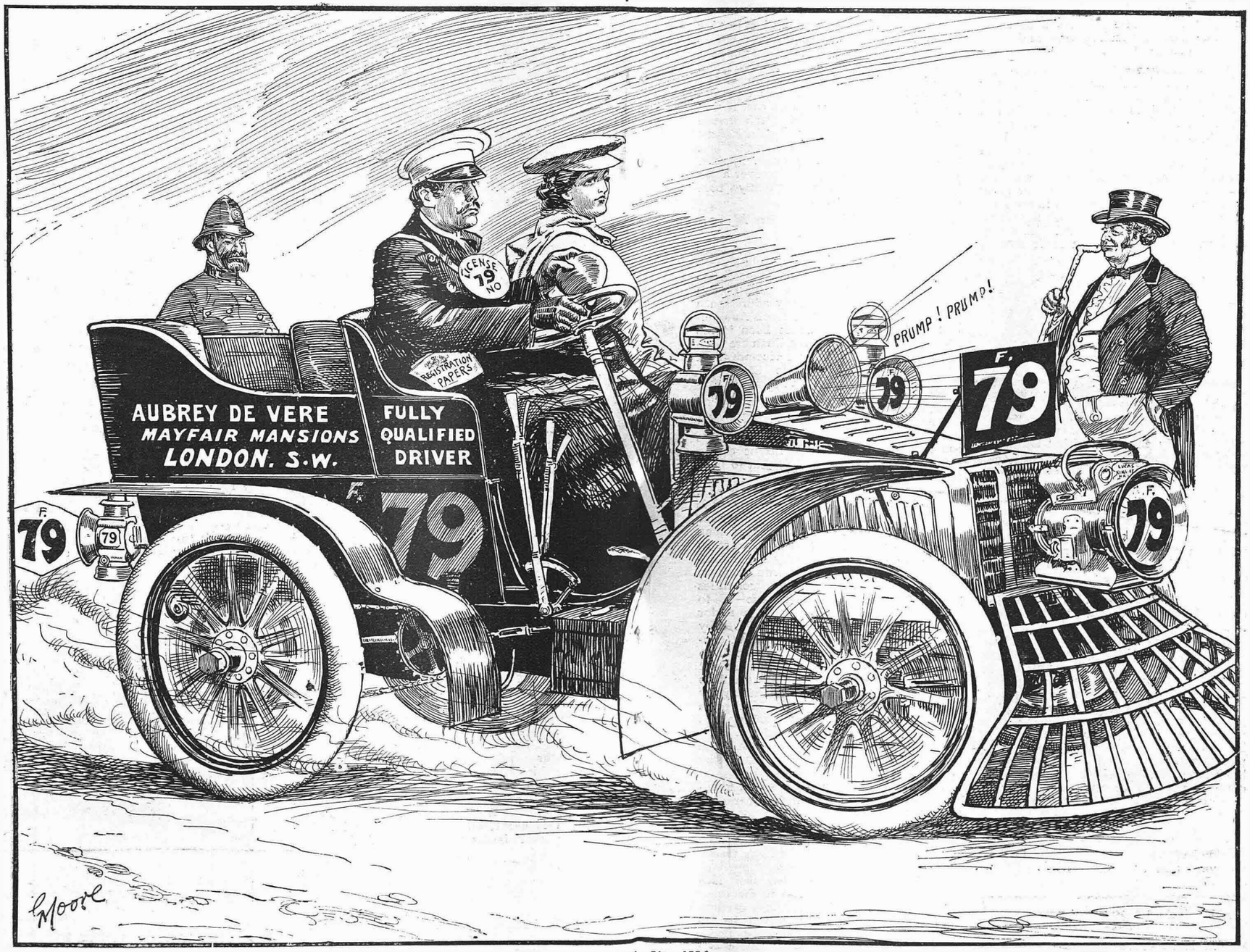
An Attraction.

At the depot of Messrs. Humber, on Holborn Viaduct, the window has, as a centre attraction, a petrol engine, with a portion of the side of cylinder cut away, so that the piston can be viewed in motion. It is evident that it is worked by some other power than petrol, but great interest is taken in it, nevertheless, and it is watched with curiosity by a large crowd.

Motorcycle Records (German) at Friedenau.

On November 1st the Austrian motorcyclist, Eduard Nicodem, made a successful attack on the German motorcycling records to 20 kilometres. He rode a 2¾ h.p. "Puch" and managed to attain a speed of between 83 and 84 kilometres an hour, which is very fast for the Friedenau track. As a matter of fact, he went for the records notwithstanding that he had slipped while riding a few trial laps. Herr Nicodem's times are as under:—1 kilometre, 45⅕ secs.; 2, 1 min. 29⅜ secs.; 3, 2 mins. 13⅘ secs.; 4, 2 mins. 58⅘ secs.; 5, 3 mins. 41⅘ secs.; 10, 7 mins. 21¼ secs.; 15, 11 mins. 8⅘ secs.; 20, 15 mins. ⅗ secs.

A large number of original drawings will be exhibited at "The Motor" stand.



THE MOTORIST OF 1904.
As some pessimists think he will appear when the new Bill comes into force.

We notice that the Civil Service Motor Agency has a good motor-clothing department at their show-rooms in Featherstone Buildings, High Holborn.

The Kaiser and the Gordon-Bennett.

The German Emperor is showing an increasing interest in the Gordon-Bennett race which is to take place in his Majesty's realm next summer. In a prolonged interview which he had last week with Baron de Brandstein, secretary of the German Automobile Club, the Emperor insisted that no precaution should be omitted to minimise risk of accident, and he cited last year's arrangements in Ireland as a model to follow. He suggested, furthermore, a race for alcohol motors, to be held at the same time as the race for the Gordon-Bennett Cup, and signified his desire—if such a race could be arranged—to give a prize. As a fitting termination to the meeting—which it is expected will last a week—the Kaiser proposed a motor launch race at Frankfort-on-Main.

A French View.

"Liberty, Fraternity, and Equality," the proud motto of the French Republic, has been realised, says "Le Velo," since the introduction of the bicycle and the motorcar. Freedom has been extended by a vehicle which makes man the master of time and space: fraternity has been amplified by the brotherly feeling which exists between the devotees of these modern sports; and finally, equality is exemplified in the fact that class distinctions cease to exist on the wheel, or at it, so to speak; the competitors in a Gordon-Bennett, be they mechanics or barons, are all on the same footing. The King of the Belgians, or the King of Italy, have no rank superiority when sitting by the side of the chauffeur who is giving them their first lesson in driving.

A Belgian View of the Motor Problem.

"Under the influence of a law prohibiting the promiscuous use of the roadway to foot passengers," says "L'Automobile Belge," "our towns will cease to be a species of enlarged villages where the pedestrian promenades along the highway as if there were no carriages, trams, horses, motorcars, cycles, motorcycles, and other users of the road. Everyone will be the gainer: communication will be more rapid, and less dangerous. If the law would but request 'mater familias' to discourage her offspring from camping out in the middle of the road as they so often do in our suburbs, what a blessing the law would confer upon humanity! The people, and the rights of the people, are all very well, but one does not live (in these days) to stop at home; and short of a boat or a balloon, there is no practicable method of getting about under present conditions. The chief complaint, mark you, against the motorist is not that he causes an accident, but that he *may* cause one. Drive the 'children's picnic' out of the highway, and you reduce the motorist at once to a condition of comparative harmlessness. In order to be run over there must be two parties—the one who runs over and the one who is run over. Eliminate the latter, and you do away with the former. Neither was the roadway primarily constructed for dogs."

'Ware Open Sparks.

We saw a narrow escape from fire, the other day. A two-cylinder horizontal engined car was being started up, the driver agitated the float of carburetter till it flooded and then turned the starting handle. As the carburetter flooded, the overflow of petrol dropped straight on to the unprotected spark-gap on one of the plugs and consequently took fire: in a few seconds a pool of burning petrol on the ground threatened to envelop the car in flames. The timely application of a bucket of sand prevented serious damage. The moral is obvious.

A Novel Side-Carriage.

There is an original side-carriage running in the Beckenham district, fitted to a "Bat" motor-bicycle. It has the near side wheel and part of the frame of a light pedalling tricycle, the front forks, handlebar and off-side wheel of which had been removed and the end of the axle clamped to the step of the motor-bicycle. The passenger in the side-carriage sat on an ordinary cycle saddle and held on to a short handle protruding from the head of the tricycle frame; when the vehicle came to a steep hill he jumped out backwards a la dismount from a tricycle and assisted by pushing.

A Wind Scoop.

We noticed rather a good draught producer, in Kensington, the other day. It was fitted to a fore-carriage in the following way, and was not nearly so conspicuous as the description would lead one to believe:—Under the footboard of the fore-carriage, facing forward, was the open end of the scoop, which measured about 18in. by a foot: the scoop narrowed as it was brought backward and upward, until it delivered its volume of cooling air direct on to the head of the engine through a narrow neck about 4in. across. The scoop appeared to be made of black American cloth, on a wire frame.

The Safety of the Motorcar.

Some recent trials in the Bois de Boulogne have served to confirm in a stiking manner the superior controllability of the motorcar as compared with the horse-drawn vehicle. A Serpollet steam car, fitted with a magneto speed-indicating apparatus, kept close behind the rival vehicles (which included a one-horse victoria, a two-horse landau, a cab—the Paris "fiacre," a trotting sulky, and two De Dion-Bouton cars) and recorded the speed; at a signal the vehicle began to pull up, the spot being marked by dropping a hammer on the road; the distance from this spot to the point at which the vehicle finally came to rest, of course gave the required information. The Serpollet car itself proved to be the most easily stopped: at a speed of 15 miles per hour it pulled up in seven yards, as against 11 yards by the trotting sulky; at 12 m.p.h. it came to rest in five yards as against 17 yards by the one-horse victoria: and at 8 m.p.h. it required only three yards one foot to stop in as against 12 yards by the cab. The two De Dion-Bouton cars (one weighing 1¼ tons and carrying five passengers; and the other weighing two-thirds of a ton with two passengers) both took the same distance—5½ yards—when travelling at 12 m.p.h.; this being slightly more than the steam car at the same speed, but much less than any of the other vehicles.

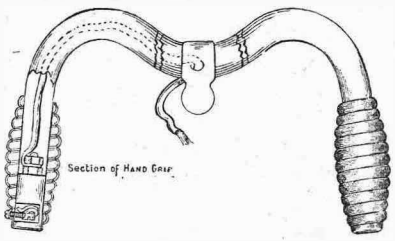
B19

The Colonel's Satire.

Colonel de Burton, of the Bourne (Notts.) Rural District Council, convulsed his fellow councillors with laughter recently by the remark that if the Councils throughout the country were going to erect boards at every dangerous spot, there would be a very considerable expense for the benefit of those gentlemen who wished to amuse themselves on mechanical toys. If the parish councillor adopts this childish attitude towards an important industry, can we wonder that the parish constable displays such a deplorable lack of common sense in dealing with the motorist!

An Anti-vibratory Hand Grip.

The illustration shows an invention for taking up the vibration at the front part of motorcycles. It is made from a ribbon of embossed silver metal spun to the shape of a spiral spring, but tapered at both ends. The ends or smaller coils are made to encircle and rest on the handlebar, while the central or larger coils, as shown above, cannot touch the bar unless under great pressure. They are, therefore, in the form of a spring cushion and absorb the vibration. The left handle is fitted with a reliable "make and break" electric switch,



and is neatly engraved with "On" and "Off" index showing the rider when his current is on and off. They can be fitted to any existing handlebar with or without switch. They are handsome in appearance and will not rust or tarnish, and are named the "Silver Grip." Full particulars of this patent can be had from the patentees and manufacturers, Robertson and Sons, 62, Argyle Street, Glasgow.

The Brazing of Aluminium.

The experimental trial of a new method of brazing aluminium, referred to in our issue of November 4th, took place in Paris at the offices of "Le Monde Sportif" on October 30th. Mons. Laffererie, the inventor of the method, demonstrated, in a manner which is said to have been quite satisfactory, the efficiency of his invention. A piece of motorcar tubing made of an alloy of aluminium, treated with the soldering medium, was subjected to the flame of a Fouil'oux lamp, and another piece of aluminium about a tenth part as big was brazed to it so effectively that the two could only be separated by repeated blows from a hammer. Two aluminium plates were brazed together in the form of a T, and one of the plates bent back on to the other, so as to bend the metal at the point where the brazing had been effected; so malleable was the joint that there was no perceptible splitting.

A Novel Competition.

The Cam Rim Brake Co are holding a novel competition for a Roc motor-bicycle and cam rim brakes at the Stanley. Cheques will be given to all applicants, and one of the cheques will bear a winning number. The possessor of this is entitled to the prize of a motor-bicycle. Ten other cheques will also have numbers entitling the holders to a brake.

A Car Burnt.

Count R. de Rougemont has just lost his 60 h.p. Mercedes touring car. Whilst taking an American friend for a run near Fontainebleau, flames suddenly burst out under the petrol tank, and in a few moments the car was destroyed: the occupants got off scot free. This car, it will be remembered, did a fine performance last August in France, winning the Laffrey Hill climb in the heavy touring car class in the splendid time of 7 mins. 15 secs. The car also took second prize over a 500 metres course, and subsequently beat record for this distance.

The Marquis De Dion on Motor Traffic.

With a view to getting expert evidence on the question of how to regulate automobile traffic, a sub-committee of the extra-parliamentary committee of the French Legislative Chamber recently addressed a series of questions to the French Automobile Club. The Marquis de Dion in his capacity of president of the Chambre Syndicate de l'Automobile, and vice-president of the French Automobile Club, has handed in an exhaustive and carefully considered report on the matter, which was published *in extenso* in "Le Velo" of November 3rd. The Marquis strikes a note of common sense at the outset of his report by deprecating the insane outcry against speed: he points out that to limit speed is to limit human life by limiting human activity: speed is the result of a demand for speed: the danger of speed is purely relative: speed in a motor vehicle must necessarily be less dangerous than speed in a horse-drawn vehicle, since in the former case one has only the personality of the driver to take into account, whereas in the latter the two personalities—those of the driver and the horse—are to be considered; and, moreover, a motor vehicle can always (as has been proved by repeated trials) be stopped in about one-third of the space which it takes to pull up a horse vehicle. Street accidents are not so much the result of increased speed as of an increased use of the roadway by pedestrians. In a few countries (e.g., parts of Canada) where the foot passenger is not permitted to use the roadway, accidents are of much rarer occurrence. The Marquis concludes by saying that in the present condition of traffic in France it would be imprudent, in his opinion, to entrust the average driver with a car of a greater maximum speed than 30 to 40 miles an hour; that common sense and the peculiar circumstances of place and time are more valuable in traffic driving than a speed limit: and that a man's previous automobile career should be taken into account when he is on trial in the event of an accident; for the habitually careless or reckless driver there should be no mercy: as a last extremity motorists themselves should constitute their own police and hunt down hooligans of the sport; but these he thinks are diminishing.

Gordon-Bennett Race.

The German Automobile Club recently submitted to the Sport Commission of the French Automobile Club proposals for modifying the regulations for the Gordon-Bennett race. Article 9 declares that only members of a club shall drive cars in the race. The German club proposes that drivers shall be either fully-qualified members of the club, or persons commissioned by the club, on the ground that the club has made it a rule not to receive professional drivers as members. This principle has not been observed by other clubs, and it could therefore happen that a professional driver might be qualified to drive a foreign car, whilst he would not be allowed to drive a German car. Article 11 prescribes that the first round shall be at least 150 kilometres in length. The German club suggests that the minimum length be reduced from 150 to 125 kilometres.

The "Timing" of Motor Vehicles.

In a furious driving case at Lewes a few days ago some evidence as to the efficiency of the electrical timing apparatus used by the police was laid before the bench by an electrical engineer. It was shown that the apparatus was inaccurate, and the magistrates decided to dismiss the case. On the theory of averages we are inclined to think that the police method of computing motor speed is likely to be nearer the mark with a faulty apparatus than with an accurate one; but we congratulate the Lewes magistrates, nevertheless, on their decision to give the motorist the benefit of the doubt. We would point out to the police that the proper function of an electrical timing apparatus is "to record speed"—not "to corroborate a speed which has already been determined": the delicate mechanism of such an apparatus will not stand the strain. If the police wish for a really reliable "speed *confirmer*" there are several varieties on the market; some of them require the wheels greased; others work automatically, without any attention, from a pure love of the thing: "pater familias," "lover of horses," "anti-juggernaut," and "pedestrian" can be recommended.

Some Stanley Exhibits.

We have received the following details too late for our Show Novelty pages:—

Hobart, Bird and Company will exhibit at the Stanley three motorcycles fitted with their standard 2¾ h.p. engine, and one fitted with a larger engine, viz., 3¼ h.p. The makers have somewhat altered the design of the frame for the coming season, although it still maintains the distinctive features originally introduced. The aim of the alteration is to secure larger tank capacity, whereby they are enabled to enclose the petrol, the oil, the trembler coil, and two accumulators of ample size, all within the tank. The accumulators are connected by a two-way switch within easy reach. Several important and original novelties have been introduced, the chief of which is an emergency handlebar control. This consists in the adaptation of an inverted lever on the left handlebar, by which three operations in succession are performed. First, the electric circuit is broken; secondly, the exhaust valve is lifted; and, thirdly, a powerful Bowden brake is applied to the rear wheel. This arrangement allows of either operation being executed alone, or in combination. This should prove a most useful adjunct. The carburetter is of a new and special type, very efficient, and fitted with throttle control from a convenient position at the top of the tank. A special form of contact breaker is fitted, the "make and break" taking place in the cam box, thus being well guarded from dust and wet, and at the same time being very easily accessible for adjustment. A new and very efficient silencer is also fitted. The "Hobart" Tri-car will be shown for the first time. The makers have built several during the past season, and they have been so successful that they have determined to make the article a standard production in future. The chief characteristics of the Hobart tri-car or fore-carriage are, ease of attachment and detachment, and stiffness of construction. It is designed on purpose to meet all the strains that a vehicle of this kind has to withstand. It is fitted with an engine of ample power. The car is hung upon large scroll springs and the controlling mechanism is substantially the same as that fitted to the standard "Hobart" engine. In the building of the tri-car two stays direct from the fore-carriage axle are carried to the axle of the rear hub of the motorcycle, to which they are attached in the usual way by the spindle nuts or steps. These stays are firmly locked together by a suitable lug with bolt and nut. They also serve as foot-rests.

The Covent y Chain Co.'s Exhibit.

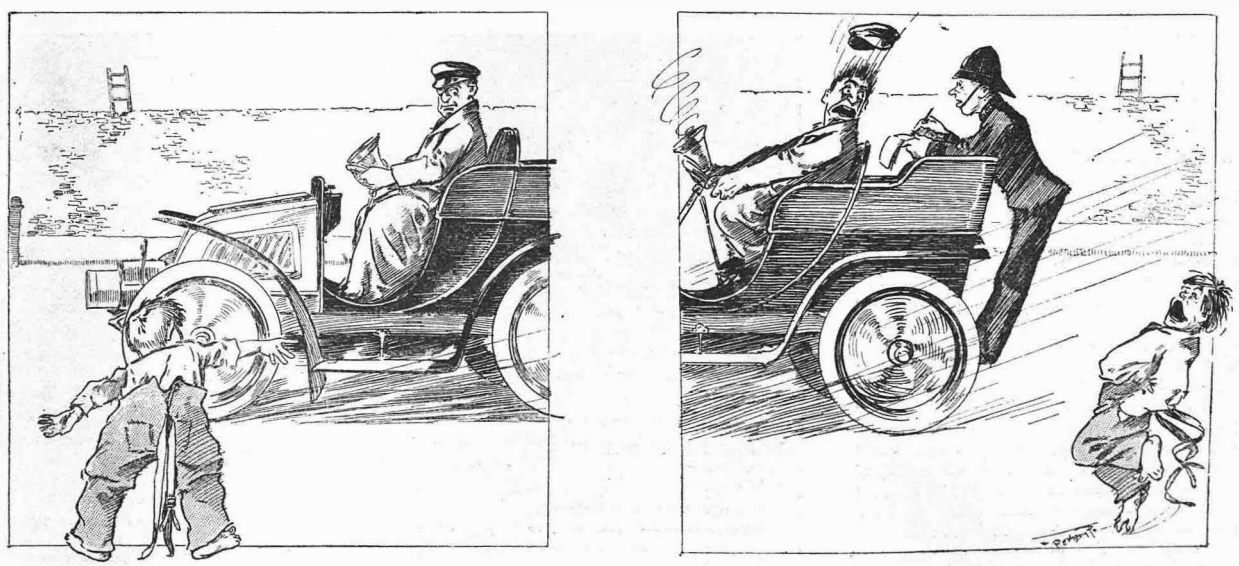
This firm will make a display of motor chains which have special points of construction. There will also be a patent chain belt for motorcycles, a belt hook, and the recently introduced free-wheel clutch, which has been designed of special strength for motor-bicycles. These exhibits will be found at the Stanley.

The Lincona Belt Exhibit.

This will consist of a handsome glass case, making a unique display of Lincona motorcycle belts, a special feature being made of the Magna Lincona, a larger belt for use upon motorcycles of high power, and where carriage attachment is used. The makers claim that the belt effectually transmits the full h.p. of the motor, and with properly designed pulleys can be run quite slack. A series of excellent photographs illustrating the preparation and manufacture of the Lincona belt should also prove an interesting item. This exhibit will be found at the Stanley.

On Original Lines.

An engine on quite original lines, designed for fitting to full roadster bicycles, will be on view at the Stanley Show, Stand 14, Minor Hall. It is called the Faceler, and has a chain drive through a spring mounted gear wheel. The special features of it are: arrangement of flywheels and gearing so as to give a narrow crank case. Intermittent motion of second shaft, giving quick opening of valves without use of cams. Inlet valve opening automatically, closing mechanically. These engines will be manufactured for the trade by the Faceler Motor Syndicate. They are of 2 h.p., and it is claimed that by their use an ordinary roadster bicycle can be transformed into a fully-powered motorcycle.



OUR ACROBATIC POLICE.

GAMIN: "Hi, look behin'!"

MOTORIST: "Get off you—er—er!"

E19

More Police Methods.

There is a police trap at Beaconsfield: Mr. Percy Brennan recently discovered this, and, thinking to prevent other motorists from breaking the law, he drove his car backwards for a hundred yards, with the intention of cautioning any approaching cars before they reached the trap. The police, however, resented his conduct, and summoned him for "driving his motor-car backwards, for a greater distance than was necessary"!

The Car took French "Leaf."

Dalziel's agency reports a curious experience of a party of motorists in the South of France. The driver of the car lost control going down a hill near Mende; the car ran into a stone wall, jumped it, and was only saved from plunging down an abyss by the branches of a huge tree into which it crashed and stuck. The occupants of the car crawled along the branches and dropped on to terra firma, terrified but uninjured.

The Motor Cycling Club.

Tickets for the dinner of the Motor Cycling Club, to be held at the "Royal Hotel," Slough, November 21st, can be obtained from any of the following members:—E. March, 59, Burton Crescent, W.C.; S. H. Fry, 12, South Villas, Camden Square, N.W.; or Henry Kennett, Junr., 46, Chapel Street Islington, N. The price of the tickets is 3s. Members who are desirous of motoring to Slough will meet at the Marble Arch. Those who prefer taking advantage of the railway, however, can book by the train leaving Paddington at 1 p.m., which will bring them to Slough in ample time.

The De Dietrich Company secure Gabriel.

The famous French racing chauffeur, Gabriel, has just signed an agreement with the De Dietrich firm. It is evident that this company mean to make a bold bid for the Gordon-Bennett. Interviewed by a representative of our Paris contemporary, "Le Velo," Gabriel outlined his programme for the coming year as follows:—"At the beginning of the year, in February or March, I shall go over to America to run a series of races against Barney Oldfield. After that, back to Paris to drive my De Dietrich in the eliminatory trial (and, I hope, the final also) of the Gordon-Bennett race. Then I shall have a trip to the St. Louis Exhibition. In between I shall occupy my time with big motor races."

The First Motor Race in South Africa.

A Berlin chauffeur, Herr W. V. Zechentmayer, in a letter from the Cape to a German paper, says that a 35 h.p. English "Daimler" won in August last the first motor race ever held in South Africa. He himself drove the car, which covered 40 miles in the hour. That the contest should pass off without accident of any kind was too much to demand; accordingly we are not surprised to learn that one of the cars shed a wheel and eventually, after having executed a number of eccentric movements, buried itself deep in a sand heap. Herr Zechentmayer writes that the black natives stand in awe of the automobile and bolt whenever they see it coming. In course of time this awe will disappear, but at present it is strong enough to restrain Hottentots from venturing within investigation distance of cars left without supervision on the roadside.

E20

A Car de Luxe.

The following are a few particulars of what is probably the handsomest car in England. This gorgeous vehicle is a 24 h.p. Mors, giving about 35 h.p. on the brake, and is the property of the Marquis of Anglesey. The marquis's Mors has a wheel base of 10 feet to accommodate a closed-in body, with glass sides and front; in each corner of the large tonneau is a comfortable revolving arm-chair, upholstered in dark red leather, and in the middle a folding card table; at the sides are small mahogany cabinets and round the walls are placed looking glasses, a clock, thermometer, barometer, etc. Thick plush curtains, on brass rails, hang all round the inside, and on the panels are small shields, bearing the crest and monogram of the noble owner. The inside of the body is fitted with electric light from four handsome pendants. Outside are the usual two bucket seats, for the driver and mechanic, but these are exposed to the weather. The wheels are 36in. and the tyres 5½in. Altogether a most luxurious carriage, but one not at all suitable for the motorist of meagre means. The marquis has seven other cars.

Side-Carrier Attachment introduced by Graham Bros.

A Bad Smash.

Albert Champion, the French motorist, who is racing in America, met with a serious accident on October 31st. He was driving a Packard racer on a horse-trotting track at Brighton Beach when, in taking a curve too wide, he lost control and dashed into a wall, breaking a leg and crushing his ribs badly. The car, a notoriously bad steerer, had come to grief on one or two previous occasions.

The Wirral Motor-Bicycle.

The Wirral motor-bicycle is the latest addition to the ranks of the chain-driven machines. It is put on the market by Messrs. Kelly, Boumphrey and Co., Birkenhead. It is fitted with a 2¾ h.p. engine, placed vertically in the usual position. Both valves are mechanically operated, and a spray carburetter is fitted. The ignition is the usual high tension. The drive is by chain direct from the engine to the back hub, which is fitted with a Bowden clutch, giving a free engine for starting. These machines can be fitted with fore-carriage or side-car and will climb any usual hill.

The Utilitarian Side of the Motor-Bicycle.

When our humorous artist, Percy Kemp, contributed a sketch to "Cycling" depicting the delight of a household goods remover who, having secured a two-horse-power motor-bicycle, attached it to a loaded pantechnicon, he was only looking well ahead. Two illustrations on this page depict the motor-bicycle put to utilitarian uses. One shows a side attachment to be used as a tradesman's carrier which has been introduced by Messrs. Graham Bros., 50, Church Street, Enfield, N. The other shows a carrier trailer in use by Mr. Max Lindner, of Hanbury, near Bromsgrove, who runs a poultry farm for show and utility purposes. His machine is a "Quadrant" 3 h.p., and the trailer 6ft. long by 4ft. 6in. wide, by Mills and Fulford. The photo shows a load of empties with a crate of fowls on top. As the farm is a long distance from any railway station, Mr. Lindner finds his motor and trailer extremely useful.

A 3 h.p. Quadrant Motor-Bicycle used with a carrier trailer.

Speed Trials at Dourdan: Griffon Motorcycle does 65 miles an hour.

The twice-postponed speed trials were held at Dourdan, last Thursday, November 5th, in fine weather, and with most satisfactory results. The most striking performance of the day was that of Duray, who covered the flying kilometre on a 100 h.p. Gobron-Brillie racing car (driven by alcohol), in 26⅘ secs., which works out at 136 kilometres (84½ miles) per hour. The French Press claim this as a world's record—rather a moot point in view of the Baron de Forest's 85 last July at Phœnix Park, and C. S. Rolls' slightly better performance later at Welbeck. The Dourdan performance, however, was a remarkable one, and goes far to confirm the reputation of the Gobron-Brillie cars for speed. Second only in point of speed, and even more interesting, was the achievement of Lamberjack, who, on a Griffon motorcycle, beat all his previous records in the sensational time of 34⅕ secs., equal to 105 kilometres (65 miles) per hour. Again the Griffon machine has demonstrated its capabilities of speed. Its superiority over its rivals, however, was by no means marked, for both the Peugeot and the Werner cycles ran it close. Lanfranchi, on a Peugeot, was within one second of Lamberjack's time, his speed working out at 63½ per hour; whilst Bucquet, on a Werner, travelled at the rate of nearly 63. Of the light racing cars the Richard-Brasiers did best, two cars of this make averaging 70 miles an hour. A Darracq proved the best of the medium racers, but its time was slightly in excess of the motorcycle record. Amongst touring cars, P. Roy, on a Roy car, was not far short of 40 miles an hour; but by far the fastest car among the tourers was a Gardner-Serpollet, which only took 40⅘ secs. for the kilometre, a speed of about 56 miles an hour. The smaller touring cars created a very favourable impression all round, the leading performers averaging 35 miles an hour.

Classification by Weight and Price.

MOTORCYCLES (under 105lbs. weight).—Lamberjack (Griffon), 34⅕ secs.; Demester (Griffon), 35¼ secs.; Lanfranchi (Peugeot), 35½ secs.; Bucquet (Werner), 35⅗ secs.

LIGHT RACING CARS.—Danjean (Richard-Brasier), 30⅘ secs.; Brasier (Richard-Brasier), 31⅗ secs.

VOITURETTES.—Wagner (Darracq), 34⅘ secs.

Lamberjack with the Griffon Motor-bicycle on which he rode at the rate of 65 miles per hour at Dourdan.

HEAVY RACING CARS.—Duray (Gobron-Brillie), 26⅖ secs.; Le Blon (Gardner-Serpollet), 27⅗ secs.; Jeandre (Mors), 29⅗ secs.

TOURING CARS.—Value up to £160, P. Roy (Roy), 1 min. 26⅖ secs.; up to £480, Pelzer (Gardner-Serpollet), 40⅘ secs.; up to £1,000, Dime (Automotrice), 1 min. 9⅘ secs.

Classification by Cylinder Capacity.

TOURING CARS.—750 to 1,500 cubic centimetres, P. Roy (Roy), 26⅗ secs.; 1,500 to 2,500 c.c., Gabreau (Boyer), 59⅕ secs.; 2,500 to 3,500 c.c., Nilsen (Boyer), 56⅕ secs.; 3½ to 5 litres, Dime (Automotrice), 1 min. 16⅘ secs.; 5 to 7 litres, Marnier (Tony Huber), 1 min. 9⅘ secs.; four-cylinder steam car, Pelzer (Gardner-Serpollet).

MOTORCYCLES.—250 to 750 c.c., first, Lamberjack (Griffon), 34⅕ secs.; second, Demester (Griffon), 35¼ secs.; third, Bucquet (Werner), 35⅗ secs. 750 to 1,500 c.c., first, Lanfranchi (Peugeot), 35½ secs.; second, Bunel (Iris), 46⅖ secs.

RACING CARS.—1,500 to 2,500 c.c., De Boisse (Denis-de Boisse), 41⅕ secs. 2½ to 3½ litres, first, Taveneaux (Passy-Thellier), 36⅕ secs.; second, Combier (Richard-Brasier), 37⅗ secs. 3½ to 5 litres, Wagner (Darracq), 34⅘ secs. 5 to 7 litres, first, Danjean (Richard-Brasier), 30⅘ secs.; second, Brasier (Richard-Brasier), 31⅗ secs. 7 to 11 litres, Henriot (Bayard-Clement), 31⅕ secs., first; Baras (Darracq), 34¼ secs., second. Over 11 litres, Duray (Gobron-Brillie), 26⅖ secs., first; Jeandre (Mors), 29⅗ secs., second; steam car, Le Blon (Gardner-Serpollet), 27⅗ secs., third.

Cissac, on Peugeot, starting at Dourdan.

Fatalities at Gaillon.

Motor racing in France, despite all the warnings received by its promoters, is still conducted with a certain amount of recklessness and lack of control which will inevitably result in its total prohibition, unless the most complete precautions are speedily adopted and made compulsory at all gatherings of the speed car. Of course, there is always the grave element of risk when fast work is in operation, but the sort of thing which does harm is an incident such as that of Sunday. There was such a dense fog that the start of the speed trials was postponed. M. Brasier and M. Danjean, driving Richard-Brasier cars, then decided to make trial spins up the hill, although it was impossible to see twenty yards ahead. Brasier was ahead, and both cars were travelling at about fifty miles an hour, when Danjean, overhauling the other, swerved to one side. His car skidded and overturned into a ditch, the driver being thrown some distance. He was picked up with a fractured skull, and died an hour afterwards. His mechanic was also badly hurt. Another unfortunate accident happened a little later to a Serpollet car, with five mechanics on board. The driver lost control of it when descending the hill into Bonnières, near Gaillon, and it ran into a tree, and was wrecked. M. Lambert, the foreman of the works, was killed, another mechanic died in the afternoon, one had his legs broken, and the others got off lightly.

In the course of the trials there was a freedom from accidents. Rigolly, on his Gobron-Brillie, covered the kilometre in 33⅗ secs., equal to 67 miles an hour, beating Le Blon's previous record, on a Serpollet, of 36 secs.

On the next page appears a portrait of Danjean, taken before the accident.

CHAMPOISEAU MOUNTING HIS GRIFFON AT DOURDAN.

The Imperial Post is giving a trial to two motor vans for collecting letters. One is driven by electric power, and the other by spirit, the horse-powers being five and six respectively. A six months' trial is in contemplation.

Hill-climb on the North Road.

The Cambridge University Automobile Club, at the week-end, held a hill climbing test on Offley Hill, near Hitchin. The day was slightly misty, and numerous patches of grease were encountered between Cambridge and the scene of the trial, whilst the hill itself was in a very slimy state. Fastest time up the hill was made by a King motorcycle, 1 min. 11 secs., whilst a Quadrant did 1 min. 13 secs. A Ralph-Lucas car (built on American steam car lines, so far as appearance goes, but driven by a two-cylindered two-cycle engine), made fastest time for cars, namely, 1 min. 24 secs. A 20 h.p. M.M.C. did 1 min. 26 secs.; whilst a 20 h.p. Napier (driven by Mr. Lionel de Rothschild) did 1 min. 28 secs. Afterwards Mr. King, on his own 2¾ h.p. King motorcycle, made the attempt, at the request of the members, and rode up in 1 min. 10 secs.

The Tramcar Case.

Mr. Moffat Ford is to be congratulated on the long-deferred result of this test case, which was arrived at on Saturday last, when the four drivers of electric cars, against whom summonses were taken out, were each fined £2 and 2s. costs. The case has been postponed from time to time, pending "tests" of the speed capacities of the cars; but despite these, the magistrate held that the legal speed of ten miles an hour had been exceeded by the drivers in question. It is interesting to note the action which has been taken by the Tramways Company as a result of this case. Hitherto there was no compulsory stop on the eastward line between Young's Corner and the "Queen of England." It will now be noticed that there is a new compulsory stop half-way between these points. It was on this straight run that the cars at times undoubtedly exceeded the limit, as the writer, who lives on the route, can testify.

E24

The Motor Cycling Club 200 Miles Trial.

The postponed final for the Edge trophy was held on Saturday last, when the three competitors, Jones, Cowles and Milligan, made a start from Hatfield to cover the distance without a stop. An alteration of the route was made, the Hockliffe course being gone over three times, as the Biggleswade route was practically unrideable owing to a dense mist. The riders were very closely watched, the checking arrangements being very satisfactory. The result was that Jones and Milligan made non-stops, and therefore tied again. The committee had provided for this contingency by deciding to continue the run on Monday.

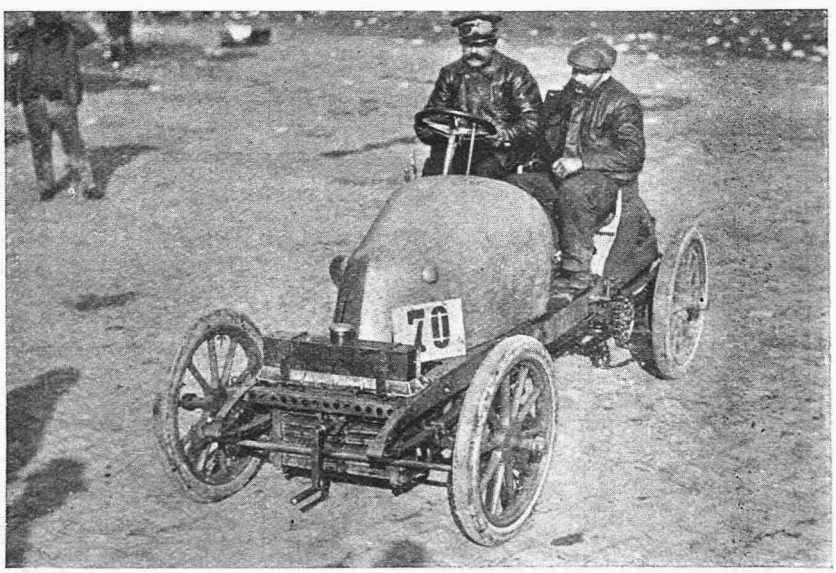
The trial was continued on Monday. The final result is that Milligan, on a Bradbury 2½ h.p. machine, has proved the winner of the S. F. Edge trophy. Cowles broke down on Saturday, leaving Jones and Milligan to continue. Jones on his De Dion tricycle looked a winner, but punctured near Hockcliffe.

Advertiser Wanted.

A reader who advertised for a quad, with two speeds and water-cooled, giving "Box No. 262," will oblige by giving his address, as we have a large number of replies for him, which have been returned by the advertiser represented by "Box 262" as not referring to him.

Crowded Out.

In consequence of great pressure on our space, we regret to say several special articles, including the usual letter from our American correspondent, are unavoidably held over till next week. It will be obvious that, although considerable space has been devoted to anticipatory details of the Shows, many exhibits remain to be dealt with in our next issue.



Danjean (Richard-Brasier car), who was killed on Sunday last in an unofficial trial at Gaillon Hill.

THE LIGHT CAR RUN ROUND LONDON.

Its Abandonment Forced by the Automobile Club. The Club's Inconsistency.

With extreme regret we have to announce that we are compelled to abandon an event which was promoted with the genuine object of advancing the Light Car movement in this country. Our regret is the greater because we are unable to fix the blame elsewhere than upon the Automobile Club. In the first place, the organisation of a simple, but educative competition for light cars should have been undertaken by the Club when it was seen that the Reliability Trials had, so far as light cars were concerned, proved a failure. The Club's inaction in this matter left it open to the enterprise of a journal whose first interest is the advancement of the popular side of motoring. In the second place, it should have been perfectly clear in the Club rules, that the Automobile Club and its subsidiaries were the only organisations entitled to conduct competitive events. And let it be here remarked that the Automobile Club of France, which the English Club likes to follow and imitate, raises no objection whatever to the enterprise of the French motor journals. The *Auto*, the *Velo*, and the *Monde Sportif* organise between them several contests a year, and we do feel that we are entitled to claim that, whereas many of those events are run with the sole object of advertising the promoting organ, we had the definite and genuine desire to make a great proselytising effort. Had we succeeded, the Light Car movement in this country would have received a very great fillip. Our third, and greatest, objection is to the vacillation of the Club after the matter had come to its notice. Through the medium of visits from its secretaries it was stated that the Club would have preferred to have been the organisers of such an event. Our reply was to the effect that if the Club so desired, we were prepared to invite it to take over the Run, we undertaking to continue the organisation and to fulfil our promise to defray the expenses. This suggestion brought the matter under the notice of the Executive Committee, who, after considering it, gave us to understand that they regarded the scheme "benignly," but would not be connected with it because the date of the event was too close. This decision was communicated to us by letter from the Technical Secretary, and we feel compelled to reproduce the letter in full, because in the current issue of the Club journal these earlier negotiations are entirely ignored.

The Technical Secretary wrote us as follows:—

[Copy.]

18, Down Street, Piccadilly, London, W.
27th October, 1903.

DEAR MR. DANGERFIELD

I duly received your letters last night, and, after perusal, put them in my pocket; but you will have gathered from Mr. Orde's telephone message last night I did not produce them at the Committee, and beg to return them to you herewith.

Mr. Orde will have informed you that the Committee do not see their way to take over the Trials, as you so kindly offered them the opportunity to do, but they spoke most kindly of your enterprise, and certainly look upon it with most favourable eye. I may say to you in confidence, that one of the chief reasons which led them to this decision was that the Run had been announced as being organised by yourselves, and if the Club took it over at this late hour, so near to the last day of entry, it might possibly give cause of complaint to some firms who would not have sufficient notice of the fact of its being taken over by the Club. The only thing that the Committee stipulate is, that the Run should be held under the Competition Rules of the Automobile Club, which will require the registration of every driver and vehicle. I have no doubt that you will have no objection to this course, and I understand that one or two of the competitors have entered distinctly on the understanding that that shall be the case.

I trust that this will meet with your full approval, and I beg to be allowed to tender my best wishes for the success of the Run, and to assure you that the question of the Light Car movement, so ably pushed by yourself, will not be, and has not been, lost sight of by the Club.

If I can, in a private capacity, afford you any assistance, believe me I shall be pleased to do so.

Yours faithfully,
For the Automobile Club,
Edmund Dangerfield, Esq., (Signed) BASIL H. JOY,
"The Motor," Technical Secretary.
Rosebery Avenue, E.C.

The decision of the Committee struck us as being the correct one in the circumstances, and we accepted the conditions. But we took exception to the fact that a fee of one guinea would be demanded by the Club for the registration of every car, and as we had promised that the Run should be conducted in such a manner that no expenses other than the cost of running should fall upon competitors, we decided to defray the cost of registering the cars, but asked for a reduced and inclusive fee. To this request we received the following reply from the Club:—

[Copy.]

18, Down Street, Piccadilly, London, W.
30th October, 1903.

DEAR MR. DANGERFIELD,

I have the pleasure to inform you that I saw Mr. Wallace last night, and he agrees to accept a payment from you of five guineas as registration fee to this Club for all the vehicles taking part in your Run Round London. He had not time to read over my letter, but took a copy of it with him, and will let you know how far you may make use of this.

Yours faithfully,
For the Automobile Club,
Edmund Dangerfield, Esq., (Signed) BASIL H. JOY,
"The Motor," Technical Secretary
Rosebery Avenue, E.C.

Mr. Joy followed up this letter by telephoning us, when we accepted the terms offered.

We then proceeded with the organisation of the Run, and we think we have made it clear that we were thoroughly justified in so doing, because, besides having secured the Club's recognition, we were receiving every encouragement. The Trade had approved the idea, and there was a prospect

of at least thirty cars being brought to the starting line; firms who were not prepared for such an event were making strenuous efforts to get cars through; a great increase had occurred in the number of light cars offered to the public, none of the new ones having had an opportunity of being shown to the public or of taking part in a contest of the kind. We heard from readers by the dozen who commended our action, offered their services in various capacities, and stated that they were looking forward to November 14th. Only from one quarter has opposition arisen: it was initiated by a firm of importers whose light car has made a certain amount of headway this year, and who did not wish to again pit their car against others. The influence of this opposition is distinctly traceable in more than one direction. It is observable in the attitude of the Society of Motor Manufacturers and Traders, the secretary of which issued a statement to the effect that the Society objected to the Run. The Society has since announced that objections to our scheme have been received from eleven firms whose names they mention. Of these, the De Dion had entered and withdrawn; with regard to the Ariel Motor Co., Ltd., Mr. Harvey du Cros, Junr., when entering the Swift car, said: "I will certainly support your scheme of Light Car trial, but at the moment cannot cay how many cars I will run, but you may count on one Swift car, at least." Three days later we were advised that, owing to the sale of the only available cars, the company regretted its inability to take part. Messrs. S. F. Edge, Ltd., (Gladiator cars) wrote: "You can put me down for a light Gladiator car, and I will send the official entry as soon as I get full particulars," and later: "I find I cannot get hold of the 6 h.p. Gladiator in time." What is the meaning of these two companies writing to the Society in terms of disapproval, no suggestion of such disapproval having been made by them to us? The Speedwell Motor Co. is included amongst the objectors, but we hold their entry signed by Mr. Dew, and their cheque for the entry fee. We have said enough to show what the quotations published by the Society amount to. It was obvious from the prompt and immediate opposition of a section of the Society and of the two journals which rushed pell-mell to its aid, that the opinions of the light car trade had not been obtained; moreover, we know full well that quite fifty per cent. of the makers and dealers in light cars are quite out of touch with the Society. The actions of the opposition and of the two journals in question completely expose the hypocrisy of the cry which was raised to the effect that the Run was being opposed "in the interests of the trade." As a matter of actual fact the light car trade welcomed the event and was strongly supporting it, as we have already proved.

Gauging the nature of the opposition, we offered to our detractors, in a circular issued to the trade, open discussion on the subject before the people most interested, but this offer was, naturally, not accepted, because they do not like this way of going to work, preferring the simpler course of attacking us from behind the shelter of committees where we are not represented.

The opposition referred to was again to the fore at the meeting of the General Committee of the Automobile Club, and it should be here noted that this influence is entirely absent from the deliberations of the Executive Committee. The Club Committee met a week after the Executive Committee had given its decision about our projected Run, and with no opportunity of hearing more than one side of the case, decided that it is not in the interests of Automobilism that Road Trials should be held except by the Automobile Club, its affiliated clubs and recognised bodies; no permits to be given to any other person. It could be argued that this decision is not retrospective; and it is particularly noticeable that the resolution does not verbally annul the decision of the Executive Committee. But we should not attempt to carry out the Run upon what would be a quibble, preferring to abandon the event and throw upon the Club the onus of administering this snub to the popular Light Car movement.

Against the decision of the Club Committee we must urge that we were not, by our scheme, infringing any rule of the Club, and if the Club did not wish other bodies to run events not run by itself, the possibility of such an occurrence should have been thought of before, and the matter should have been dealt with in the rules of the Club.

We have expressed to the entrants for our event the regret with which we have to ask them to release us of our obligations in the matter of our projected Run, and we ask the same indulgence of our readers; and although we have not been able to carry out what would have been a most successful event, we can give our assurance that we are, and always shall be, busy at work in the interests, not only of users of light cars, but of the makers thereof. We are so convinced of the fact that, of motoring amongst our own clientele—the men of moderate means—the fringe has scarcely been touched, that we shall spare no effort, but will remain always on the *qui vive* to advance the movement by every means in our power.

Important as would have been the success of this Run to all concerned, it will be recognised by members of the Trade that there are matters of graver import involved in the transactions above described. The time has now arrived when this fact should be fully appreciated by the Automobile Club and others interested in both the pastime and the industry.

The following extract from the Motor Car notes in "The Globe" will show the general trend of outside feeling regarding the event prior to the Club's change of front:—

"The Light Car Run round London that is being organised by that energetic paper, 'The Motor,' seems to have given great offence to the majority of its motoring contemporaries, though it is difficult to see any legitimate excuse for such a display of feeling. The matter is one that concerns the Automobile Club and the trade, and as the former is stated to have given its consent, and the latter, with the exception of a few important firms, appears to view the scheme with approval, the Run, no doubt, will take place. The cheap and light car will be a prominent feature among next year's models, and the proposed competition will help to bring the appearance and, to a certain extent, the capabilities of the inexpensive motor before the notice of the public. The route to be followed passes through semi-suburban districts, whose inhabitants consist to a large extent of those to whom the light car would specially appeal. In the recent Reliability Trials the cheap cars were somewhat overshadowed by the larger and more powerful competitors, and the scheme of 'The Motor' would appear likely to offer an inexpensive and useful advertisement to those firms which participate in it. In the meantime, the Society of Motor Manufacturers and Traders have passed a resolution condemning the Run, though it is apparently forgotten that an event organised by a responsible journal, dozens of which take place every year in France, is on a very different footing to the alleged non-stop runs which individual firms announce for the advertisement of their own goods."

Several other journals have commented favourably on the scheme, whilst a large number of approving letters were received from readers of this journal, to the writers of which we now offer our best thanks.

FORE-CARRIAGES, SIDE-CARRIAGES, AND TRAILERS—A CRITICISM.

Now that one or other of these adjuncts to the bicycle or motorcycle has become so popular, it may be well to consider, from a mechanical standpoint, whether that popularity is soundly based, or whether it merely exists because there is nothing better offered. There can be no doubt that a great amount of business is being done in all three types, but, judging from their mechanical nature, it would appear that neither makers nor agents have sufficiently considered the conditions under which each variety must work, and the real requirements of the public. With sufficient motive power, and a properly designed engine, it is, of course, possible to make anything go, after a fashion. And it is equally well understood that if the said device is to travel on the ordinary road, its frame must be so designed as

TO WITHSTAND BOTH NORMAL AND OCCASIONAL ROAD SHOCKS AND STRESSES.

Yet we do not find, even in this detail, that sufficient strength is invariably afforded to make up for the inherent defects of any of the three types above mentioned, whether such defects arise from general design or detail construction. But granted the necessary strength of frame, and the efficiency of the engine, *per se*, it by no means follows, as will appear, that the whole device is efficient, or that something much more so might not very well be forthcoming. For, after all, what is efficiency but the maximum of work and life for a given expenditure of power, or that which produces power?

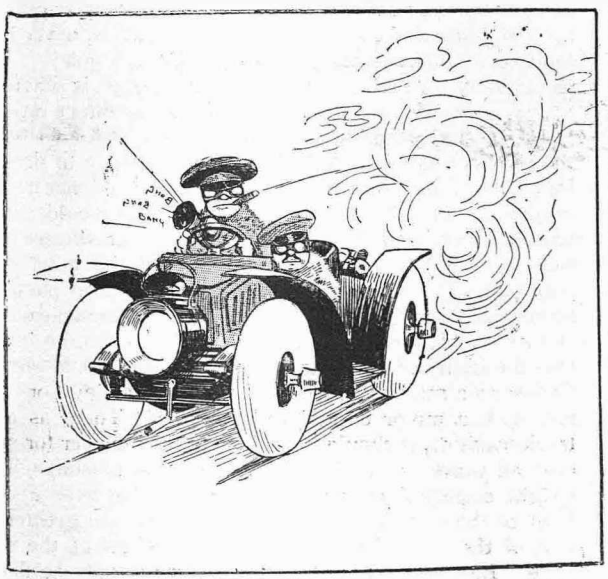
It is true that the motorcycle is by no means an absolutely perfect vehicle, even under the most favourable conditions. Yet, no matter what its faults, it will be admitted that its feature of only requiring a single track alone renders it the easiest driven vehicle in existence; for it is indeed a poor road that will not afford a continuously rideable track a couple of inches wide, be it ever so tortuous.

THEREFORE WE MAY AT LEAST REGARD IT AS OUR STANDA OF EFFICIENCY.

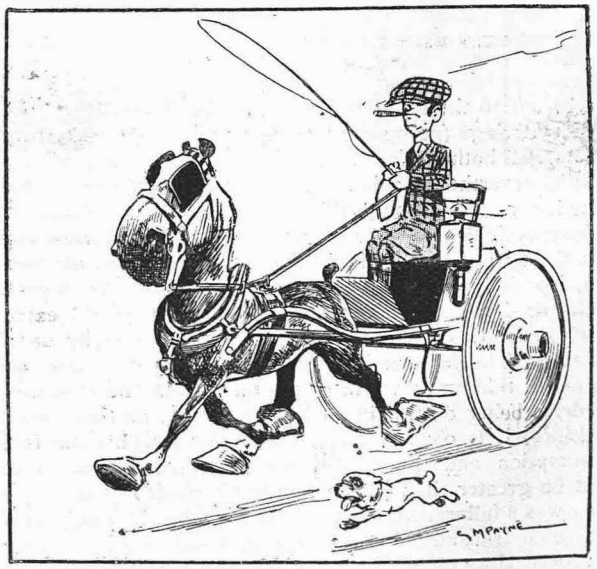
Next in order, then, should come the quad: a two-track machine with two driving wheels, a detail which makes for even wear upon the tyres. This vehicle is generally considered to have been a failure, as much from a sporting as from a commercial standpoint. It is easy to see the reason in the former case, this being that it took up as much road space as a voiturette and afforded less accommodation—being *a vis-a-dos* affair at best—and lastly (because it had to be light) was not designed with sufficient structural strength, for its wheelbase length, to withstand road shocks. From the commercial point of view it may be said that the quad was placed upon the market at a distinctly unfortunate period; one in which motorcars of all powers were some 30 per cent. more costly than at the present time; when the era of the light, cheap, and efficient small car seemed very far off; and when even the motorcycle—not a "cheap" vehicle now, in most cases—was by no means cheap enough to form the link between car and bicycle.

STILL LESS, THEREFORE, COULD THE MORE EXPENSIVE QUAD APPEAL TO THE GENERAL PUBLIC,

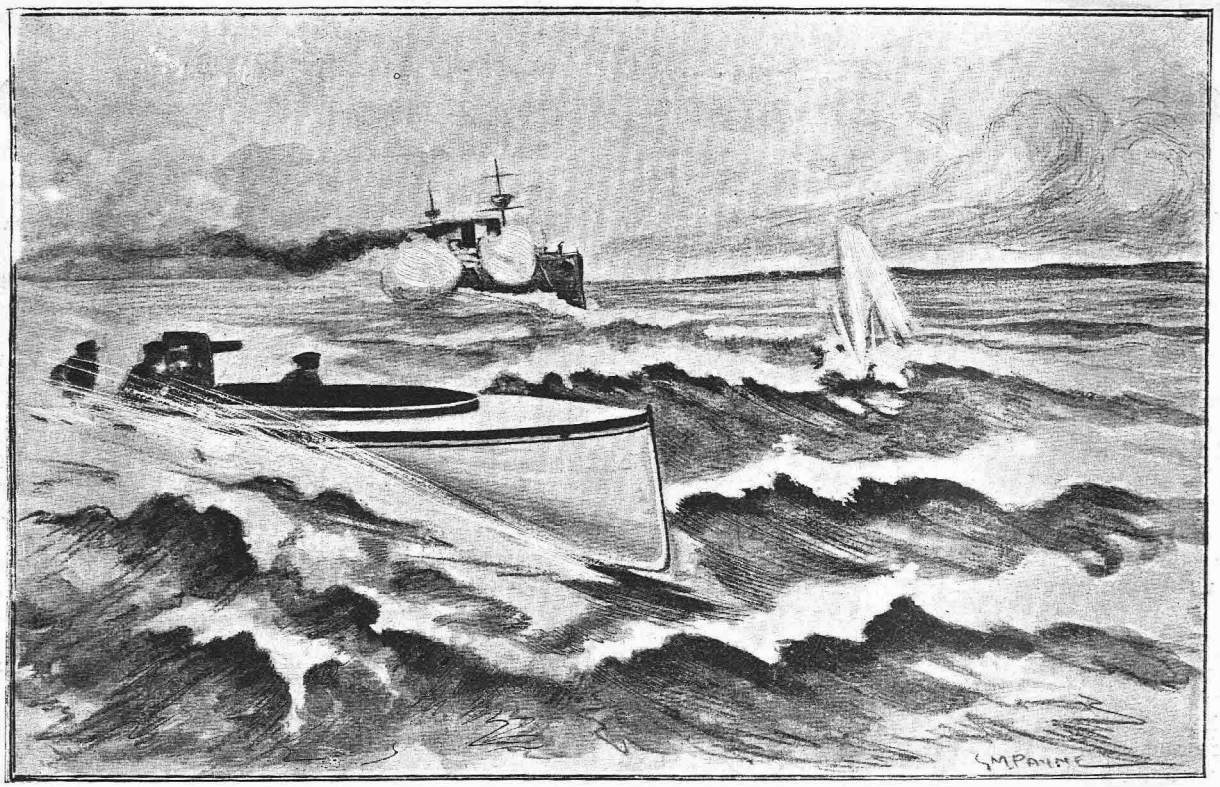
who came to admire, and to buy if possible; but regarding the price—elected to wait! And seeing that that price was equal to, or very little less than, that of a good secondhand light car or voiturette at the present time, one can but applaud their judgment, whilst deprecating the lack of that quality on the part of the manufacturers, who, although they had seen the cycle trade well-nigh killed with over-capitalisation and intermediate profits, must needs again cater for the long purse—the owner of which generally decided to buy a car, after all—instead of for the many, who would have bought the "link" had it been offered them at a moderate



The d storted view which some horsey men have of the motorcar!



The distorted view which some motorists have of the horsey man!



WITH THE DESPATCHES.

The motor despatch boat may be expected to play an important part in future naval warfare. Travelling at a great speed, and showing a very small striking front, it will prove a very difficult target to hit.

price. All this may in some measure explain the non-success of the quad. But now that the motorcycle of excellent quality is well within the reach of the general public, and the small motor of 1½ to 3 h.p. by no means a costly engine, it is somewhat singular to find every disadvantage of the quad reproduced in the fore-carriage and the trailer—both three-track machines—while the side-carriage, which belongs to the same category, possesses the additional disadvantage of having the propelling power right on one side of the whole device.

WHAT THIS MUST MEAN TO THE TYRE OF THE SINGLE DRIVING WHEEL

may be left to the imagination, since the side-strains from the side-carriage (no matter how lightly the latter may run, or how well both its frame and that of the motorcycle may be built) nevertheless exist, and must re-act upon the frame of the latter. And though this reaction may—and doubtless is—inappreciable upon a smooth-paved surface, it must tell upon the tyre of the single driving wheel upon the average road, especially when that tyre has to bite to an extra degree on the road surface to overcome the friction of the extra wheel-track; this friction, moreover, acting laterally upon this tyre. The fore-carriage and the trailer, of course, do not entail this extra waste of engine power and tyre life, the drive being central in each case. Yet, as three-track machines, it is obvious that, weight for weight, the fuel consumption and the wear upon the driving wheel tyre must be greater than in the two-track quad. And if the latter was a failure, what must these be, with the whole tractive force transmitted through one wheel and one tyre? Moreover, since the whole of the propulsion of a three-wheel machine falls on one tyre, it is clear that, biting harder, it must raise more dust, which naturally places the trailer at a disadvantage with the fore-carriage. But, on the other hand,

THE LATTER MUST REQUIRE MORE POWER TO PROPEL IT AT THE SAME SPEED,

on the principle that it is easier to pull a wheelbarrow than to push it.

On the whole, therefore, it would be seen that there is a wide market—especially now that the purchasing public are better informed as to the real prime cost of small motors and all other parts which go to make up the lighter vehicles—for a four-wheeled two-track machine, which is, nevertheless, built on a different design from the typical quad. Something more on the lines of a light voiturette is what is required; with the 2 or 3 h.p. motor acting direct on a rear live axle, and air-cooled through a trumpet-funnel beneath the body, which could be built skeleton fashion of light tubing. The tubing of the small chassis would naturally require to be of heavier gauge; but probably would not need to be heavier in total amount (in view of the shorter wheelbase required) than the frame-tubing of the quad of two years ago. Such a vehicle, carrying its two passengers seated side by side, would have all the convenience of a voiturette. It would probably be unable to attain anything like the high speed of the motorcycle; but would surely be as fast as a motorcycle with fore or side-carriage or trailer, and with a motor of no greater power. Then, as a two-track machine, it should score in efficiency, power for power, over all those mentioned. For the same reason, with the weight dispersed over all four wheels, the wear upon the tyres of the two driving wheels should not be greater than that of the tyre of the single driving wheel of the motorcycle. Lastly, such a machine should not only be durable, but cheap to construct as well as maintain.

G. de H. S.

OTHER PEOPLE'S VIEWS.

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

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

1. Plain Writing. Type-writing for preference.

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

3. Letters to be kept as brief as possible.

4. For the purpose of illustrating any letter, rough diagrams may be sent, which will be worked up by one of our artists.

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

Loss of Petrol.

Sir,—I notice in your issue of the 30th September, page 190, a query from W. Holden (Crewe), re dripping of petrol from carburetter of a Darracq car when going at normal speed, also excessive use of petrol. Having had to cope with this same trouble in other Darracq cars I remedied it by fitting in a new spray nozzle to the carburetter; in one case I found a crack down the full length of the nozzle. I can supply him with a nozzle ready to screw in carburetter; or, if he cannot manage it himself, if he sends me carburetter I will fix it for him.—Yours faithfully, EDGAR SMITH.

"The Motories," Halifax.

Vibration on Motorcycles.

Sir,—The matter of vibration on motorcycles is, as you say in a recent issue, one which must be dealt with at once, it being practically the one thing which tends to spoil an otherwise perfect sport. In my belief the size of the tyres will have the very greatest effect in insulating the machine and rider from shocks and undue vibration caused by bad roads, whilst spring handlebars and saddle pillars should greatly minimise the vibration caused by the engine. Two-inch motor tyres are not sufficiently large for heavy motor-bicycles weighing, say, over 100lbs. or 2½ h.p.; and even lighter motors might with advantage be fitted with larger tyres. I am pleased to see that this matter is receiving attention in your columns, and to notice that one firm (Swains, Ltd.), has offered to make a 2½in. tyre if there be any demand for it. It may, however, interest your readers to know that the Clincher tyre, in my opinion the best tyre on the market at the present moment, can now be obtained in this size, and motorists should one and all specify this size and kind of tyre on their new machines, or when renewing their tyres.—Yours faithfully, H RIPPON-SEYMOUR.

Spring Seat Pillars.

Sir,—We should like to be allowed to reply to your correspondent, Mr. H. W. Turner, on the question of vibration of motorcycles. Mr. Turner states that "spring seat pillar makers do not seem to realise the binding effect which is set up in spring seat pillars, owing to the angle at which they are placed, thus robbing the rider of the full benefit of the springs." We think that Mr. Turner cannot have seen and examined our spring seat pillar, which is specially provided with two rollers, upon which the spring plunger works, and which allow the spring to have full play over the roughest roads.—Yours faithfully,

PHŒNIX MOTORS, LTD.

Motorcycling Expenses.

Sir,—A few remarks on expense connected with motor-bicycling may be of interest. I bought a Quadrant 3 h.p bicycle in May last and have now ridden over 2,000 miles, most of which was in short spins near Dublin where, as you know, the roads are not of the best. Capital outlay—bicycle £60; spare parts, accumulator, etc., £5 (most of these should last as long as the bicycle). My running expenses have amounted to £4, which includes a new tyre as yet hardly used. This enables me to go 25 miles for 1s. My first belt (Lincona) and tyre (Clincher A Won) on back wheel ran for 1,600 miles, the tyre only puncturing once. I have required no replacement except an exhaust spring and a few platinum points, and I have only to add that I am satisfied and consider that I have got good value for my money.—Yours faithfully,

S.H.L.

Wind Scoops.

Sir,—In a recent issue of "THE MOTOR" there is a paragraph in "Cyclomot's Causerie" from which it would appear, from Mr. Hoopdonk's argument, that wind scoops for motorcycles, etc., are very unnecessary, and in another part of the same paragraph it is said, "Provided the engine be not actually sheltered." Certainly that is the only reason for using air scoops when engines are more or less sheltered behind wide mudguards, forecarriages, etc. (as most of them are); and what could be simpler than to use scoops for the purpose of directing a current of air to the engine head? Then, again, the only part of the engine which requires to be kept cool is the combustion chamber, and a current of air caught up by a wide funnel would certainly force its way through the narrow opening at the other end, and create a strong draught. I should also like others to know that I have obtained excellent results by having an extra air valve fitted to my F.N. carburetter.—Yours faithfully,

E. A. SPILLER.

Bowden Exhaust Valve Lifter.

Sir,—Your correspondent, Mr. O. D. Narth, very evidently has not had his Bowden exhaust valve lifter properly fitted, as it should not require more than a finger pressure to lift the exhaust valve by our mechanism. The lever fitted by us is adequate in size for its work, so that we must assume that the fault lies with the person who put on an inefficient lever, and not with the Bowden exhaust valve lifter.—Yours faithfully,

J. DRING, Managing Director,
E. M. Bowden's Patents Syndicate, Ltd.

Difficulty with 1½ h.p. Quadrant.

Sir,—With reference to Mr. L. Wallace's letter in a recent issue of "THE MOTOR," under the heading "Difficulty with Quadrant 1½ h.p. machine," I would suggest that he examines his mixing chamber, where are set the only two levers. I had a case of a Quadrant, in which the hole which is in sleeve of air lever had been made on wrong side of sleeve, through a mistake in manufacture. Thus, the hole never corresponded with the aperture in top of carburetter, and the gas was throttled, no matter what the position of air lever because one hole could not cover the other to let through the full amount of gas. When petrol was absolutely fresh the motor would go for a short time, but soon ceased working on account of being unable to obtain enough gas. When this was put right the motor worked perfectly. It appearing that Mr. Wallace's case and my own were similar, I thought it worth a letter.—Yours faithfully,

REGINALD F. SURPLICE.

The Motor-Tricycle.

Sir,—I notice in your "Information Bureau" "Beeston" asks the question, "Are motor-tricycles reliable?" Being an old lover of tricycles, I should like to give you my experience. On a recent occasion I got out my tricycle (which is fitted with a 2¾ h.p. De Dion engine, water-cooled, and fitted with a two-speed gear, very long wheel base, and 28in. wheels), attached a carriage-built trailer, and with two adults in same, well wrapped up, we started for Hastings (32 miles), via Hamstreet, Brookland, Rye and Winchelsea. It was raining hard and blowing a gale. If any of your readers have travelled on that road they will understand what I had to contend with, viz., roads full of ruts, and ruts full of water, and, worst of all (the roads being mended with the old Kentish rag), it was like riding through so much white gruel. I accomplished the distance in 2¾ hours, and I returned home again at night by the same route, and although the wind was in my favour, it was very dark. It took me about the same time to cover the distance. Why such machines as these have gone out of fashion I am at a loss to understand. Yours faithfully, "MOTOR-TRICYCLE."

Surface Carburetters.

Sir,—Referring to the letter of Mr. J. van Hooydonk in "THE MOTOR" of October 21st, the following statement is made:—"I am inclined to think that a 2¼ h.p. is about the largest size of surface carburetter which can be reasonably fitted to a bicycle." I would like to state that for the past three months I have been riding a fore-carriage fitted with a 3¼ h.p. Hamilton engine and surface carburetter, and have had no difficulty even with .720 petrol. I have no experience of the spray carburetter, but I am having one fitted to my 2¼ h.p. Hamilton bicycle, more with a view of comparing its working, as I have ridden this particular machine for the past year with a surface carburetter with excellent results.—Yours faithfully,

EDWARD PHILLIPS.

Loss of Power Explained.

Sir,—I beg to thank you for your reply to my query re motor-bicycle. While waiting for an answer I had the counterbalance taken out and another fly-wheel put in: this certainly stopped the vibration, but did not add to the power of the motor. I may say here that my belt drive is very long (8ft. 4in. is the length of belt) and the belt is very flexible and is always kept well dressed with Dawson's dressing. During a recent Sunday run the motor ran worse than ever, and required pedalling on every rise. When out in the country I went over every part I thought was likely to cause the trouble and found there was about ⅛in. play between stem of exhaust valve and valve lifter: I, therefore, rigged up a piece of tin to make them come closer together and so lift the exhaust valve better, and was able to tow two cyclist friends home: we did 12 miles out of the 15 in three-quarters of an hour. The motor now goes splendidly and takes hills without trouble. Later on I had a proper job made of it, and on a subsequent run my motor towed a tandem and two singles the best part of 47 miles.—Yours faithfully, T. E. WEBSTER.

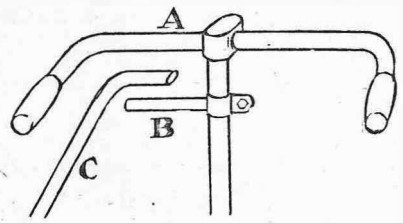
The One Cycle Motor.

Sir,—I read your "O.P.V." columns each week with the greatest interest, and must tell you I have got many valuable hints from descriptions of troubles and your suggestions for their removal. Recently I noticed that a correspondent mentioned the need of a one-cycle motor which, I think, would be appreciated by a good many riders. I have a catalogue of an engine called the "Bichrone," and from the drawings and diagrams therein I have come to the conclusion that it could be made as a twin cylinder engine, to give an impulse at both the outward and inward strokes similar to a single cylinder steam engine. This could be accomplished by crossing the induction pipes of the opposite cylinders to the gas pump. Thus we should get two cranks, and four connecting rods, one working connecting rod, and one pumping rod on each crank. I do not know if the firm is putting this on the market for 1904, but I consider it would be perfectly feasible to compound their engine in this way. By the way—will "J.E.L." (Cork), who described his experiences with the "Trusty" carburetter on the bench with paraffin as fuel give his experiences with it on the road, if he has got his machine working?—Yours faithfully, JAMES B. LIVESEY,

Blackburn.

Riding Side-car Without Passenger.

Sir,—Referring to your correspondent "H.G.T.," in a recent issue as to riding a side-car without a passenger, I will endeavour to illustrate my method of riding the car. A represents handlebar of machine, B is a piece of tubing clipped tightly on to the handlebar stem—the piece I use is the stem of an old American machine with the bar taken out. C is a piece of stout gauge tubing bent round and cut to requisite length, and of a diameter to slip easily over B. It can then easily be slipped off when not required and laid in side-car. I may say that I used this to go to London and back for the first time, and therefore had ample opportunity of testing it in traffic. I have an outside flywheel on my machine—a Clement-Garrard—and can therefore brake machine on hills and in traffic by pressing hand on the flywheel, in which way I am



able to slow machine to walking pace on even the steepest hills. I can do thirty miles an hour on the level easily this way, and it is as comfortable as a little car, besides being faster than many. Trusting this will be of interest to your readers.—Yours faithfully, FRED. A. AUSTIN.

Scottish Roads.

Sir,—I beg to direct your attention and that of some of your influential readers to a matter connected with the roads in Scotland of importance to the motor industry. Although Scotland is but a small part of Britain, it should not be assumed that its roads demand no more attention than those, say, of Yorkshire, the fact being that an equal area in England is dealt with under the general agitation for the improvement of roads, while Scotland has a different Local Government Board and a different law, and at present the local authorities are discussing restrictions which will seriously interfere with the use of the public roads if given effect to. I enclose a copy of the report of a discussion at a meeting of the Arbroath District Committee, from which it appears that the prohibitionists have found themselves seriously hampered by the existence of a statutory obligation that roads should be 20ft. in width. They now, with the aid of the County Councils Association, seek powers to evade this obligation, when they will at once close many of these roads as being too narrow for motorcars. They have fortified themselves by taking the opinion of counsel, who has been bold enough to advise them as to the necessity for widening roads as well as on the legal points on which he is doubtless well qualified to give advice. I also enclose a report (from "The Scotsman" of to-day) of a meeting of the Forfar District Committee, from which it appears that they have agreed to join with their Arbroath neighbours in reactionary legislation. The success of these road authorities and others taking the same view depends largely on obtaining the assistance of the County Councils Association, a body which consists of a few representatives from each County Council. There are many members of County Councils interested in motoring, and I would suggest that as many of these as possible be approached by circular and invited to do their best to prevent their representatives supporting the legislation proposed. —Yours faithfully, "AVENEL."

An Ignition Difficulty Explained.

Sir,—Under the heading "A Good Spark but no Explosion," in your issue of September 30th, you came to my assistance—not for the first time. The trouble, however, must have been at the throttle, for I found that the telescopic rod of lever had slipped somewhat, and shut off all mixture to inlet valve. I write this in case any other reader should be in similar trouble, for the slight click in silencer was simply the sound of the ignition at sparking-plug travelling through the exhaust. At any rate, on re-adjusting the throttle lever a good explosion occurred, and I have had no further trouble with my Kerry. There is one further matter that I would like some of your readers' opinions on, namely, how best to avoid side-slip on wet wood paving, greasy granite setts, and the eternally soused tram lines. A well pumped tyre is not sufficient. I have 2in. Clincher tyres. They are excellent. They took me from London to Cardiff and back with only one re-pumping of the front tyre, and no further inflation of the back one; but they are liable to slip on the above-mentioned roads, or on very wet chalk. There should be a cheap expedient; if so, I would like to know of it.—Yours faithfully, P. H. SNELLING.

20, Hartington Road, Ealing.

Alcohol as a Fuel.

Sir,—In connection with a recent instructive article in "THE MOTOR," by Mr. J. W. G. Brooker, A.I.C., may I add a few remarks and suggestions on the proposed introduction of alcohol as a motor fuel in England? The steady increase in the price of petrol points to the advisability of employing an alternative fuel at no distant date, and renders discussion and suggestion specially appropriate at present. Mr. Brooker states that alcohol may be produced for 10d. to 11d. per gallon on the Continent. I may add that, by the use of potatoes, roots, grain and stone fruit, it may be produced there at as low a cost as 6d. per gallon. Furthermore, as Mr. Brooker remarks, the British distiller is under official restrictions and supervision, and his total output is probably reduced thereby; but he does not pay for that supervision, and hence is not put to any direct expense on that score. Restrictions and supervision are rendered necessary by the heavy duty at stake, which accounts for the presence of denaturing agents in duty-free spirits used for commercial purposes. Alcohol is largely used as motor fuel in Germany, where the Government, by regulation dated September, 1902, requires that alcohol intended as motor spirit, denatured by the addition of 2 per cent. of benzine and ½ per cent. of the ordinary denaturing agent (a mixture of wood spirit and pyridine bases), and so rendered unsuitable for domestic purposes, shall be distinguished by the further addition of ½ litre of crystal violet (rosaniline) solution per 100 litres. As regards this country, methylated spirit might, subject to official approval, be so compounded as to

comply with its Act (43 and 44 Vict., c. 24), and answer all requirements for motor fuel.

Methylated spirit is defined as a mixture of plain British spirits, or unsweetened foreign spirits, or rum, with one-ninth of its bulk of wood naphtha, or methylic alcohol, or with some other substance or combination of substances approved for the purpose by the Commissioners. In addition, it must contain three-eighths of 1 per cent. of mineral naphtha or petroleum oil.

If we could obtain official approval of petrol in lieu of the wood naphtha, the subsequent addition of a minute proportion of another denaturing agent, such as mineral naphtha, or animal oil, as a Revenue safeguard, would hardly seriously affect the adaptability of the resulting mixture as a motor spirit. But to secure this fuel cheaply a certain amount of experimenting and official encouragement appears to be called for, as well as the necessary enterprise on the part of some distiller or maker of methylated spirit.—Yours faithfully,

T. E. HOLDWAY.

Novel System of Motor Catching.

Sir,—I beg to warn your readers of a particularly active limb of the law operating in the vicinity of Twyford, between Maidenhead and Reading, on the Bath road. I was warned the other day by a local cyclist, and had the honour of passing through the infected area at about six miles per hour (I like to be on the safe side) unscathed. My companion—for the cyclist and I rode in company some way—told me the way the trap was worked. The road is provided with telegraph and telephone poles and wires on either side: presumably these poles are spaced more or less at equal intervals, and the spacing being a known quantity it is a simple matter even for a country police sergeant to count a few poles and compute the total distance. The beauty of this is that exact measurements of the road are not needed, and the trap can be, and is, moved perhaps two or three miles during the day. Now, the method of signalling as it was explained to me is ingenious. As a motor passes a stick is thrown up at the telegraph wires, and on the principle of the mechanical telephone a man listening at the other end of the trap, with his ear to a pole, hears the impact and starts his watch. I am not aware if a "constant" has been worked out compensating for the transmission of sound over these given lengths, nor do I know if the permission of the G.P.O. has been obtained for this particular use of their wires. If a small boy threw a stick at the telephone or telegraph wires, the worthy magistrates would very soon have something to say to him. In conclusion I may say that I have continually been warned by cyclists of traps in districts unknown to me; and inasmuch as they have saved me a goodly sum in maximum fines I must express my very great appreciation of their kindly and disinterested action. It leads me to believe that cyclists and motorists are not quite such deadly enemies as even some of the respectable daily papers would like to make out.—Yours faithfully,

"OLYMPIA TANDEM."

[We have received several letters from motorists which confirm our correspondent's remarks as to the good offices rendered by cyclists.—ED.]

ADJUSTMENTS!

Overheating.

Sir,—Having seen so many letters in "THE MOTOR" in regard to the trouble of overheating, I think some of your readers might be interested to hear what the cause was in my case. My machine, a 3 h.p. Rex, had gone perfectly for about two months, when gradually it began to work erratically, till about three months later it took to overheating on the slightest provocation. It would neither climb hills that a 1¾ h.p. would have climbed easily, nor would it travel at more than about 14 miles an hour on the level under the most favourable conditions: when I advanced the spark the engine went slower and slower and finally stopped: it was fearfully hot when this took place, and the cause was doubtless overheating. I reground both valves, put in new springs, cleaned out the engine, and looked at the timing gear, all without the slightest improvement being effected. One day, however, I took off the case of the timing gear to see if the cam which actuated the exhaust valve lifter had perhaps become worn, but this was not the case: but it was here that I found the whole trouble: I discovered that the cog-wheel fixed to the main shaft of the engine was loose and had a play of about ⅛in.: This was caused by the small screw (which holds this cog tight) having worked loose: I screwed it up tight and have never had the slightest trouble since. The overheating is very easily accounted for as follows:—When I advanced the spark the small cog slipped, and did not allow the cam on the other larger cog (the contact breaker cog) to push up the exhaust valve stem at the proper moment, so that the burnt gases were not able to escape at the right time. Possibly some of the readers of "THE MOTOR" may be able to trace their overheating troubles to this same cause: I hope so.—Yours faithfully, E.F.G.

Management of 2 h.p. Minerva Machine.

Sir,—We have read with interest the article "How I manage my 2 h.p. Minerva," by "Lubrico," which appeared in your issue dated September 30th. We may say that we have anticipated most of the small matters mentioned by him; for instance, the twisted raw hide belt will be replaced by a V pattern, and also in connection with these we shall use "Herwin's" patent belt fastener. The rattle of the float in next year's pattern will be quite eliminated: we are lengthening the tube and fitting a rubber washer in the cap; this will also prevent any chance of the tube puncturing the float. In our 1904 type of carburetter, which will be known as the "Minerva-Longuemare," the dust cap and small hole serving the purpose of an auxiliary air inlet will be replaced by an elongated hole covered by a slide. Where we do not agree with your correspondent is as to the advisability of replacing the nut by a tap in the bottom of the petrol tank: we have always declined to do this, as in the event of the tap shaking open, apart from the annoyance of losing the petrol, the danger of the spirit falling on to the engine and possibly igniting would not compensate for the small advantage a tap might afford.—Yours faithfully,

MINERVA MOTORS, LTD.,
D. CITROEN, Managing Director.

C7

Chain v. Belt Drive.

Sir,—Can you not do something to inaugurate an adequate discussion of this all-important subject in your columns? A correspondent recently described the altogether satisfactory results obtained from his Humber chain driven motorcycle, which, in a 1,000 miles' run, had given absolutely no trouble whatever. Can anyone say this of a belt drive, whether flat, round or V-shaped? The perplexing point seems to be that Humbers, in spite of their proved superiority, appear to be all but alone in retaining the chain drive. In the recent automobile 1,000 miles' trials not a single chain driver appears to have been entered; yet belt troubles were universally met with, in spite of the precautions adopted by all competitors of carrying spare belts and other devices to ensure arriving at their destinations. In your summary of results you stated that the belt was in all cases an invariable source of trouble if not of actual failure, and this is my experience. Yet none appear anxious to imitate the Humbers' successful lead. How is this? —Yours faithfully,

M.I.M.E.

The Definition of Horse-Power.

Sir,—In looking through the list of entries in the recent 1,000 miles car trials, I cannot help noticing the difference in the cylinder capacity of the various cars, as compared with the reputed horse-power. For instance, a car with a single cylinder of 100 × 120 mm. is described as 9 h.p., while a car with four cylinders, each 100 × 130 mm., is rated as only 14 h.p. Again, a single cylinder engine of 88 × 110 mm. is entered as 6½ h.p.; while a car with four cylinders is rated as only 12 h.p., instead of 26 h.p. (by comparison). And yet another car, with only two cylinders, each precisely the same size, and obviously half the power, is listed as 10 h.p. Two other cars, with two and four cylinders respectively, each of the same size, are given as both developing the same horse-power. In all cases mentioned above the figures are given as brake horse-power. Does this not prove that the present system of calculating the horse-power is absolutely misleading and ridiculous? Why does not the Automobile Club establish a standard of horse-power based on cylinder capacity, and insist on all makers advertising their horse-power on these lines?

Taking the average cylinder capacity of the cars entered in the 1,000 miles trial, it will be found to be 183 cubic centimetres per horse-power; yet one car has a capacity of no less than 415 cubic centimetres per horse-power, while another shows only 103.

Obviously, to my thinking, the purchaser of one is not getting good value for his money, while the purchaser of another is getting a monster in disguise. The calculation of horse-power should be based on a cylinder capacity of, say, 175 to 200 cubic centimetres per horse-power. The power thus arrived at could be described as theoretical horse-power, or capacity horse-power, or some other suitable term, to distinguish it from brake, nominal, and indicated horse-power. If this standard were adopted by the Automobile Club, and they were to recognise no other, it would soon come into general use, and I am sure it would be to the advantage of both manufacturer and public alike. It would also tend to induce makers to improve their transmission, and reduce weight, so as to get the best out of their cars for a given amount of power. As things stand at present, if a manufacturer knows his cars are too heavy, or his gears absorb an abnormal percentage of power, he has only to underrate his horse-power, and thus he has a reserve of power to balance against these faults, and he still develops his nominal horse-power at the road wheels. Thus, one maker may have a 12 b.h.p. engine, and get 10 b.h.p. at the road wheels; while another maker may have an 18 b.h.p. engine, and get only the same b.h.p. (10) at the road wheels, but, by underrating his horse-power, and calling it 10 h.p., he obtains an advantage over the first manufacturer who correctly states his horse-power as 12. It is obvious that the so-called 10 h.p. car has to be sold at the price of an 18 h.p.

Now, if some new standard were adopted, based on cylinder capacity, as suggested, and only this standard recognised by the Club in all races, hill climbs, trials, and other fixtures, the intending purchaser would have some definite base to work upon. Some such reform is greatly needed, and should be introduced at once, before the automobile industry assumes too gigantic dimensions to be dealt with.—Yours faithfully,

Douglas S. Cox.

The New Hudson Machine.

Sir,—I see that one of your correspondents, in your issue of September 30th, is making enquiries concerning the New Hudson motor-bicycle, and as I have ridden this machine for the last six months, I thought my experiences might be of service. As sent out from the makers the machine has, in my opinion, three faults. The ignition and the carburetter do not act well, and the transmission could be much improved. As to ignition, I decided to use a trembler coil, and screwed down the platinum tipped screw, and have had no difficulty with that part of the mechanism since. The carburetter I found uncertain in action, and difficult to get a start with. I cured this fault by replacing it with a float feed of the same make, and it has worked perfectly ever since. This is an easy replacement to make, and necessitates no alteration that cannot be done in a few minutes. This brings me to what I consider the last and most serious defect in the machine, that is, the transmission. The V belt I did not find satisfactory as a means of transmitting the power of the motor, and my machine will tear to pieces in a week the best Lincona that ever was made, not through any fault of the belt, but because it has to go round a three-inch pulley at one end, and is then opened out on the back wheel, with the result that the back is torn off, and the whole thing comes to pieces. I improved matters by using a round belt, but it is by no means a perfect way of transmitting the power, and I am now going to see if Brittain's pulley will solve the difficulty. In spite of its faults, the motor is one that seems to me to be designed on right lines, and to be one of the first of the inevitable quick-running engines of the future. When the machine is doing twenty miles an hour the motor is running at over 2,000 revolutions a minute; and when the machine touches thirty miles an hour, as it will do under favourable conditions, it is doing about 3,000. These calculations are very roughly done, but I think they are approximately right. The result of this is that the machine is very fast for its horse-power on the level, and very bad at hill climbing, for the moment the number of revolutions decreases the power sinks with it in a much greater ratio than is the case with a slower running engine with heavy flywheels. The effect of the high speed at which the engine runs has one result which has much surprised me, and that is that there is not half the wear on the bearings as compared with a slow running engine, and, of course, the vibration is practically nil. The bicycle part of the machine is above criticism, and could not be better. It is strong and beautifully finished, and I believe that a greater amount of attention to details would make this machine a very effective one for its weight and horse-power.—Yours faithfully,

C. S. Ensell.

The Motor Volunteer Corps.

Sir,—Having seen something of the working of the Motor Corps during the recent operations on Salisbury Plain, may I, as an auxiliary officer, make some suggestions as to their formation? In the first place, it seemed to me that there were as many officers as privates. It appeared to be quite a toss up whether a man enlisted as private or officer, and there was little distinction drawn between the two. However, I suppose that is a matter which concerns them only. My idea is that the man who passes examinations in, say, mechanics, as applied to all forms of road traction, map reading, and map drawing, telegraphy and such like, should be an officer of a rank corresponding to the standard of examination he passes. The man who does not trouble to do this would be a private; or, if he passed a small examination, a N.C.O. The cyclist should do much the same thing, but as there are so many motorcyclists who ought to join but have not, I should like them to be formed into sections or companies, drawn entirely from one county for each section or company, and having one captain and four subalterns, and they would serve with the different brigades or regiments of their county. There is a third branch of the corps, namely, the mechanic or chauffeur. His duties would be purely those of a mechanic. They should be formed into sections, each under a sergeant and two corporals, and the whole under—for want of a better name—veterinary officers, whose duties in the field would be to drive about in supply cars, ready to do any repairs that might be wanted. I think all ranks should have an annual course of revolver practice, whilst a carbine and collapsible bicycle might at times be most useful in a car. I think that the corps, as a rule, should be considered as combatants, and the cyclists always; though, at the same time, until the motor can be run silently, I do not see that they can be of universal use. I can imagine that a lot of pleasure might be derived from the capture of a 20 or 30 h.p. car; while a cyclist going 20 miles an hour would get an unpleasant shock if he ran into a rope stretched across a road. I trust that any members of the corps reading this will forgive me if I have said anything to suggest that they are not "up to the mark." This has not been my intention, as I consider they deserve great praise for the keen way in which they fulfilled their duties.—Yours faithfully,

"Fleman."

OUR INFORMATION BUREAU.

SPECIAL NOTICE.

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

1. Plain writing. Type writing for preference.

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

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

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

G.R.J. (Edinburgh).—Should say it would pay you to see the "Kerry" and "Pebok" machines.

H. J. Barnes (Glasgow).—The "Diana" paraffin lamp can be obtained from Baedeker and Co., 17, Newcastle Street, Farringdon Street, London, E.C.

J.B.H. (Dublin) would be glad if any reader could tell him of an easily adaptable two-speed gear to drive from a two-cylinder engine of 20 h.p., placed parallel with the car axles. It must only require one chain, and the gear must be one that can be obtained straightaway, and not have to be specially constructed.

Requires More Speed.

F.W.D. (Ebbw Vale) writes:—I have a 3 h.p. Rex with which I have not had a moment's trouble; it climbs hills well and never gets out of order; the maximum speed I can get out of it, however, is only about 25 miles per hour: the gear is 1 to 5. Advancing the spark beyond a certain point does not increase the speed: would you say that the trembler coil was the cause of the low maximum speed? The machine climbs hills a little better than another make of 2¾ h.p. machine, and with a gear of 1 to 5 I should think I should be able to do over 30 miles per hour if necessary.—We are of opinion that the trembler coil ignition is in no way responsible for the somewhat low speed. It will be necessary to look to other causes, of which there are a number, for instance (1) the carburetter may not be supplying sufficient gas. (2) Compression may be rather weak and could be much improved. (3) The inlet spring may be under tension and consequently the valve will not shut quick enough at high speeds. (4) Belt may slip, but this would not appear probable as the machine takes hills well. Of course, there is a position of spark advance beyond which a great loss of efficiency occurs. We are not sure but what the gear is too low for speed; 4½ to 1 ratio is usual for 30 miles per hour.

Burt and Co. (Brighton).—You will be able to obtain particulars of "Pognon" spark plug from J. E. Hutton, Ltd., 81, Shaftesbury Avenue, London, W.C.

"Medicus."—Humbers and Singers make a speciality of motor-tricycles. A 3 h.p. motor will prove equal to the work you mention. Of course, you might find a Trimo attachment suit; that is, to ride it without a passenger.

J. W. Whitford (Clonmel).—We do not think the starting difficulty arises from anything but the fact that you have too much air passing into the carburetter. If you will fit a throttle on the air supply your difficulty will most probably disappear.

"Novice."—(1) We believe you would do better with a fore-carriage having a 3 h.p. engine. You will be able to manage this after a lesson or two. Of course, a two-speed gear and water-cooled cylinders mean extra complication. (2) Nothing better on the lines you mention than our "Motor Manual."

Reducing Speed of Minerva Motor.

"Browston" (Medway) writes:—I have a 2 h.p. 1903 Minerva machine and (1) I am unable to persuade it to go less than 15 m.p.h. with the exhaust valve just closed and the throttle just opened; if I retard the spark one notch further the action opens the exhaust valve too much, and the engine stops: it has always been like this, but hitherto I have regulated the speed by switching on and off. (2) Have you any experience of Dunhill's speed indicator, and would the fact of the rim not being perfectly true affect it? (3) Do you know of anyone who makes a dressing case, which would take a shirt and suit of clothes, etc., to fit over a Main-Hilton carrier? I sincerely hope that the L.G.B. will grasp the difference between the single tracker (which has to be held up when not under weigh, and may be carried at a pinch) and the various other forms of so-called "motorcycle."—(1) If you are unable to get a finer adjustment of the throttle you could fit an independent exhaust lifter with a good range of adjustment: this method has been successfully adopted in similar cases. Of course, you might be able to adjust the spark advance gear to allow of further retardation before the exhaust is lifted. (2) The Dunhill's speed indicator is satisfactory, and as it is arranged on the end of a spring it takes up the variations in the rim circle to a considerable degree. (3) There is a waterproof case made by Bransom, Kent and Company that fits the Main-Hilton carrier.

T. Eggleton (London, N.).—We should advise you to go in for the new 3½ h.p. Minerva motor, which is specially designed for fore-carriage work.

C. S. Crane (Singapore).—There is no particular reason why you should not have an Eisemann dynamo and coil ignition: it is quite efficient and, we believe, wears much better than a dynamo with a reciprocating action: it would be a question merely of getting the necessary mechanical fitting done to adopt it to your machine.

A. Meigh (Stoke).—We could hardly say where the fault lay in your home-made auto-trembler. Much depends on the winding, the quality of the iron core, and the speed at which the spring contact vibrates: a slow vibration is of no use. We should say it would be much better to purchase a standard auto-trembler: it will save a lot of time in experimenting.

"Novice" (Dublin).—(1) You will not be able to get easy starting without injecting paraffin, unless you are fortunate enough to come across a brand of lubricating oil that does not "set" when the cylinder cools. (2) We certainly advise you to have the accumulator charged up every five or six weeks; otherwise there is a risk of the plates sulphating, and this is a troublesome matter to remedy.

The Dissipation of Heat.

G.H.T.—The idea you submit for constructing the cylinder and head of a non-conducting material so as to retain the heat is quite impossible: lubrication could not be effected, and no gas could be got in the cylinder. In a steam engine cylinder, of course, every effort has to be made to keep the heat in, but in a gas engine a certain amount of heat must be got rid of: you are right in your contention that this lost heat is lost power. We believe the sample of V belt you send is the "Elswick": you can obtain further details of this from F. L. Anderson, 1, Furnival Street, London, E.C.

Sudden Stopping of Motor.

A. Roby (Stamford Hill) writes:—I have a 2¾ Pebok machine, which goes well with the exception that the engine will stop with a jerk and then go on again. This it does repeatedly, and if I am going fast it has a tendency to throw me off. On the stand there is no misfiring either at plug or cam. I have seen to all wires, tested accumulator, cleaned out carburetter, and tried inserting a piece of low tension wire from coil to frame, but all to no purpose. Throttle half open or full, air valve open or shut, the result is the same.—The defect can only be due either to a misfire or to the inlet valve sticking through over lubrication. It may simply be a question of adjustment at the make and break, or there may be a short circuit formed now and again on the wires. If the trouble arises from the inlet sticking, this will require cleaning with some paraffin. Another matter you ought to see to is that there is no failure of petrol supply

Fabriques Nationales Co. (Herstal).—Subscription to hand, for which accept our thanks.

A. G. (London).—The speed a petrol motor runs at is determined by the usual factors, such as the bore and stroke of cylinder and degree of compression, volume of gas drawn in, etc.

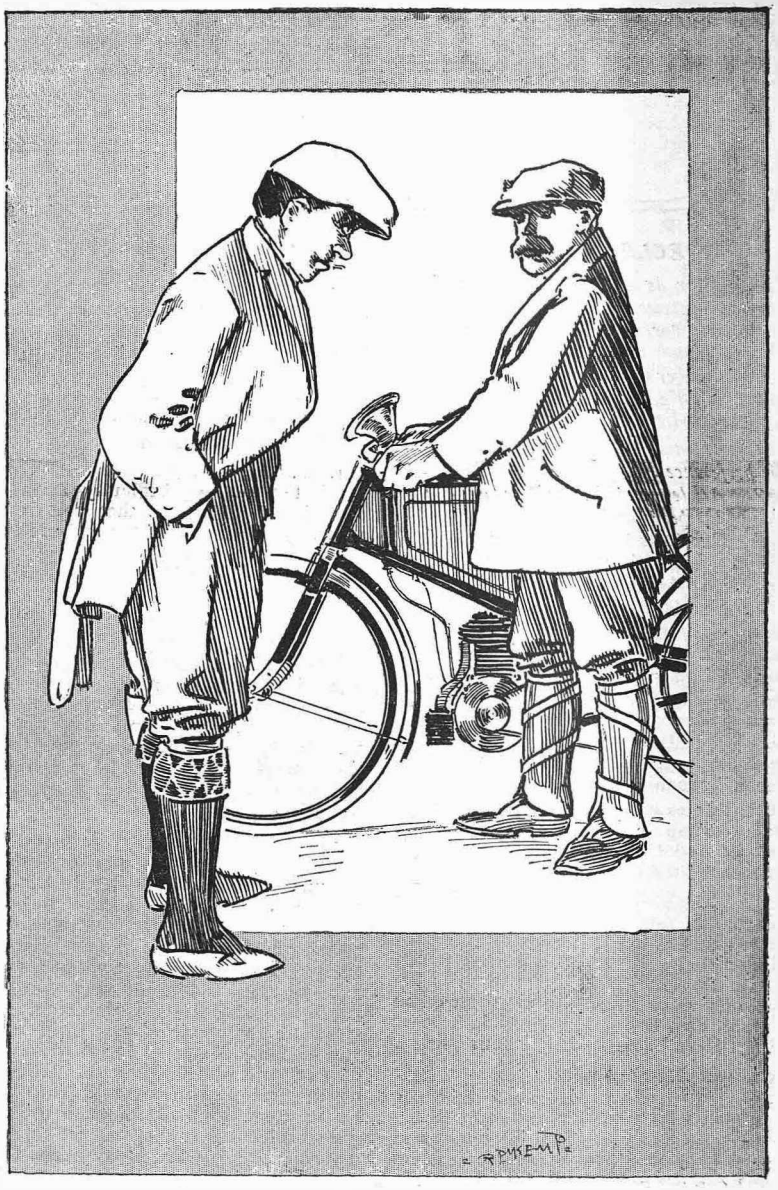
H. S. Picton (Thornton Heath).—(1) If you find your accumulator will not retain its charge, you might see if the Minerva Co. can make it right, as it is one of their make. It may be short circuited inside, plates sulphated, or acid too weak. (2) Test lamps are reliable enough, provided they take not less than an ampere of current to light them. You simply judge condition of cells by noting the brightness of lamp. Unless it glows brightly the cells are not up to full voltage. (3) the P. and R. and "Castle" are good reserve cells.

Starting Trouble

E. A. Harris (Newquay) writes:—I have a well-known make of motor-bicycle, 2 h.p., and up to six weeks ago it went very well, but since then I have had a lot of trouble. The first trouble was lost compression; that was rectified by grinding-in the exhaust valve. Immediately that was done I noticed a peculiar noise coming through the carburetter, and came to the conclusion that the inlet was faulty, so sent it back to the makers with instructions to stop the leak. They ground and returned it; but there is no difference, and the noise is still the same. I cannot get a start with the engine, and it is a great inconvenience to me, as I ride to business on it every morning.—You may effect a remedy by pulling the inlet valve spring out. It appears to be too weak to close the valve properly. Of course it will be necessary to first assure yourself that the sparking and carburation are quite perfect.

Tyro in Distress.

"Accumulator" (Exeter) tells us he has adopted this nom de plume because he is "literally charged with questions." He speaks in glowing terms of the immense value of our "Information Bureau" and calls it the Mecca of all good motor-cyclists in distress. His troubles are as follows:—(1) He has a 2¾ h.p. "Brown" motor-bicycle, and the compression is weak. He has discovered that the piston has only two rings instead of three. Is this the reason for the loss of compression? (2) He hears a mysterious click in the coil and fears it is a short circuit. (3) He fancies the timing is wrongly set, and wishes to put it right. (4) Petrol leaks out at one of the joints of pipe to carburetter: how can this be remedied? (5) Do the non-slipping pulleys advertised do what the makers claim? (6) The tread of back tyre is worn: what can be done to it?—(1) Loss of compression is more likely due to the exhaust valve requiring grinding-in. Three rings are better than two, but it depends how wide the rings are. (2) Click in coil is of no consequence if you do not find the spark affected. (3) Read the article on "Timing," in issue 73. (4) A carefully made soft leather washer inside the union will make the joint tight, or a touch of white lead will do temporarily. (5) We cannot say from experience, but readers speak well of them. (6) Nothing better than a Bates' or Smith's band as put on by makers: it can be done at home, but not so well and generally comes off in a month or two.—Better vulcanised on.



MINE UNCLE!

"Given up moting?"
"Well, for a time. You see I was heavily fined last month."
"Disposed of the machine?"
"For a while—I pawned it to pay the fine!"

A Charging Battery Problem.

"Inquirer" (Ardshead, N.B).—We should explain the anomaly in this way:—The battery as you have constructed it with a small carbon in a porous pot and very large zinc cylinder is just the reverse of what should be to get good results. There is very little depolarizing surface, hence you will get very little current from it. The internal resistance will also be high, and when you couple up the lamp this also adds to the total resistance in the circuit, hence you only get a fraction of the necessary current to light the lamp. Many of the 4 volt test lamps sold require an ampere of current to light them; and of course, if only ½ or ¾ ampere passes, the lamp will only show a red glow. The reason you got several amperes through ammeter is because this has practically no resistance, and thus short circuits the battery.

"Don Quixote" (London, N.) would be glad if any reader who drives an average class small car (that is, one under £200) would tell him what the driving expenses amount to for 100 miles over average roads with two passengers, and inclusive of charges for petrol, lubricating oil, electricity, repairs and replacements, including tyres.

"Non-plussed" (Doncaster).—You say that although you have all valves and joints absolutely gas tight you are unable to get any compression, and that there is nothing wrong with piston, and rings are quite perfect. Well, all we can suggest is either a crack in the cylinder or head somewhere, or the bore of the cylinder is tapered: this latter is not improbable—better have the cylinder off and carefully test the bore with a pair of inside callipers. If found to be tapered it will be necessary to have it re-bored.

"Simms Bosch" (Sutton).—(1) Get an estimate for the work to be done locally. We only supply a limited number of the volumes. (2) Ormonde. (3) Such a gear as you mention could not possibly stand the wear and tear of a high powered motor. (4) For track work you could gear up to 1 to 3½. (5) Dicks' belt is a composition belt of woven cotton treated with a gutta percha compound.

J. Edwards (Torquay) complains that he cannot get good results with his trembler coil working a 12 h.p. car. It is a Bassee Michel pattern, costing £5 10s. It stops vibrating now and again, and causes a misfire.—It may be simply the trembler sticking to the core; but more likely than not it is the brush contact at fault; perhaps not enough pressure on the brush. (2) We can recommend the new E.I.C. coil.

"Moformania" (Burgess Hill).—(1) You can obtain license for remainder of year for 7s. 6d. (2) Impossible to say exactly why your motor rattles considerably when the exhaust valve is lifted; probably some of the bushes are worn—not at all unlikely, as it is a secondhand machine. (3) You will not gain anything by setting your sparking to fire more than an inch down on the compression stroke to give maximum advance: best to leave it as set by makers. (4) A regulating tap on petrol supply would be an advantage.

Fore-carriage Queries.

J. Eggleton (London N.).—(1) For a 2½ h.p. Minerva engine a 1 to 5½ gear will give good results: for 3½ h.p., 1 to 4½. (2) Clincher or Palmer are excellent. (3) We have not tried the saddle. (4) Next year's Minerva carburetter should certainly be an advance on the surface pattern. (5) For the lamps try Gamage's; they have a variety of good patterns. (6) It is entirely a matter for you to decide whether you have fore car made detachable or not: As a rule users of fore-carriages rarely refit the machine as a bicycle. (7) About 25 miles per hour, maximum. (8) Much difference of opinion as to value of air scoops. (9) Best to look up the gradients in a contour road book.

Cover Blowing off Rim.

"Wheeler" (Hull) recently had an unfortunate experience with the back tyre of his motor-bicycle. The cover is of the beaded edge type, and on two occasions has blown off the rim, causing an irreparable burst in the air tube. The tyre was blown very hard, and to all appearances was properly fitted on the rim. "Wheeler" asks what is our opinion on the matter.—The blowing off of an outer cover may be due to one of several causes. For instance, the edge of a cover has been known to stretch and force its way out of the rim. In another case the edge of the cover had not been properly fitted into the groove of the rim. The air tube being of too large diameter for the cover would also tend to force the cover off. If the air tube is not carefully put in place before the loose edge of the cover is tucked into its groove, the air pressure will force the tube under the beaded edge, and a burst is sure to result. The rim being slightly out of gauge might do it; but it is rather rare to find a rim of this description nowadays. The greatest care should be exercised when replacing an air tube or cover to see that everything is in its exact position. Hurried or careless replacing of the tube and cover are often responsible for bursts.

"Stranded."—It is quite possible to get the motor to run at reduced power, using methylated spirit as a fuel, that is, of course, with a spray carburetter. We know of several instances where it has been used. We could not give the distance you could run a 2 h.p. machine on half a pint of cheap whiskey.

W. Tennep (Poplar) wishes to become a motorcyclist, but has unfortunately had an injury to right leg and is in doubt whether he would be able to start a motor-bicycle.—Well, there are ways of starting a motor-bicycle other than by the pedals: it is possible, for instance, to run alongside, drop the exhaust valve, and jump in the saddle: or there are machines like the "Humber" and "Iris" that can be supplied with a hand starter.

D. Gowie (Tottenham).—The fitting of a small dynamo for charging accumulators on a motor-bicycle is not a thoroughly practical idea. It would be much better to go in for an "Eisemann" dynamo ignition, and utilise the current direct. The letters F.N. you see so often in alvertisements and articles refer to the "Fabriques Nationales," a great factory in Belgium which makes amongst many other mechanical things, motors and accessories.

M.S. (Weybridge).—You can obtain the speed in miles per hour of your motor-bicycle thus:—(The easiest way is to time a mile by cyclometer and stop watch) Knowing maximum revolutions of motor, the rear wheel will revolve at a rate proportional to the gear: thus, if the ratio is 1 to 5 the driving wheel will revolve one-fifth times per minute that the engine pulley does; this figure multiplied into diameter of driving wheel (opposite treads of tyre) into 3.1416 into 60, and divided by 63,360 will give the speed in miles per hour.

Compression and Capacity Queries.

Z.Y. (Southport).—(1) You can materially increase the compression by bolting a ¼in. thick plate of aluminium to the top of your piston: do not make any other alterations or you will certainly spoil the engine. (2) Gears are always defined now on the basis of a 26in. diameter driving wheel. Before we could calculate the speed your motor-tricycle would run at with a 12-tooth pinion and 106-tooth gear wheel, 28in. drivers, we should require to know maximum revolutions per minute of engine. (3) You can find the cubic capacity of head as you suggest by filling up with water and emptying into a graduated vessel.

Inlet Valve Spring, etc.

C. E. Denton (Esher).—You will always get a spark at the make and break: faint sparks from high tension cable end generally result from having a very imperfect connection from coil to frame—best to join the "M" terminal direct to the motor—or the contacts of the make and break are inferior metal instead of being pure platinum. You mention that you experience trouble with carburetter, and observe that there is a continual blowing back through the air lever apertures, and inside of spray chamber is black. There can be no doubt here that the inlet valve is at fault; most probably it requires both a new spring of the correct tension, and also regrinding.

"Simlok."—You will find it an advantage to fit a good spray carburetter: it would be possible, of course, to fit it in conjunction with the surface, but we hardly think it worth while to do so: you would only require to use it in the event of some part of the spray going wrong or breaking.

F. Hall (Bacup).—(1) We should certainly go in for the new spring forks, especially as your roads are not of the best. (2) Have Smith's treads on both wheels. (3) Unless there is some difficulty in the fitting, have two chains. If belt is necessary, have it protected in some way from mud. (4) Both devices are unsuitable for a machine of the type and power.

"Enquirer."—There is nothing as far as we know more practicable to prevent freezing up of the water in tank and radiator in frosty weather than to add 15 to 20 per cent. of glycerine to the water: this is not a pleasant mixture to deal with, as it makes a nasty sticky mess of everything it touches; but it is preferable to using chloride of calcium in solution, which is sometimes mentioned as an alternative.

"Antipodean."—(1) There will be a very considerable difference in the qualities of the two spirits: the sample that has gone stale will have lost many of its characteristic properties. (2) You ask why the W—— motor-bicycles are made with engine pulley considerably out of line with the belt rim, and the latter also with a sloping surface. There is no good reason why this should be; providing the rear wheel is central in both sets of forks a belt rim out of line with engine pulley is clear evidence of careless fitting of the machine together. It is permissible to have the belt rim slightly crowned on the surface, but why yours should have a slant we cannot say.

E.T.N. (Dewsbury) writes:—Which will be the best and cheapest method to charge a 4-volt accumulator (for motor-cycle) (a) from electric supply, 440 volts, used for power, or (b) from small dynamo? I have suitable power to drive this: what would be the probable cost?—If you do not object to the waste of energy it would be the most convenient to use four 110 volt lamps coupled in series and also in series with the accumulator: lamps should be of 25 or 30 c.p. each. A small dynamo would cost about £5, and absorb approximately quarter horse-power to drive it.

Test for Coil.

G.B. (Gloucester) writes:—I find that after running, say, 40 miles on my motor-bicycle the platinum contacts are eaten away at the trembler, with the result that the engine misses fire. I have then to file up before a fresh satisfactory start can be made. I think that the condenser of coil must be at fault. Is there any test to find out if this is so? Or what means is there of testing the coil?—The coil may be of bad quality, taking a heavy current to work it, or it may be that your contacts are imitation platinum. All you can do with the coil is to try if it gives a strong spark at the high tension cable. If the condenser connection was broken it is doubtful whether the motor would work at all. In any case, unless one thoroughly understands the construction and working of a coil, to take it to pieces will result in spoiling it probably.

F.S.N.M. (Limavady).—You can couple the motors together in the way you describe, but we cannot speak confidently as to the efficiency of the air cooling. You might do it effectively with a couple of high speed fans, but it is entirely a matter for determining experimentally. The artillery wheels are the most satisfactory, particularly from an ease of cleaning point of view.

J.E.T.H. (Overstrand).—Missing fire at slow speeds and perfect running at high speeds may show that the carburetter is not working well and that not sufficient petrol gets through the jet to give a mixture at slow speeds. A detail that requires careful attention is to see that there is no possibility of air getting into the gas supply pipe beyond the carburetter: a badly fitting union joint is often responsible for this. Your make and break may not be well adjusted to give a quick enough break at slow speeds.

The Motor-Tricycle.

In reply to "Trike" (Tipton) H.C.L. replies as follows:—I rode a De Dion tricycle for 18 months, and as far as wear on back tyres was concerned there was nothing to complain of. This wear will depend to a certain extent on the ratio of gearing between the pinion and spur wheel. In my case it was 9 to 1, which, of course is low, and consequently the shocks of each explosion are greatly reduced before being conveyed to the road wheels, with a consequent reduction in wear of tyres. Kept well adjusted, I found my gear wheels did not want renewing during the 18 months I owned the machine, and indeed they showed only very slight signs of wear: I should say the average life of such wheels would be quite 2,500 miles. I found my machine an ideal mount for town use in wet weather, as side-slip was an almost unknown quantity. The only serious defect to my mind in this form of mount is the noise caused by the gear wheels: this appears to be quite ineradicable.

Fore-carriage with De Dion Engine.

D.N. (Plumstead) writes:—I am about to go in for a bicycle with a fore-carriage, and propose using a De Dion 2¾ h.p. engine, geared 7 to 1, pedal gear under 60, slung under the front stay between the head and bottom bracket in a slanting direction as low as possible. Do you think the h.p. sufficient, and would you recommend any alterations to the above? I wish to use the machine for general purposes in all weathers, and do not want to do any more pedalling than necessary up hills about Kent. Do you think a water-cooled head would be any advantage as regards preventing the engine over-heating? as the position of the engine will be close to the back of the attachment.—Although we believe that the 2¾ h.p. De Dion engine will actually do more foot-pounds of work than many other makes of engines rated the same, it is barely sufficient for a fore-car attachment. Makers are realising that nothing less that 3 h.p. is suitable for the varying conditions which a fore-carriage machine has to meet. But it is important to note that if the passenger and driver are of light weight, and the hills the machine would have to tackle do not exceed 1 in 12, then 2¾ h.p. might do very well. As to the engine gear, 7 to 1 will prove a trifle low; 6 to 1 would be better. Pedal gear and engine position are satisfactory. We do not think a water-cooled head a desirable complication unless one is compelled to adopt it. Better, we think, to experiment with a fan.

E. Cooper (Wasa, Finland).—The dimensions you give would be approximately those of a 4 h.p. engine. You will not get the same power using paraffin, the stroke being too short.

"Enquirer" (Rothbury).—(1) You would undoubtedly get more speed with direct belt drive, the friction losses in the chains and gear being considerable. (2) It appears as though the engine does not get sufficient gas, and this would account for the difference between what the makers claim in the way of speed and what you actually get: You might with advantage enlarge the spray jet in carburetter very slightly. (3) Engine not responding to throttle may be due to your not having enough gas, or to an overheated cylinder. (4) Inlet valve spring looks too weak. (5) Not advisable to put more range on advance spark.

A Starting Trouble.

In reply to T. Gaskell (Worksop) who enquires in "THE MOTOR," October 7th, R.H. (Richmond) writes:—I have experienced similar trouble and I consider that the fault was entirely in the plug, which after careful examination I found to be sooted in the shell. The points I had already cleansed, but I discovered that, though current would show a good spark on the points at low speed, yet at high speed the current diffused all over the shell and rarely jumped across at the points. I think that when cleaning a spark plug one often overlooks the necessity of thoroughly cleaning it inside and out; the points, if the rest is clean, being of secondary importance.

Loose Fly-wheel.

C. Hart (Coventry) writes:—I have a Lamaudiere motor-bicycle, and have had a deal of trouble with the fly-wheel, which works loose on the crank shaft and has smashed one shaft. The weight of the fly-wheel is 15 lbs. and the engine is 2¼ h.p. with good compression. Could you tell me if the fly-wheel is too heavy; if so, how much shall I take off, and how would you advise me to fasten the fly-wheel to the crank?—You can only fit the wheel on its present, by a special key. This requires to be very accurately made; and then, if possible, have a couple of lock nuts on the end of axle. The work requires very carefully doing, or the wheel will not run true. Should not reduce weight of wheel.

Various Queries.

H. Pullman (Nottingham).—(1) Yes, we should advise you to clean out the cells and refill with fresh acid. The powder you speak of is from the plates. (2) The small coils sold at opticians' shops are of no real service for ignition; the insulation is nothing like good enough. (3) You will not improve on ordinary castor oil for your belt; this is grand stuff for making a belt pliable. (4) The F.N. motor works up to about 1,600 revolutions per minute. (5) We have obtained good results from a piece of very thin sheet rubber composition packing: this is about 1-32nd inch thick, and is best obtained from a dealer in engineers' supplies. (6) We should not advise you to alter your present flat belt drive: you might improve matters by fitting a belt guard to keep mud and grit off the belt. (7) We have to accept makers' claims as to the horse-power for the simple reason that there is no easily applied means of testing it; that is, to find out the foot-pounds of energy developed!

"Somerset" (Weston-super-Mare).—(1) Your present carburetter would do, we think. (2) We are promised several two-speed gears at the Shows. We know nothing at present that you can go in for and fit straight away to your machine. We do not advise the dismantling of a standard machine for the fitting of larger engines, speed gears, and experimental devices; the results are rarely satisfactory, and heavy expenses are incurred: if a really good thing can be fitted to an existing machine the firm who made the machine will be found as a rule only too willing to fit it: many high grade mounts have been spoilt by letting a local man try experiments with them.

ANSWERS BY POST.

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

Thursday, October 29th.—J. McKerrow (Cumnock), C. E. Lowndes (York), J. E. Cave (Rushden), H. Thomas (Cardiff), J. Marshall (Wigan), A. Berrill (S. Woodford), A. L. Farrow (Oldham), E. T. Chamberlain (Banstead), A. B. Cary (Hythe), H. Dexter (Oakham).

Friday, October 30th.—W. J. Purser (Freshwater), C. H. Smith (Derby), J. Herbert (Hucknall Torkard), F. Murrin (Torquay), W. J. Bertram (Rothbury), J. C. West (Tame), C. E. Pain (Whitchurch), C. W. Fulton (Paisley), W. Gooch (Upper Sydenham), T. Smith (Urmston), L. Wallace (Liverpool), Pearson Bros. (Southsea), T. H. Barton (Little Eaton).

Saturday, October 31st.—A. N. Booth (Scarboro'), C. S. Edmonds (Birmingham), J. H. Thwaites (Huntingdon), J. Cernes (Wombwell), R. S. Stuart (Folkestone), W. Keating (Dublin).

Monday, November 2nd.—A. P. Wilson (Bristol), Mann, Egerton and Co. (Norwich), L. Edson (Barnsley), G. H. Barnes (Colne), P. W. White (West Hampstead), H. Tallents (Oxford), P. Mitchell (Farnham), L. H. Holliday (Streatham), C. S. Stock (Wimbledon), T. C. Thompson (Kettering), P. Spicer (Leamington), G. G. Fritz (Harborne).

Tuesday, November 3rd.—May Bros (London), H. A. Neal (Gainsboro'), J. H. Gibbon (Plymouth), B. Bolt (Aston), V.K.K. (Kensington), E. G. Allison (Sunderland), K. Davies (Llwynann), W. Singleton (Hull), A. Dorleans (Old Windsor), A. W. Dawes (Willenhall), E. Nixon (Sheffield), F. Scowcroft (Pembroke), G. Gribbon (London, W.), J. Taylor (Oldham), W. R. Coates (York), E. Byron (Bury), H. Gibson (Birmingham), T. Jones (Nantwich), A. Harris (Leyton), W. H. Cheetham (Sale), W. Higgins (Fulham), J. G. Wilkins (Walworth).

Wednesday, November 4th.—G. H. Barnes (Lewisham), S. H. Green (Preston), A. Gander (London), W. J. Powell (St. Columb), R. A. Wellsley (Bedford), S. A. Westropp (London), W. J. Pearce (Romsey), H. Haddon (Cardiff), B. H. Carr (Exeter), J. Lindsell (Peckham), Lake and Elliot (Braintree), H. A. Entract (Highbury), H. G. Turner (Brighton), F. W. Porter (Welwyn).