

The Motor

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INCORPORATING Motor Cycling & Motoring

SOME EXPERIENCES ON A LIGHT CAR. (Concluded.)

By E. DOUGLAS FAWCETT.

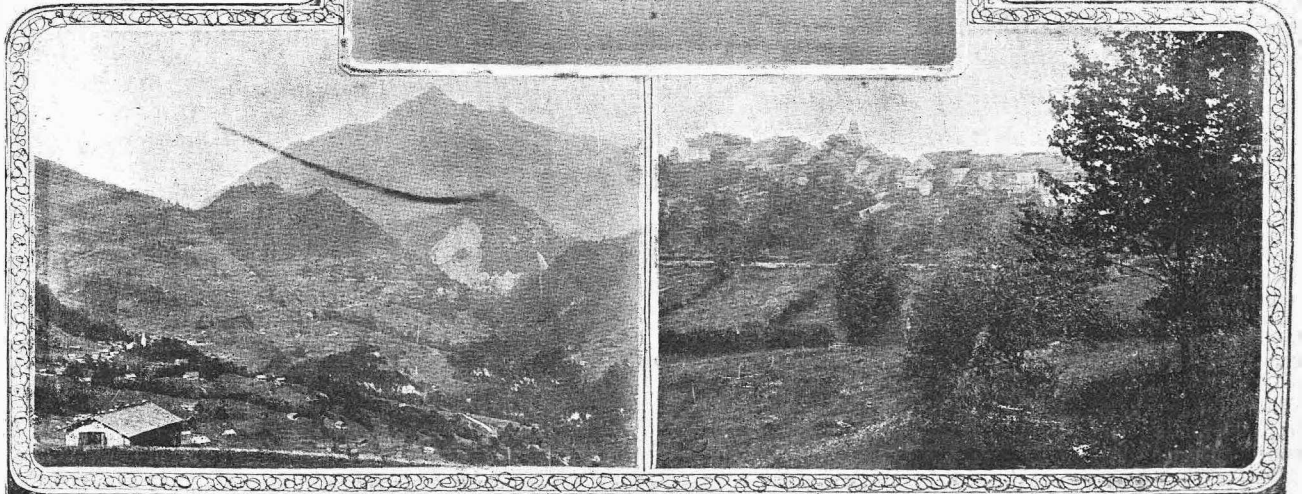
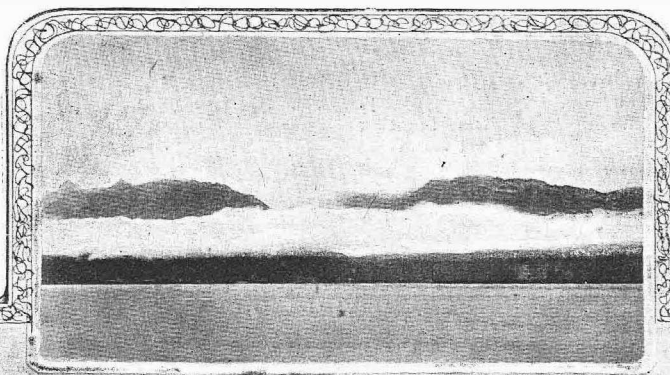
A three-speed 6 h.p. De Dion would, of course, be welcome, and I believe that such an improvement is already being contemplated at the works. However, if we care to run on the reverse there is nothing which can bid us pause.

But, without resorting to the *marche arriere*, one can tackle terribly long and exacting ascents. I started recently to ascend to Champéry in the Valais, but was turned back at Monthey, cars being forbidden the road. Determined to climb something, I crossed the Rhone Valley to Aigle and took the car $7\frac{1}{2}$ miles up the very picturesque ascent that leads to the mountain village of Sepey. Not content with this test, we turned to the left and mounted right up to Leysin—to my thinking a superb performance for a little car of the two-speed type. Leysin, which has earned renown as a resort of consumptives, lies about 4,700 feet above the sea, offering its visitors a glorious view of the Rhone Valley and the splendidly-peaked Dent du Midi. Above and behind soar the rock-towers of the Tours d'Al, some 7,600 feet in height. During the descent to Sepey, the fibre casing of my right back brake overheated and gave off quantities of smoke, and I was compelled to cool brakes and drums at a wayside spring. The footbrake was not sufficient to hold the car, the "sabot" being some-

what worn. We returned home without further incident, save that near Ivorne a horse, on sight of us, snapped both shafts of a hay cart in executing a feat of equine gymnastics. The valley horses are apt to be restive; many being only brought on to the main roads for special work. Just then one of the great hay harvestings of the Rhone Valley was in full swing. Loud, and doubtless instructive language reached us from other hay carts, drawn by steeds of similar temperaments, but fortunately there were no further misadventures to chronicle.

To sum up. The car has been a complete success. It has never yet failed me—has never once been *en panne*, for really I cannot take trembler troubles seriously. The engine and transmission gear work to perfection. Call this 6 h.p. a "run-about" if you will, but if so I know not what is your purpose. It is better to "run about" than to "stick" (as do so many bigger cars, and that with pain-

ful frequency), on the road-sides, and if one is satisfied with two seats and ample luggage space, I can certainly say that the ordinary 6 h.p. De Dion is good enough to take anywhere. Great speed for a touring car is superfluous, that is to say, if the usual attractions of touring are borne in mind. The small car—easily cleaned, greased, and maintained



1.—Cloud effect (twilight) seen across the lake from St. Gingolph over Montreux and Villeneuve. (The mountains range from about 5,500 to 7,500 feet in height.)
2.—View from the heights of Leysin. Note the strip of road hundreds of feet below on the right hand. The writer ascended by way of this. The road winding up the mountain in the centre leads to Chateau d'Oec over the Col des Mosses. 3.—Samberton.

Some Experiences on a Light Car—concl'd.

—which can touch its "27" for a short distance, but normally does its "19" or "20" only, which climbs well, carries ample baggage, and is run generally on the principle of pleasurable "lazing," is a highly satisfactory vehicle, and the sooner folk get to recognise the fact the better for all concerned. Only the extreme heat deters me from continuing my trip on to Naples. At present, however, I have retired to the heights of Savoy, and from a proud eminence of some 5,000 feet am reflecting



Amidst the snow-capped mountains.

complacently on the furnaces which are said to be devouring my fellow-creatures in the valleys. When I descend I may have something more to tell of the doings of our little car in the mountains. Till then, good readers—good-bye!

E. DOUGLAS FAWCETT.

At Aschaffenburg next November the first German public school for chauffeurs is to be opened in connection with the local Polytechnic. The curriculum will comprise theoretical and practical courses, geography, physics, electro-technics and motortechinics being included in the former, and workshop practice, fitting-up, and motor driving in the latter. Pupils must pass an examination before receiving a diploma. No doubt Aschaffenburg's example will speedily be followed by other German towns.

TEMPORARY USE OF GEAR WITH BROKEN TEETH.

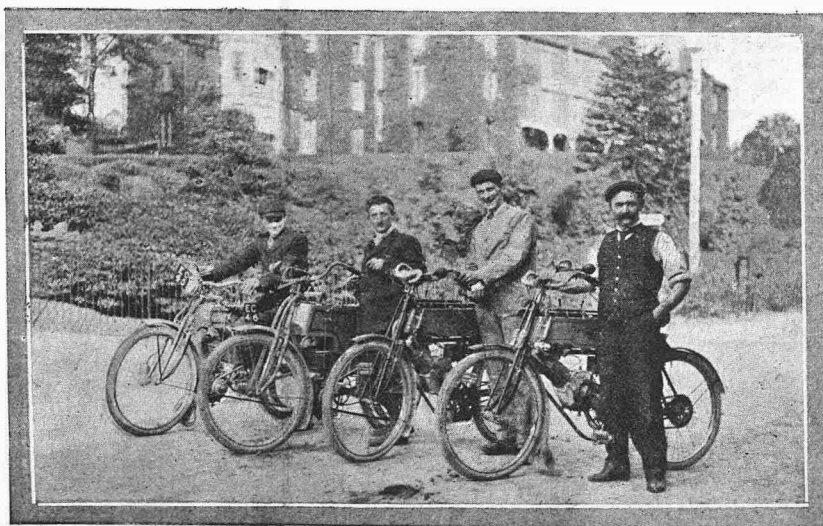
A snapping of gear teeth, whether in the change of speed or compensating gear, is usually regarded as a complicated breakdown impossible to remedy on the road. When the compensating gear is injured, it is necessary to remove the chains or universal joints, which is not a pleasant task, as the object is not to put the car in running order, but merely make it possible to have recourse to that stigma of automobilism, viz., hauling by horses. However, it is possible to put temporary "false" teeth in a gear while awaiting a new part from the works. Any motorist who can handle tools can execute the work with the skill of the most American-Parisian dentist. The method, says a French exchange, is almost the same as that employed by these dentists to replace the least attractive stumps by dazzling ivory.

In the first place, the break in the teeth must be filed up level, so as to remove what remains. Then take three small pieces of metal, bronze or soft steel, and give them exactly the dimensions of the lost teeth. Then fix them on a pivot, which must be screwed, and after drilling the broken gear with three holes close together per tooth broken, the new teeth can be firmly screwed by the pivot on the wheel. They can then be soldered together to prevent loosening. The broken tooth, which was solid, will then be replaced by three small sections of teeth of the same size, two of them being at the place of its extremities, and one in middle. When the work is well done, the car can be run until a new wheel arrives from the works. This avoids troublesome delays.

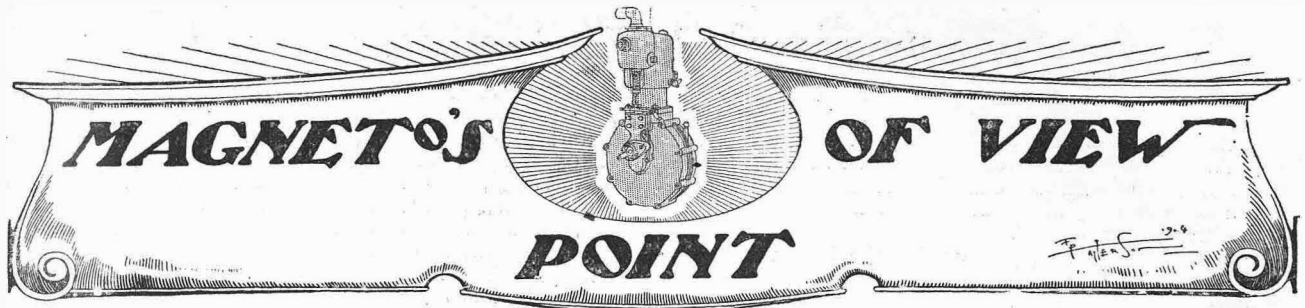
MAINTENANCE OF CHAIN GEAR.

As many cars have chain gear drive fitted, the question of their maintenance will be interesting to many chauffeurs. How many can attend to them properly? Certainly not ten per cent. The chain is the only mechanical part of the car which, in spite of its constant work, must not be greased or oiled. Why this exception? Because all the other parts to be oiled dip into oil or grease, and are consequently always supplied with a pure lubricant. Chains, on the contrary, are brought into contact with the most varied substances, dust, mud, grit, etc. If the chain is greasy it will pick up anything within reach, and will soon be coated with a kind of emery paste which grinds away the links, as also the teeth of the wheels, and after long journeys they would be as sharp as the spur rowels of an Arab. Chains should be oiled as follow: Remove the chain, wipe it, and then dip it into a basin of petroleum (not spirit). Leave it there a few minutes, moving all the links about so that the oil will penetrate everywhere, and clean out the grit. Now take it out and wipe it carefully. If it was very dirty, and the petroleum is full of grit, etc., repeat the operation in fresh oil.

In the next place mix a kilogramme (2 lb. 2 oz.) of hot virgin wax and 5 litres (9 pints) of animal oil (neat's foot oil). Dip the chain in this mixture without removing it from the fire until the air in the links has been driven out; then remove the chain, and when cool wipe it dry. There will be no further need to clean the chain for a long time; it will remain dry on the exterior and well-oiled in all joints.



Photograph of four motor-bicycles which recently climbed Kirkstone Pass (Cumberland). The machines were ridden by Mr. J. Braithwaite, Windermere (3 h.p. Rex); Mr. W. C. Skelton, Ambleside (3 h.p. Rex); Mr. C. Tatham, Windermere (3 h.p. Humber); Mr. W. Hodgson, Windermere (3 h.p. Humber).



Some Curious Breakdowns in Sparking Plugs.

I was trying a new porcelain plug recently, the makers of which claimed that it was unbreakable and that short circuits were impossible. I got exactly five miles out of this, and then the engine stopped dead. At the moment I did not suspect that it was the plug that was the cause of the trouble, and my first impulse was to have a look at the carburetter jet; but, as I had lubricated the engine pretty freely soon after starting, it was just possible, thought I, that the plug points had got fouled up. I quickly had the plug out of the cylinder, and, sure enough, there was a small globule of oil right across the points. I thoroughly cleaned up the points and replaced plug—meanwhile the usual crowd of small boys had appeared round the machine, where they sprang from was a mystery—and, anxious to get away, I mounted and attempted to start, but not a single explosion could I get. I pedalled till I came to a quiet side road, and then tried the spark from the end of the high tension wire to the frame. There was no doubt about this being all right. I took the plug out again, joined the cable to it, and started the coil, but not a vestige of spark appeared at the points. There was no trace of a crack on the porcelain, so the whole thing looked mysterious. Keeping the coil trembler going for a few moments longer, I was surprised to notice a sharp puff of smoke shoot out from between the lower part of plug shell and the porcelain.

A HIDDEN CRACK.

I then saw at once what was wrong: the porcelain had cracked right inside the shell, and the spark was gaily short-circuiting through it. The smoke was obviously from some oil that had saturated the crack. I threw the plug away—to all appearances a brand new and perfect plug—and put in an E.I.C., and rode off without more ado. I had one E.I.C. plug, which did service a little over 2,000 miles, and I never had to clean it once. I thought it was going to last for ever, but one day I tried to start, and could not get the engine to fire, although the evening before it ran perfectly. I put in the spare plug, and tested the other one at leisure. It exhibited a curious feature; now and again a spark would jump the points, but most of the time tiny, albeit brilliant stars of light shot out here and there from the mica core close up to the steel body of the plug. In the dark the whole

of the mica seemed aglow, and the effect of the sparks was pretty indeed. What had happened to this plug was simply that the mica had become porous, as it were, through long-continued use, forming numerous places for the spark to leak through.

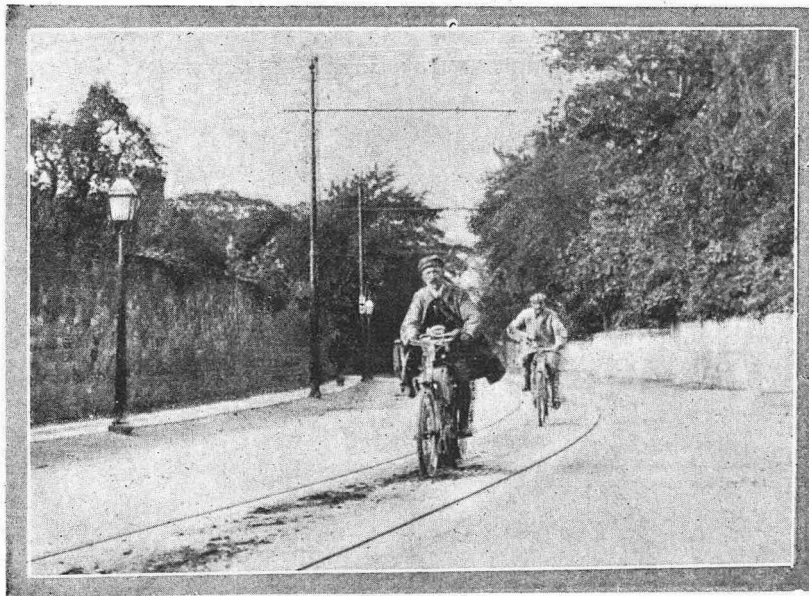
LOSS OF COMPRESSION THROUGH THE PACKING.

Of the many porcelain plugs I have tested, the majority, in a more or less degree, leaked under the pressure of the explosion, although they seemed tight enough against the compression. My favourite plan of proving this was to inject a liberal dose of paraffin into the combustion chamber and watch the plug. Nearly always a tiny puff of smoke would issue from between the packing nut and porcelain. In one or two I have had lubricating oil percolate through, causing dust to gather on the porcelain and provoke leakage of the current. I believe many riders little suspect that a very fair loss may occur through leakage of explosion pressure at the plug. One of the best porcelain plugs I had was a little Castle, costing 2s., I believe. This stood a season's hard work, but finally succumbed to an almost imperceptible crack right across the inner face of the porcelain. Two oil proof plugs I had cracked the first time of testing, simply through the oil splashing on the hot porcelain.

Will the Mechanical Inlet Valve Survive?

Some two seasons ago the coming of the mechanical inlet valve was boomed right and left as the greatest advance in motorcycle engine construction since the motor-bicycle was introduced as a practical machine. It is not a little interesting to recall the prophecies then made that the so-called antiquated automatic inlet valve was doomed to such an extent that the season of 1904 would see it absolutely disappear from every machine having a reputation to lose.

During the past few weeks I have heard from many experienced riders—some of them connected with the manufacture of machines—that it is their firm opinion that the superiority of the mechanical valve over the automatic valve has never been established, despite the amount of booming done on its behalf. At the time everyone was talking about mechanical valves and the advantages that would accrue, I must confess I did not share their enthusiasm. I thought that even if there was a slight gain in power by adopting the valve it would not pay in the long run, as it would cause extra wear.



THE MOTORCYCLE TRIALS.

The Quadrant and Brown Machines speeding through Wakefield.

TWO NOVICES' MOTORCYCLE MISADVENTURES.

A CHAPTER OF ACCIDENTS.

On the Saturday preceding the August Bank Holiday, a friend and myself started from Chelmsford at about three o'clock in the afternoon to spend the week-end at Ashford in Kent, a distance of 65 miles, which we finally accomplished after a series of adventures.

Six miles on the road, just outside the little village of Ingatestone, I had the misfortune to break a gudgeon pin (the third in a fortnight!). Fortunately, we found a repairer who put in two new pins "guaranteed not to come out by fair means," and after 3½ hours' delay, we were spinning along again full of hope. We had sent a wire to Ashford saying we should be late for dinner, and this turned out to be the case. About a mile further on we ran into a huge rain storm, and got soaked; but we stuck to it, and after about half-an-hour the sun came out again.

Then my friend found one of his accumulators had given out, but as he said it had not been recently charged, we thought nothing of it, and switched on to the other one. Presently he started misfiring, and we discovered the porcelain of the plug was cracked. Having put in a fresh plug, we went on, and arrived at Gravesend without further mishaps. We lighted up there, and went on for two miles at a good bat, patting ourselves on the back at the good behaviour of our motors. Two miles further on

MY FRIEND'S MOTOR SUDDENLY STOPPED DEAD,

to his great disgust. In a very few minutes we discovered that the nut which holds the contact breaker on the square shaft (which we afterwards discovered was also the timing shaft) had fallen off, and there was only a contact when the vibration caused it to shake about.

Well, we replaced the nut, and, of course, fitted it wrongly! Then my friend pedalled the machine up and down the road, but no explosions followed. After that we turned our attention to the carburetter, and had it all to pieces, putting in a new spray. More pedalling—still no results. Then the belt slipped and would not pass the compression, so we shortened it. We had another look at the accumulators, and found that when testing them, the sheet of rubber between the terminals of the coil and the accumulators had not been replaced, the result being a "short" between them. There was nothing to be done—so

I TOWED MY CHUM INTO STROOD,

five miles on, arriving at 11.30, having had two hours by the roadside. We were again fortunate enough to find a

repairer, who said he could fit us up with a tricycle accumulator slung in a tool bag. We walked over the bridge into Rochester, and refreshed the inner man at a Swiss cafe. At 12 o'clock we went back, expecting to find the machine ready, but, alas and alack, the fun was only just beginning!

Four solid hours more did we stay in that workshop! The timing gear had to be put right, carburetter had to be pulled to pieces and the original spray replaced; and then, after the contact breaker had been adjusted, we discovered that the petrol pipe had begun to leak all over the place. As a grand finale, the wires to the outside accumulator kept on breaking. My unfortunate companion sat on the bike and pedalled at intervals, while I lay on the floor and tried to sleep—vain hopes—as the beastly motor back-fired when it fired at all!

WE FINALLY GOT AWAY

at 4 a.m., in pouring rain, and, beyond a fouled plug, two broken wires, and a B. and S. at Maidstone, had no further stoppages.

The man at Strood showed us a nice little 2½ h.p. bike he had just finished building, and we have since learnt that he secured the gold medal at Maidstone on Bank Holiday in the five miles handicap. We finally reached Ashford at 7 a.m., having been exactly 16 hours covering 65 miles!!!

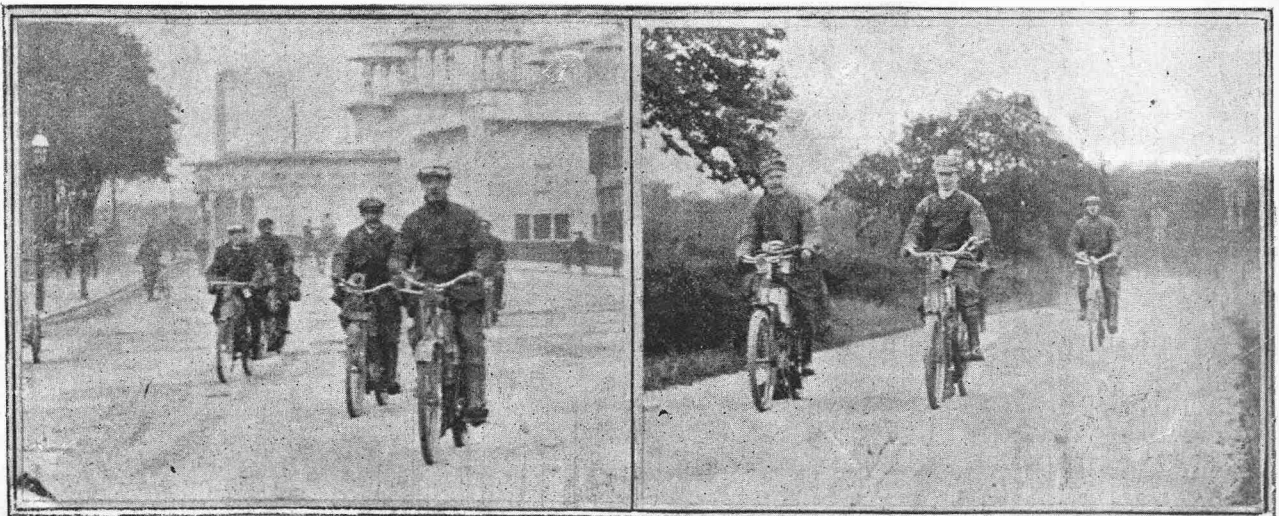
We spent most of Sunday morning at a repairer's, and after dinner the "guaranteed" gudgeon pin fell rather ostentatiously into the crank chamber!!!

I was ignominiously towed back to the repairer, and we left the bike with him.

I now have two pins that I fancy will hold—in fact, I do not see how they can come out. When I have tested them a little longer I will explain how they are fixed, for the benefit of "THE MOTOR" readers. Out of the time between Saturday afternoon and Tuesday morning, we spent 14 hours in repair, and had 14 hours' sleep!!!

We started back at 5 o'clock on Tuesday morning, and reached Chelmsford at 8.30 without any mishaps, having had the most adventurous Bank Holiday we have ever spent. And I verily believe we are keener on "the sport" than ever! Experience is the best of all teachers, and the series of mishaps which I have detailed were not without their valuable lessons to we two novices.

LIFFORD HEWITT.



THE AUTO-CYCLE CLUB'S 1,000 MILES' TRIAL.

(1) Competitors just leaving Nottingham.

(2) The Bradbury Humber and Alldays machines entering Wakefield.

THE SMALL HIGH-SPEED ENGINE.

"Magneto" discusses its practicability and offers some suggestions.

As it appears very probable that a demand will arise for a small engine that will be more powerful for its size compared with any of those now in use on motorcycles; it may be of interest to consider in what direction the present system of construction might be modified to meet requirements. The main principle upon which such a type of engine must be based is its high maximum speed, because owing to the small cylinder capacity that can be used the explosive impulses will necessarily be small, so that a greater number must occur in a given period to get a given amount of power. Now it must be remembered that a point is soon reached at which, although the speed may be increasing, the power is falling rapidly. One main reason for this being the impossibility of igniting the mixture rapidly enough, and the combustion being thereby incomplete, the full expansion, or rather the full pressure of the exploded gases, is not developed. Another reason is that the friction losses in the engine increase out of proportion to the speed. Experiments have been made on the subject and approximately at

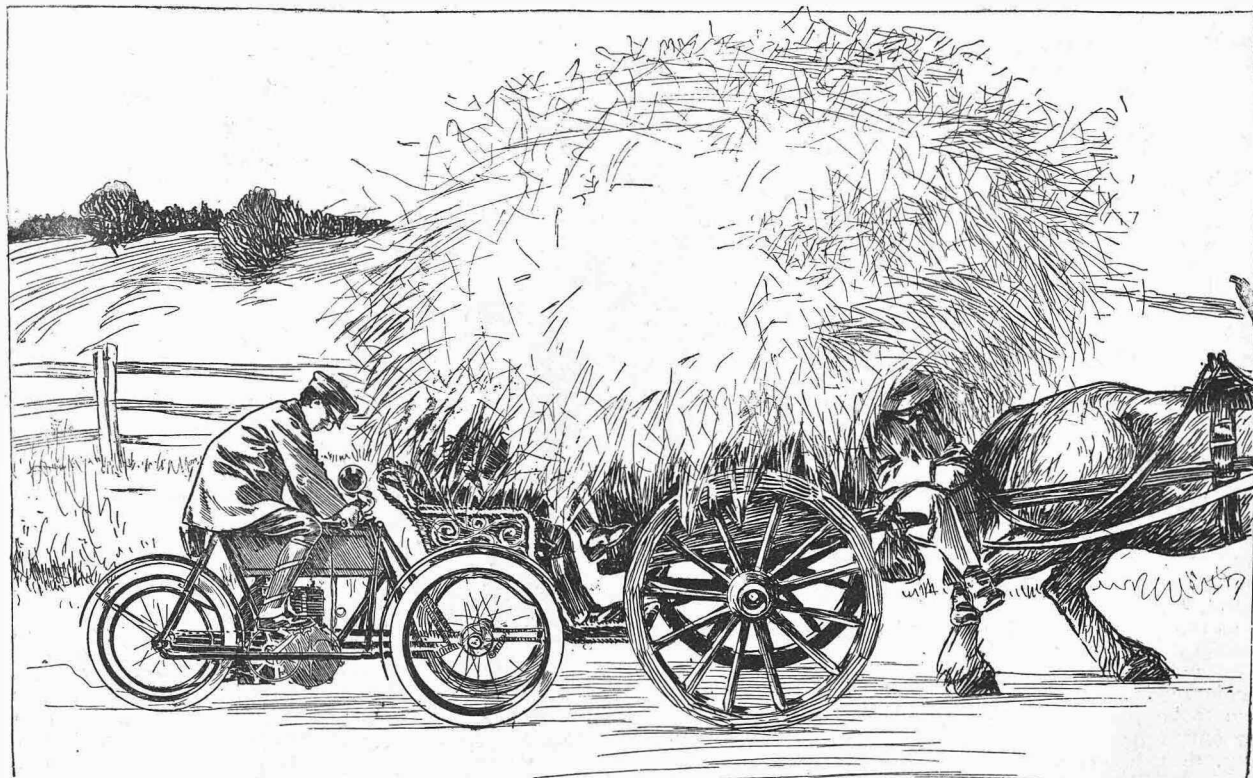
SPEEDS OF 2,700 TO 3,000 REVOLUTIONS

per minute it was found that the power curve began to fall, even using ignition apparatus specially suited for giving extremely rapid sparks. It was also found that the inertia of the valves to be overcome at such high velocities accounted for considerable loss of power. It might, then, be safe to say that such an engine as is under consideration might be expected to develop full power at 2,500 revolutions. Now with regard to power, suppose we stipulate for 2 h.p. What size of cylinder will give this? The experiments made by Professor Callendar some time ago with a cylinder having a capacity of 198,000 cubic milli-

metres piston displacement, proved that 2½ h.p. indicated could be obtained. This meant that less than 2 h.p. would be available for useful work at the engine pulley. The balance of the power would be lost in the engine. These dimensions would be ample if the compression was increased a little to get the higher speed, i.e., 2,500 instead of 2,000, and if the bearing friction could be minimised in some way. Piston friction cannot be reduced assuming that the cylinder is ground and polished to a high degree and a good quality engine oil used for lubricating the cylinder.

BALL BEARINGS MIGHT PROVE TO BE THE SOLUTION

of the friction problem. These could be applied to the crank end of the connecting rod and also to the main bearings. Roller bearings, it might be mentioned, have been successfully used in the Singer motor for the main shaft bearings. The ease with which ball bearings can be adjusted and their simple construction are important advantages. To get smooth running with a high speed engine it is vitally important to have the piston and connecting rod as light as possible without sacrificing strength. There is no doubt that a pressed steel piston would be ideal if the difficulties of making the grooves and securing the gudgeon pin could be surmounted. A method of carrying the pin suggests itself in the shape of a steel casting or bracket clamping through the piston head, or there might be enough metal to take two or three threads and then a thin lock nut would suffice to secure it. It might be thought by some that there would be a chance of compression leakage here; but in reality this would not be so, as there would be a gas-tight seating top and bottom of the bracket. Now with regard to the connecting rod, there is



The Unexpected often happens in Motoring.

scope for development here. Why not make this of a steel tube with the ends lapped and brazed to eyes for carrying the bearings? This would give an ideally light and strong connecting rod. It would have the disadvantage of being more expensive to make than the usual pattern machined up from a steel stamping. Even if this latter pattern were retained it could be very appreciably lightened in the web. It is an undoubted fact that the outside fly-wheel type of engine lends itself to lighter design than the inside fly-wheel type. The crank case is very much smaller, and the fly-wheel of relatively much greater diameter and consequent efficiency at a minimum weight. A diameter of 10½ inches and 7 lb. of metal in the rim would give a very suitable fly-wheel for the 2 h.p. engine under consideration. It is a question whether this should have arms joining to the hub or a plain disc centre. An ideal fly-wheel would be a perfectly turned rim spoked by fine wires to the hub in the same manner as a bicycle wheel is built up. Although this doubtless would suffice for an experimental machine it would not be a workable design for road use. The wheel would best be made as

A MALLEABLE STEEL CASTING,

or a forging, and the main features kept in view, namely (1) to have the web or centre as light as possible, and all the weight available at the periphery; (2) to be turned mathematically true; (3) secured to the shaft by a good long boss. There are two methods for securing the wheel, either by a tapered axle end and feather, or by screwing it on the shaft as was done in the early F.N. engine. The latter method is perhaps the more mechanical, but on the other hand it is a more expensive method. The cylinder so far has not been considered. It is possible now to get a cast cylinder machined up to such a fine pitch that it is questionable if much would be gained by adopting a steel cylinder. The steel cylinder could be slightly thinner and be equally capable of withstanding the explosion stresses, but there are mechanical difficulties in the way. There is the combustion chamber to provide and also the radiators for same and cylinder. A miniature cylinder could be pressed complete with its combustion chamber and radiators dispensed with altogether, as was done on a very small engine at the last Paris show, but for the size of cylinder under consideration this would not do at all. A compromise would seem to be the best way out of the difficulty, thus, to use a plain steel tube cylinder and a cast head with the valves in it. The cylinder

radiators would be of sheet copper à la Aster "principle." It should be borne in mind that by having the combustion head and cylinder in two parts there are distinct advantages gained over the one piece cylinder and head. If the valves are in the head a symmetrical combustion chamber is obtained and objectionable pockets for retaining hot gases and thereby causing pre-ignition are done away with entirely. The head can be quickly removed and kept clear from deposits of burnt oil, an almost impossible operation with a one-piece cylinder and head. It is surprising that this advantage is not more fully recognised, as there can be no doubt of the much better working of an engine having a perfectly clean combustion chamber. The joint between the two parts is considered by many the worst feature of the system, but really nothing could make a better gas-tight joint than two perfectly turned and ground faces. If this is done it is only a question of providing a good method for clamping the head on to the cylinder so that there will be no chance of unequal pressure being applied.

THE INTRODUCTION OF COPPER WASHERS

is quite unnecessary with carefully ground joints, the use of them in fact being conducive to leakage. With regard to the valves, the exhaust would be operated by a push rod and rocker similar to the Clement, J.A.P., and Buchet engines, a perfectly efficient system simple in construction and nothing about it to go wrong. There are critics who object to the system—why it is hard to say. There are obvious advantages inasmuch as the valve springs are kept quite cool by the air draught and not sheltered at the side as in the ordinary engine. The valves are working in full view of the rider, and a defect in either is at once perceived; such, for instance, as the inlet valve sticking or the exhaust cotter breaking. The two to one gear might very well run on adjustable ball bearings, as there is a lot of friction to be got rid of here caused by the thrust of the valve spring. Should plain bearings be retained instead of ball bearings, it is imperative that they should be made of case-hardened steel, and not of phosphor bronze, this being altogether unsuited to stand the wear. A really well-finished steel bearing kept properly lubricated should be almost everlasting. The seizing of a steel bearing can only be due to failure of the lubrication. Such a contingency should not be difficult to provide for. It would, of course, be imperative to have the shaft case hardened as well as the bearing. Otherwise the wear would be transferred from bearings to shaft, a very undesirable feature. "MAGNETO."



SHORT-SIGHTED MOTORIST: Could you tell me where this road leads to?

The Motor

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OPINION.

The Light Car Trials.

Following hard upon the trials of motorcycles which were reported last week, the trials of light cars have already commenced. In all the official announcements of these events the Automobile Club has referred to "Small Cars": we have preferred all along to describe the trials as "light car" trials, a term which has been familiarised by long use, and which neither implies insignificance nor suggests a sort of secondary importance. It is safe to say that these trials will be followed with the very greatest interest by the public, and we have made special arrangements for observing, reporting upon the behaviour of the vehicles taking part, and for illustrating interesting incidents during the trials. We have for some weeks past been giving exhaustive details and illustrations of the various cars taking part in the trials, and the concluding series of descriptions and illustrations appears in this issue. We have not been able to find room for particulars of every car, but after the trials we shall commence a series of interesting illustrated articles dealing with the successful cars in a very thorough manner. The next issue will contain the first complete report of the whole series of runs, together with photographic illustrations and incidental sketches by our special artist, who will follow the events throughout. No effort will be spared to make "THE MOTOR" report thoroughly interesting, instructive, and, above all, reliable.

The Popularity of the Tri-car.

During the last two years the motorcycle with a fore-carriage attachment for a second passenger has steadily grown in popularity, and the outlook at the present time seems to indicate that the demand for the lightest and cheapest form of sociable automobile is likely to considerably increase. Apart from the sociability which it provides, the tri-car has reached such a very high state of reliability and all-round efficiency that to the man of limited means who cannot afford a car and yet desires something beyond a motor-bicycle, it forms an ideal compromise. As a touring vehicle it is a delightful conveyance, and that it can stand the racket of severe and continuous strain has been demonstrated again and again, both by private users and in competitions. Manufacturers have made more strides with this class of vehicle than with the single track automobile, and the tri-car of to-day possesses many of the refinements which belong to the heavier types of automobiles. The general tendency is to adopt the free engine and two speeds, and in this we see much wisdom, for the former facilitates starting and the latter is essential if hills of average gradients are to be negotiated without recourse

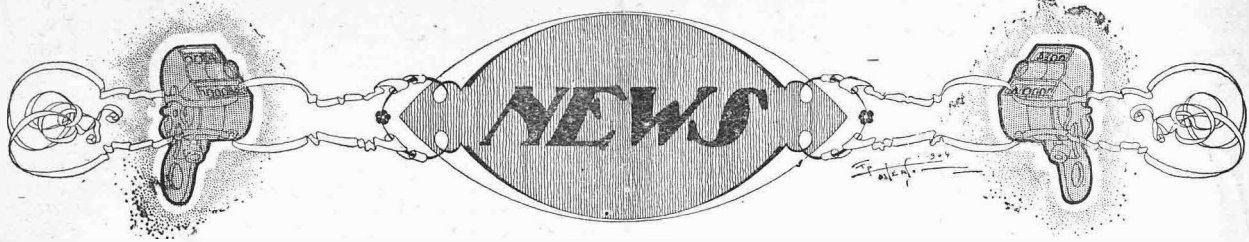
to muscular effort. There is also a general tendency towards the abolition of pedals; there are arguments both for and against the pedalless machine, but pedals as a stand-by are no mean factors of convenience at times, although the fact that so many makers have already, or are seriously thinking of dispensing with them, is, we think, eloquent testimony to the efficiency of the tri-car of to-day. If anything, the majority of the machines err on the side of weight; while, of course, the keeping down of the weight is not so necessary in tri-cars as in the case of the bicycle types, makers should not lose sight of it altogether. The legal limit in this respect is 3 cwt., but there are very few of the machines that are turned out at the present time which do not exceed this, thus rendering the users liable to payment for a full car license. We would particularly urge makers to pay attention to this. There is no necessity why a 4½ h.p. water-cooled tri-car (and we do not recommend machines of less power) should not come well under the limit, providing due and proper regard is paid to the detail work. In most instances the castings are too heavy, and the engines generally too weighty. We can foresee many changes in this respect in the early future, and amongst these will be the wide adoption of the outside flywheel, with its attendant advantages. The evolution of the tri-car is proceeding satisfactorily, and at the moment it is a vehicle which deserves the popularity it has commanded.

The Fallible Police.

It is no exaggeration to say that the disclosures which have been made in the Beck case have brought to light the utter unreliability of police evidence. In the case of this unfortunate man, who has suffered so much, the effects of the miscarriage of justice have been so terrible that it seems quite absurd to name them side by side with the minor sufferings of the motorist who is the victim of the over-zealous police. Yet there is a striking lesson to be learnt from the one case and applied to the other. In the case of the motorist we have shown over and over again that if the police get what they call "a case," their policy is to go through with it at all hazards, and in so doing they are not over particular as to the manner in which they keep their "end up." In the case of the unfortunate man, Beck, we see what this policy means when the charge is a criminal one involving social status, private character, business reputation, and even life itself. The Englishman has grown accustomed to believing implicitly that our system of criminal jurisprudence is so sound that, should he be unjustly involved in ever such a trumped-up charge, Justice, stern and unerring, will see him righted; that is a wholesome confidence, but it has lately been rudely shaken, if not quite removed. While it is, fortunately, still possible to believe in the absolute purity of those who sit in judgment, it is not safe to rely upon a system which allows a department charged with a grave duty to perpetuate rather than admit an error. The lesson which this important case teaches is one which minor cases have proved before—that the policeman and the police system are individually and fundamentally fallible. Magistrates and justices of the peace will be breaking away from long-cherished traditions in accepting this theory, but they must really steel themselves to make the effort to do so!

THE LIGHT CAR TRIALS.

In the next issue of "THE MOTOR" we shall give very full detailed reports of each day's run in the Light Car Trials. Special representatives of "THE MOTOR" have been sent to Hereford for this purpose, and the most complete arrangements have been made for writers, photographers, and an artist to follow the cars taking part and to observe, record, and illustrate their doings. "THE MOTOR" of Tuesday next will contain the first full report of, and lengthy comment on, the whole of the trials from start to finish.



Next week.

"THE MOTOR" will contain the first complete report of the Light Car Trials.

We have made complete arrangements for following the events from beginning to end.

Illustrations of the various incidents of the trials will be contributed in the form of photographs and special drawings.

We are asked to state that the Bat motor-bicycle which took part in the Auto-Cycle Club 1,000 miles' trial was 2½ h.p., and not 3½ as reported. The error arose through the latter figure being given in the club official programme.

The Bolton Corporation have purchased at the cost of £800, another motor 'bus, to ply between the town and Darcy Lever, two miles away. The trials have been very satisfactory, and the regular service is to commence shortly.

The Italian Motor Club is organising for the third time the Pontassieve-La Cesuma hill-climbing competition, open to touring cars and racers. Prizes are to consist of objects of art and medals. September 11th has been fixed for the event.

The Hull Automobile Club has recently been formed in the town, and already boasts a membership of over forty. The preliminary run took place to Welton on the 18th inst., and thirty-three members were present. We trust this enthusiasm will continue.

A motorist, who was charged with being intoxicated when in charge of his car, was promptly arrested by an alert policeman at Lytham, whereupon the motorist obligingly drove himself and the officer to the police station, where he was conducted to the cells. The case was afterwards dismissed.

Coming Events.

- Aug. 27—Sep. 4. Brescia Automobile Week (Italy).
- " 29— " 3. Automobile Club's Reliability Trials for Light Cars.
- Sept. 1. Deauville Automobile Meeting.
- " 2. Chateau-Thierry Hill climb.
- " 3. Southern M.C. Hill Climb (passenger carrying).
- " 3. Wolverhampton Automobile Club Fuel Consumption Trials (Market Drayton).
- " 6, 7. Irish Automobile Club's Meeting at Portmarnock.
- " 10. Motor C.C. Reliability Runs for the Brown Trophy.
- " 10. Hertfordshire Automobile Club's Hill Climb, near Wendover.
- " 17. Southern M.C. Hill Climb (singles).
- " 24. Auto-Cycle Club races at Crystal Palace.
- . Midland A.C. Speed Trials.
- Oct. 5. D'ourdan Kilometre Trials.
- " 8. Vanderbilt Cup in America.
- " 9. Gaillon Hill Climb.
- " 14. Leipzig Motor Show.
- Dec. 9 to 26. French Automobile Salon (Grand Palais, Paris.)

The Berkshire A.C. meet on the 24th September, will be at Easthampstead Park, Wokingham, by invitation of the Marquis of Downshire.

Mr. Charles Potter, of Leeds, who rode a 3½ h.p. Riley motor-bicycle in motor-cycle trials, informs us he was obliged to retire at Thirsk owing to tyre trouble only, having punctured no less than four times in as many miles, caused by three horse-shoe nails and one long sharp nail like a tack. The latter necessitated taking out the back wheel entirely and putting the tube into water in a pond to locate the cut. Altogether there are ten patches on the inner tube.

Pleasure motor boats are about to be very fully dealt with in the columns of "The Motor Boat."

General Booth continues his motor tour and is in good health, though it is reported he has lost weight.

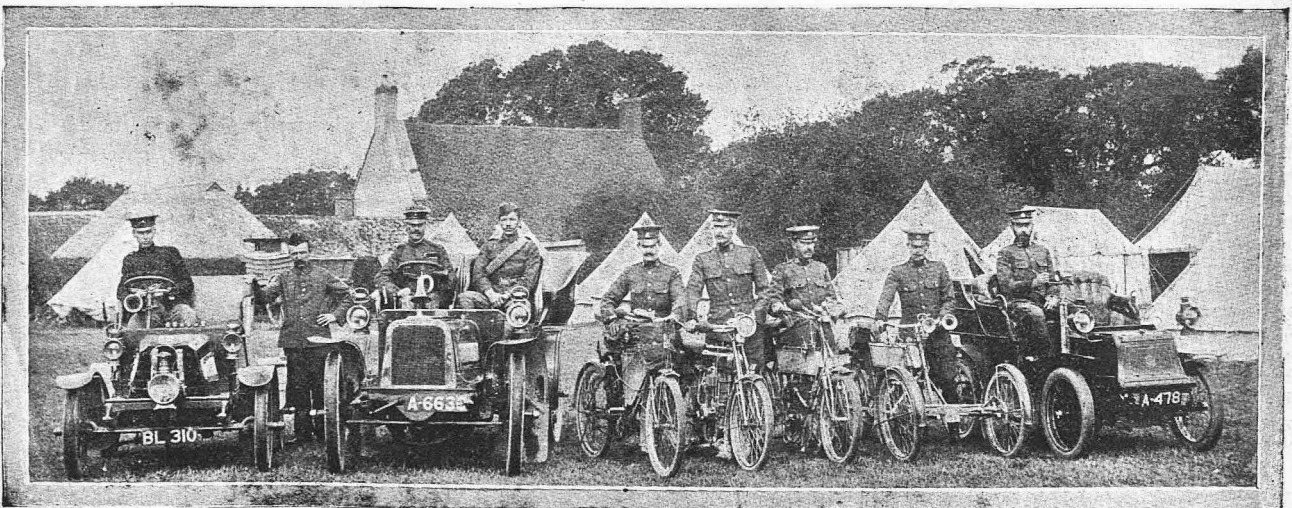
A 10 h.p. Humber car carried two representatives during the motorcycle trials and behaved splendidly throughout.

During the 1,000 miles trials for motor-cycles, Mr. H. van Hooydonk, who was the driver of the only fore-carriage to finish, ran 800 miles on a little 15 ampere Castile accumulator.

We regret to learn that Mr. G. F. Turtle, of Southampton, who met with a serious accident whilst riding his motor-bicycle in the town on July 28th, succumbed to his injuries last week.

We gave a map of the routes to be covered in the Light Car Trials in our issue of August 2nd. In our next issue the report of each day's run will be accompanied by a separate map showing very clearly the route taken by the cars on each day's journey. This will be a useful and interesting feature of our report, which will be the first complete record of the whole of the trials to be published.

An exceedingly amusing incident was witnessed in Swindon a few days since. A gentleman had stopped his car in High Street, and had left it temporarily unattended. During his absence a herd of cattle passed by, when one of the number, rather more curious than its companions, came up, sniffed at the horseless vehicle, gave a jump, and landed itself clean into the body of the car. Eventually, after a little persuasion and a good deal of force, the animal "alighted"!



MOTOR VOLUNTEERS AT SWAY CAMP, NEW FOREST.

NEWS.

The Great Western Railway Co. inaugurated a fortnight ago the first public motorcar service in Wales. Well designed steam cars now travel the eleven miles between Wrexham and Llangollen, and so far the venture has met with every success.

We understand that the well-known N.S.U. Cycle and Motor Co., Ltd., of Neckarsulm, Germany, will shortly open a depot in London. As usual, the firm will exhibit at the Stanley Show, where we understand some striking novelties will be on view.

There is a report of a Mr. Roberts, of Balham, having died while cycling in Norfolk with his wife in a trailer. Several people have connected Mr. G. F. Roberts, the late secretary of the Motor Cycling Club, with this sad incident, and that gentleman asks us to correct such erroneous impressions. The confusion has arisen from the fact that Mr. G. E. Roberts is a resident of Balham.

A motorcar exhibition is to be held in Copenhagen early in 1905 which will include motor boats in the exhibits.

The International Committee of the A.C.G.B.I. are about to consider whether it is possible to arrange a non-stop run for large cars before the close of the present season.

An unfortunate mishap occurred in Leicester on the 22nd inst. A motorcyclist was proceeding along the Western Boulevard when he collided with a perambulator, which was upset without hurting the child occupying it; but the little lad of ten years of age in charge of the baby carriage had both bones of his left leg broken.

There is no doubt that the motorcycle reliability trials aroused a vast amount of interest in every district through which the competitors passed, and it was pleasant indeed to find the police in all the towns, from the Chief Constable downwards, doing their best to facilitate the competitors' movements. Nottingham, Leicester, Norwich, and Doncaster were perhaps the most prominent in this respect.

The Vauxhall Ironworks Co., Ltd., inform us that their cars are now fitted with wheel steering and bucket seats.

The Rev. C. Jacques astonished the Chorley Rural Council the other day by dumping on the table over 200 nails of all sizes, up to four inches long, which had been collected on the main road in Brindle. They accounted for the epidemic of punctures which was prevalent in the district. More care in the laying of road material was promised.

A. A. Chase, the ex-racing man, who is now manufacturing motorcycles at Anerley, was last week summoned to the local police-court and somewhat heavily fined as a result of a collision with a pedal cyclist. Chase had three summonses for the one event, one of these being for the technical offence of carrying no driver's license, but, strange to report, this was dismissed. It was admitted by the police that both Chase and the man he collided with were not thrown; but that they dismounted from their machines on the spot. Notwithstanding, county funds were increased to the extent of some £4 10s.



FURTHER VIEWS IN CONNECTION WITH THE MOTORCYCLE 1,000 MILES' TRIALS.

1.—Highworth Control. 2.—Starting the Bradbury fore-car uphill. 3.—Crundall and his Humber leaving Thirsk for Northallerton. 4.—Griffin the first to arrive at Thirsk. 5.—A stop near Woodbridge. 6.—Leaving Warwick. 7.—Preparing to leave Ely. 8.—Hobson. 9.—Hooydonk (Timo) and Silver (Quadrant) at Colchester.

NEWS.

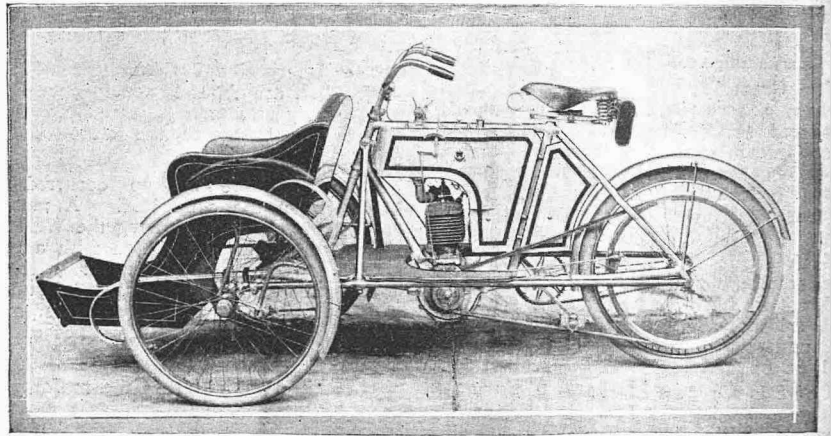
We regret to hear that Mr. E. Clark, who made such a good performance on the 2 h.p. Leader (Minerva) machine in the 1,000 miles' Auto-Cycle Club tour, is very seriously ill with enteric fever. We learn that he was unwell throughout the trial, and it was, therefore, very plucky of him to have continued.

We reproduce on this page a photo of the new 3½ h.p. Rex tri-car. This machine is a duplicate of the tricycle which has just performed so conspicuously well in the 1,000 miles' motorcycle reliability trials with the addition of coach-built front seat. The selling price of this serviceable vehicle is 60 guineas.

Record Beaten at Uxbridge.

F. E. Barker, who, at the Uxbridge sports on Wednesday last, lowered Harry Martin's five miles track record from 9 mins. 54½ secs. to 9 mins. 34½ secs., thoroughly deserved his success, for he met with enough ill-luck to make many a rider abandon the attempt. He started off well, and was travelling at a good speed when the machine side-slipped and threw him some yards. In his second attempt the saddle broke after he had gone about a couple of miles, and he was forced to pull up and make a third essay. This time, he rode without a saddle at all, simply resting on the top tube, and, as mentioned, lowered the record by nearly 20 secs. The machine was one he had assembled himself.

At the same meeting a motor pursuit race was held. In the first heat H. C. Tyler, who experienced such hard luck in the 1,000 miles trial, a pin breaking in the timing gear of his 1½ h.p. Humber, was caught by C. H. Tyler, 1 h.p. Minerva. H. C. Tyler, who is only 17 years of age, lost ground through his petrol tap being turned off, and finally came to a stop through a wire snapping from his accumulator. In the second heat, A. P. Tyler, 2½ h.p. Jap, overtook E. W. Ford, 3 h.p. Lafnir. The final resulted in favour of A. P. Tyler, on the Jap. As the race ended when one competitor overtook his opponent, it was amusing to read in one paper that the first heat was won by ten yards, the second by 20 yards, and the final by three lengths.

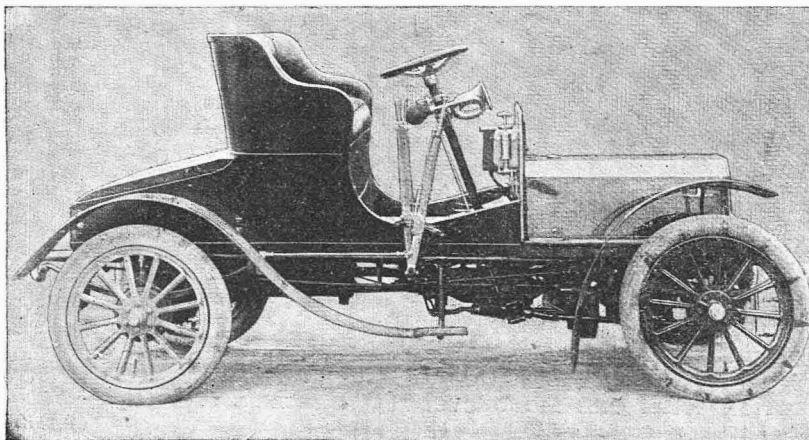


The New Rex 3½ Tri-car. This machine, minus the fore-car, performed well in the recent trials.

The 8 h.p. Enfield Light Car.

A few weeks ago we were able to give a preliminary notice of the new 8 h.p. car made by the Enfield Cycle Co., Ltd., Redditch. We are now able to supplement this by fuller details. This, the very latest production from the Redditch house, is quite up to the company's high standard of fine work, for it is an accepted axiom with all the company's officials that only the best is good enough. The two-cylinder engine has mechanically operated inlet valves, each cylinder having a bore of 4in. by 5in. stroke; it develops 8 h.p. at 1,200 revolutions per minute, and is governed on the inlet with an accelerator pedal, cutting out the governor entirely when desired. A high speed trembler coil accumulator, and wipe contact make up the electrical equipment, particular attention having been devoted to this matter. The water circulating pump is of the centrifugal type, having a leather-faced wheel on the end of the shaft, which is rotated by contact with the fly-wheel of engine. The water is thereby moved continuously through a set of gilled tubes with extra large cooling surface. Water capacity is four gallons, the tank for this being carried on the front of the dashboard. Lubrication to engine crank case etc., is by means of a forced feed from the dashboard. The latter also carries

the switch and induction coil. A Longue-mare carburetter (having a warming jacket around it) is supplied with petrol from a tank under the seats containing six gallons. The engine fly-wheel serves as the internal member of the large surfaced friction clutch, whence the drive is conveyed to the oil-tight and dust-excluding gear-box. The gear wheels in this are of good diameter and width, with the teeth very accurately cut and hardened so as to stand the fullest possible wear and bad usage. Three speeds forward (the top speed giving a practically direct drive without the intervention of any gear wheels) and a reverse are worked from a side lever. From the gear-box the drive is taken by a propeller shaft with universal joints, carrying a bevel pinion to the large bevel gear on the rear live axle; both the bevel and the axle run on ball bearings. Motion is conveyed to the steering wheels through the intervention of an enclosed rack and pinion by a handsomely finished wheel; all the control levers are brought up to the steering column, and, whilst being accessible, in no way impede free movement of the driver's limbs. One metal to metal band brake is attached to a drum on the gear-box countershaft, manoeuvred by a pedal; two hub band brakes on rear wheels receive motion from a side lever. The brakes act equally well, forward or backward, and adjustment for wear can be quickly effected. The weldless steel tubular frame is of extra heavy gauge; both sides are absolutely parallel and the ends at true right angles, securing proper alignment for the engine and gear-box suspension—a most important point for the saving of friction in the transmission system. Long elliptic springs carry a very handsomely finished body, upholstered in real leather, and giving accommodation for two passengers in seats of the Roi de Belge pattern. Equal sized artillery wood wheels with English seasoned oak spokes support Clipper Continental tyres 700 mm. by 85 mm. The wheel base is of exceptional length, amounting to 7 feet (practically the same length as many cars on the market at double the price). The price of this most excellent vehicle, which is luxuriously finished, is £200. The car has been entered for the forthcoming trials, and its performance will be watched with interest.



The Enfield Light Car.

NEWS.

The Hendee Manufacturing Company have introduced a two-cylinder Indian motor-bicycle, which recently covered a mile and one furlong in 1 min. 27 secs.

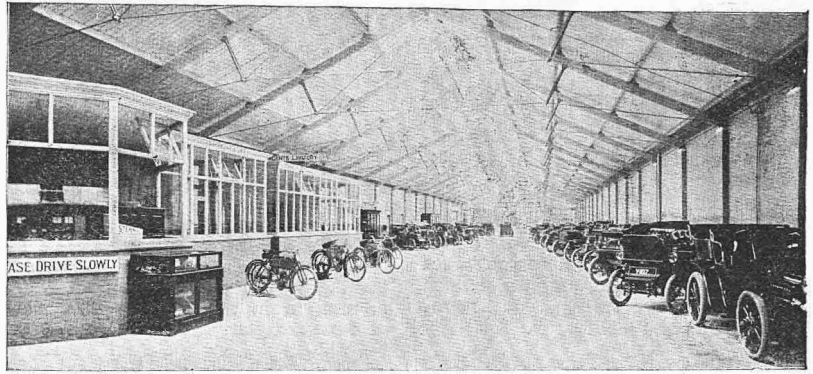
In Chicago recently a law court held that a speedometer was more reliable evidence than a police watch. A motorist who was charged by the police with driving beyond the legal limit produced his speedometer in proof of his assertion that he was within the limit; and the judge decided against the policeman.

The Team Trials and a Rejected Entry.

We have received a letter from the Rex Motor Cycle Club, of Coventry, in which protest is made against the action of the Motor Cycling Club in declining the entry of the Rex Club for the team trials. The Motor Cycling Club have, of course, a perfect right to reject entries, for reasons which are known to them, but we refrain from commenting upon a matter about which we are only in possession of *ex parte* statements. The Rex Motor Cycle Club desire to challenge the winning team to a friendly contest under similar terms.

Meet of Medical Motorists.

Automobilism has always been strong in Lincolnshire, and medical men in that county have used motors extensively, and in so doing have materially fostered the movement. It occurred to Dr. P. Sharp, an enthusiastic motorist and strong supporter of the Lincolnshire A.C., of Brant Broughton, midway between Grantham and Lincoln, to invite some of his motoring medical friends of that district to an informal meet at his place a few days ago, and though several were unable to get over, from various causes, he had quite a good gathering, and, being an enthusiastic photographer, he recorded the event by his camera, and we are enabled to reproduce one of his photos. Reading from left to right the doctors are Dr. de Beauvais, Ancaster; Dr. Overy, New Orleans; Dr. Newcombe, Caythorpe, Minerva motorcycle; Dr. Sharp, Brant Broughton, 12 h.p. Richardson; Dr. H. Stannard, Humber motor-bicycle; Dr. D. J. G. Watkins, Lincoln, Humberette; Dr. Godfrey Lowe and Dr. Purvis, Lincoln, Rex four-car.



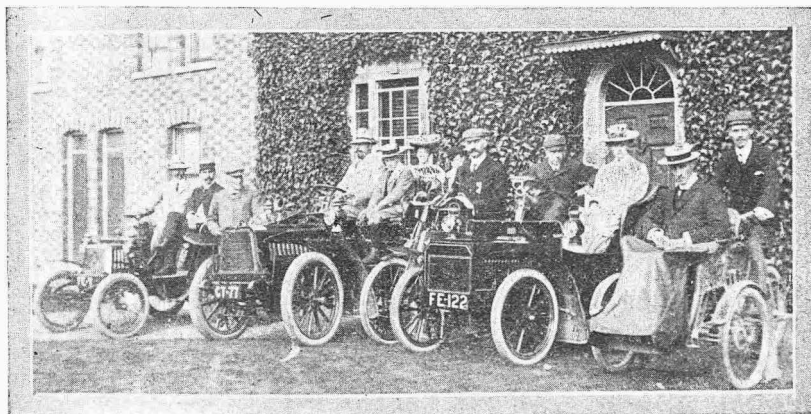
The new garage of the Bridgwater Motor Co., Bridgwater. It is one of the largest and most up-to-date in the country.

A Singular Point of the Motor Act in a Furious Driving Case.

If a motorcar changes hands, should the re-registration be attended to by the new or by the old owner? The Act seems to provide that it shall be done by one of them, but it does not say which; nor does it attach any penalty for the omission of the duty. Consequently the new owner leaves it to the old, and the old owner to the new, with the result that nothing is done. These points have all been brought out in a novel furious driving case just heard at the Manchester County Police Court, and have resulted in a decision being given by the Stipendiary (Mr. Yates, K.C.), which it is as well to have made as public as possible for the information of car owners and users. The case referred to was a remarkable one in several respects. A Southport gentleman was summoned for furiously driving a car in the early hours of the morning (1.50 a.m. to wit) through Stretford in the direction of Manchester on June 27th last. The policeman on duty swore he was travelling at over 40 miles an hour, but as the car was a small two-seated 6 h.p. car, this is, without doubt, an exaggeration. He blew his whistle as a signal for the driver to stop, but this was disregarded. As the car passed he also noticed that no back lamp was lit, but he caught the number (N157) by the light of a street lamp. This number was traced as being registered in the name of Harold Slack, of Southport, who was summoned as stated. Mr. Percy Jordan, of Manchester, appeared for the defence,

and stated that the car had been registered by Mr. Slack, but was not now his, as it had been sold at a motorcar auction sale in Manchester in May last, and believed to have been purchased by a Mr. Haynes. Mr. Slack had, therefore, no knowledge of the offence alleged, nor had he ever been in Stretford in his life. Strange to say, the Stipendiary stated that the question arose: Was the defendant liable? and pointed out that the law said the vendor should give notice of the change of ownership, but Mr. Jordan, the solicitor for the defence, informed him that he had made enquiries at the Manchester Town Hall, where the opinion was held that the purchaser should indicate the change. The Stipendiary then intimated that he would consider the matter carefully to see whether there was any liability on the person who admittedly was not the owner on the day in question, and he fixed October 4th to give his decision on the point. As the sequel,

A CURIOUS DEVELOPMENT OF THE CASE occupied the attention of the magistrates on the following day. It appeared that a Mr. Samuel B. Haynes, of Eccles, had seen the case reported in the daily Press, and as he was the present owner and driver on the occasion referred to, he honourably went to the office of Mr. Jordan, the solicitor, and went with him to the court. He stated he wished to absolve Mr. Slack of all blame, acknowledged his carelessness in not getting the car re-registered, and wished the summons to be re-issued against himself. Mr. Yates, K.C. (the Stipendiary), then gave his decision on the question. He said the point was: Was a person who was the registered owner of a car responsible for what happened to it until he chose to get the registration changed? He had carefully read through the Act, but it did not help one. The penalty imposed was not so much upon the person as on the car, but for not changing the registration it became void, and the person driving it afterwards was driving an unregistered car, and subject to the penalty. If the old number was kept on a person might be killed and no one would be able to ascertain who was the owner or driver. In the case referred to, this particular car was being driven by its present owner unregistered. In this case no penalty should be imposed on Mr. Slack, but the summonses would be re-issued against Mr. Haynes, returnable for October 4th, when the case would be re-heard.



A meet of Lincolnshire medical men.

NEWS.

The "Albert Brown" Trophy.

All who are desirous of entering for the competition for the 25 guinea trophy presented to the Motor Cycling Club by Mr. Albert Brown, of Messrs. Brown Bros., Ltd., are reminded that no further entries can be received after the first post on Monday, September 5th. All communications respecting the event, which takes place on Saturday, Sept. 10th, should be made to the hon. secretary, C. W. Brown, Hollyville, North Finchley, N.

Novel Automobile Competition in Roxholme Park.

The Lincolnshire and South Lincolnshire Automobile Clubs have, at last, decided upon a scheme of amalgamation, and the first meet under their joint auspices took place on Saturday afternoon, when Capt. J. A. Cole, J.P., chairman of the administrative council of the County Club, entertained the members in his picturesque grounds at Roxholme Hall—four miles from Sleaford. The weather was delightfully fine, and there was, consequently, a large muster of cars and motorcycles from all parts of the county. In connection with the event, Captain Cole organised a novel competition, which was watched by upwards of a hundred motorists and their friends, who rode over to the meet. This took place in the private grounds attached to the Hall, and ladies figured conspicuously in the event. The idea was to start a car from a given point, each gentleman driver having a lady passenger, who was obliged to alight at another point, fill a glass with water, return with it to the car and carry the water while riding into the park—the winner being judged by the quickest time and the quantity of water remaining in the glass at the stopping-point. So cleverly was this performed by the majority of the ladies that some of them scarcely spill a drop during the run, and the race was virtually decided on the times which were made. Mr. R. M. Wright, of Lincoln, who drove Mrs. Brook in her husband's 9-11 h.p. Clement, was declared the winner, and the two carried off the prizes which Capt. Cole offered. The distance was about half a mile, with two stops, and the following were the times recorded:—(1) Mr. R. M. Wright (Lincoln), 10 h.p. Clement, 1 min. 26 secs.; (2) Dr. Gilpin (Bourne), 8 h.p. Peugeot, 1 min. 32 secs.; (3) Mr. W. R. Pennell (Lincoln), 10 h.p. Locomobile, 1 min. 33 secs.; (4) Dr. Sharp (Brant Broughton), 12 h.p. Richardson, 1 min. 39 secs.; (5) Capt. Lyall (Grantham), 7 h.p. Panhard, 1 min. 42 secs.; (6) Mr. A. W. Holloway (Boston), Baby Peugeot, 1 min. 45 secs.; (7) Capt. Newsum (Lincoln), 18 h.p. Richardson, 1 min. 50 secs.; Mr. C. W. Pennell (Lincoln), also competed, but was disqualified in consequence of his finishing over the stopping-line. Mr. Rees Jeffery, secretary of the Motor Union, officiated as timekeeper; Captain Cole was starter; and Major Barrow, judge. After the competition the company were entertained to an al-fresco tea. Amongst the visitors were two Nottinghamshire cars, driven respectively by Major Barrow, of Normanton Hall, and Mr. Hickins, of Brackenhurst Hall, both in the neighbourhood of Southwell.

AUTOMOBILE CLUB'S LIGHT CAR TRIALS.

(Reported by Our Own Representatives.)

HEREFORD, Sunday afternoon.

Hereford, normally a city of very little excitement, is being stirred to the quick with the sudden influx of motorcars. And the nature of the Herefordian attitude towards the visitors may be gauged from the behaviour of the constable who stands and directs the traffic by the church at the top of Broad Street. The High Street just here is very narrow, and so the turning is not only sharp, but there is no margin in case of a sudden meeting of two vehicles. Normally, the traffic flows through here in a placid sort of way,

ing the programme of the week. Thus, almost for the first time in the history of the Automobile Club, the existence of the British public and of its rights is being recognised, and it is being told all about the purpose for which its property—the highway—is being used. Such a broad-minded way of dealing with the populace indicates a refreshing change in the Club's attitude. Moreover, at the foot of the aforementioned posters there is a notice to owners of restive horses and to parents of small children asking them to keep them in restraint. This is all right, but



(1) The Competing cars stored in the Drill Hall at Hereford. (2) Sunday, 10.30 a.m.—Two Wolseley light cars about to start for Dinmore Hill with Pressmen.

but let the sound of a motorcar horn break the stillness of the air and the constable alertly and abruptly stops the traffic, gets any obstructive vehicle out of the way, beckons the driver of the car to "come along," and then salutes him as the car passes in triumph. Truly the motorcar is king in Hereford to-day. And as those in charge of the cars are driving with the utmost consideration, the impression which is being made by the light car is distinctly a favourable one.

Wonderful to relate,

POSTERS ARE DISPLAYED

all over the town announcing to the inhabitants the nature of the trials, and giv-

the owners of irritating dogs might have been addressed as the same time!

Thirty-five of the thirty-eight cars entered for the trials have arrived, and they are garaged in the drill hall.

THE THREE ABSENTEES

10 h.p. four-cylinder Chriton.
6 h.p. single-cylinder Belsize.
8 h.p. " " Simms.

It is said that the Chriton could not be finished in time owing to sickness occurring to one of the principals. The Belsize unfortunately came into collision in Manchester whilst on the way down. The Simms did not put in an appearance, as

NEWS.

the makers were unable to get it ready in time.

The absence of the Chrton is to be regretted, for not only would she have been an interesting car, but her performance would have been very closely watched. For undoubtedly the ideal is a four-cylindered engine, and nobody whom I have yet met in motorcar circles can see a way

trials got up this morning except the Cadillac. The hill is approached from a sharp right angle turn in the road, and commences to rise at once for 2,812 feet. There is a total rise of 230½ feet in this distance, the average grade being 1 in 12.2. Four hundred feet of the early part of the hill rise at a grade of 1 in 8, and a little farther on there is 100 feet of 1 in 7.9. Then comes an easy stretch—albeit it is 1 in 15 or so!—and the timed portion of the hill ends here. But after that there is the last final stretch which attains

contest, and pressmen and other interested visitors are making all arrangements for being at this the most interesting part of the whole trial very early in the day in order to see the struggle through from beginning to end.

The weather here is glorious, the scenery is perfect, and everybody is looking forward to an interesting and enjoyable experience, but there will be very few easy minds until after Tuesday.

ON SATURDAY EVENING

Mr. Joy presided at meetings of drivers and observers, and a very nice spirit prevails amongst all who are taking part in the trials. The rules have been carefully explained, and it has been made quite clear that they will be strictly enforced. At the same time the very simplicity of the competition will permit drivers and observers to act with perfect consideration and courtesy to other people on the road. For instance, it will be possible for a competing car to stop and render assistance in the case of an accident to anybody on the road—even if to a stranger—without spoiling its record. This is only humane.

The officials and competitors are to turn out by 7.15 to-morrow morning, and the vehicles will line up in Broad Street ready for a prompt start at eight o'clock. There is quite a crowd of visitors here, and cars are running about everywhere, and all day. Accommodation is really difficult to obtain, large as are the resources of Hereford, developed in this direction as they have been by the musical festivals held here.

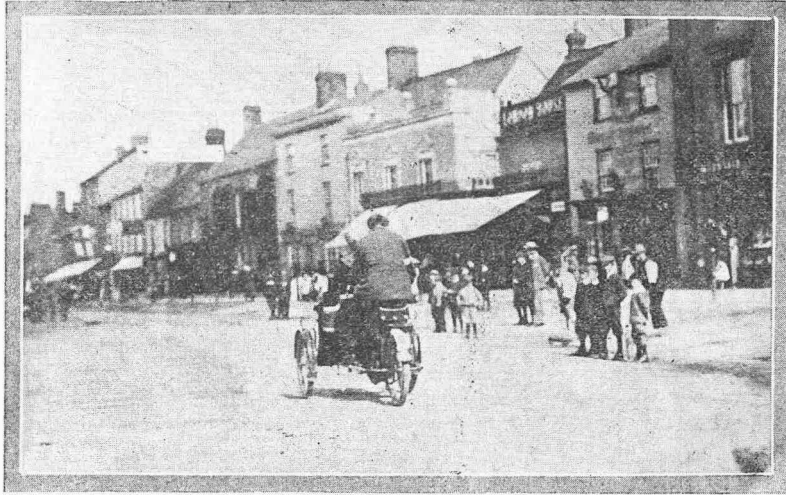
HEREFORD, Monday, August 24th.
(By Telegraph.)

During yesterday the judges carried out some interesting tests. At first these were thought to have been privately initiated, but they have since been officially adopted. Frome's Hill was the scene of the trials. A 6 h.p. Wolseley car was towed up the hill behind a 10 h.p. car, with series of spring balances between, in order to determine the tractive effort required. The first attempt did not succeed, because the gearing of the bigger car did not allow it to travel slowly enough to accomplish the work.

A BIG FARM HORSE WAS PROCURED,

and the little car was hauled up the hill three times, the amount of pull being registered as well as the speed. Some valuable data have thus been obtained which will be published with the judges' report. To-day (Monday) the weather is again magnificent, and there is every promise of a fine day. The cars left the Drill Hall, and taking up their positions in Broad Street made a very effective start. The inflexibility of the rules was instanced at the start this morning, when Miss Levitt, the only lady driver in the trials, had to start her own engine, whilst a big healthy-looking observer looked on and proffered no help. All the cars got away without trouble or incident, and they have gone out over the Ludlow route.

A later message reads:—The first run has just been completed. The road to Ludlow is excellent, the surface being splendid. Enthusiastic crowds were met en route, whilst the police have lent considerable assistance. The competing cars almost without exception climbed Din-



Motor C.C. Championship. The Rover Tri-car leaving Bicester.

by which such an ideal can be attained at so low a price as £195.

Yesterday was devoted to the very careful preparation of the cars. Their tanks were filled up, and they were got into complete running order, and then they went on the scales.

THE WEIGH'S WERE VERY INSTRUCTIVE.

The light-weight of the competition is the 6 h.p. Vauxhall, which turned the scale at 8cwt. 1qr. 14lb., whilst the heaviest is the 9 h.p. Oldsmobile, which scales no less than 17cwt. 1qr. Weight means such a lot in this country, because of the hills. I have already been over a portion of the routes to be covered during the week, and, whilst the surface throughout may be said to be excellent and traffic of the scantiest, yet the roads are narrow and curly, with very few straight or level stretches.

The crux of the whole trials comes on Tuesday during the double run to Worcester. Twelve miles from Hereford the rise over Frome's Hill has to be tackled, and the competitors are in somewhat of a stew about it. Drivers and owners of cars of which they held a high opinion went out there glibly enough on Friday, not to see whether they could get over it, but just to make sure.

THEY CAME BACK WITH SET FACES,

and with their pride broken. I was out there this morning on Mr. Perman's 20 h.p. Spyker, and we were followed by three or four other cars. The Spyker naturally experienced no trouble, whilst the 12 h.p. Wolseley got up well, but these have nothing to worry about, as they are not in the trials. None of the small cars of the type of those in the

AN ANGLE OF 1 IN 6 FOR ABOUT TWENTY YARDS

or so, and it was at this point that the cars invariably stuck. The Star cars had come down with a fairly high gear, but on Friday there was a hurried telephone message to Wolverhampton. On Saturday morning some blanks were cut off the solid bar—they were taken to Birmingham on a car; Messrs Bramptons were persuaded to cut them into chain sprockets. They were then taken to Hereford by Mr. Lisle, Senior, and fitted to the cross shaft. The result is that both Mr. Lisle, Junior, and Mr. Goodwin are now easier in their minds. This was, comparatively speaking, an easy job with chain-driven cars, but the drivers of gear-driven cars were cogitating and wondering how they could improve matters, and in their case thoughts were perforce directed towards the engine, with a view to keeping up its full number of revolutions. The point of all this is that, whilst the cars will no doubt be able to climb the timed portion of the hill without any trouble, any failure on the subsequent steep portion will be

FATAL TO THE NON-STOP RECORD,

and, as the hill has to be climbed twice on Tuesday, there is a great chance of two out of twelve rides being bad ones. It is confidently expected that fully 50 per cent. of the cars will fail to get up under their own power and carrying their full load, and whilst the hill is undoubtedly an exceptional affair, yet that does not give the competitors much encouragement. It can thus be seen that Tuesday is the turning point of the whole

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MOTORCYCLING CLUB CHAMPIONSHIP.

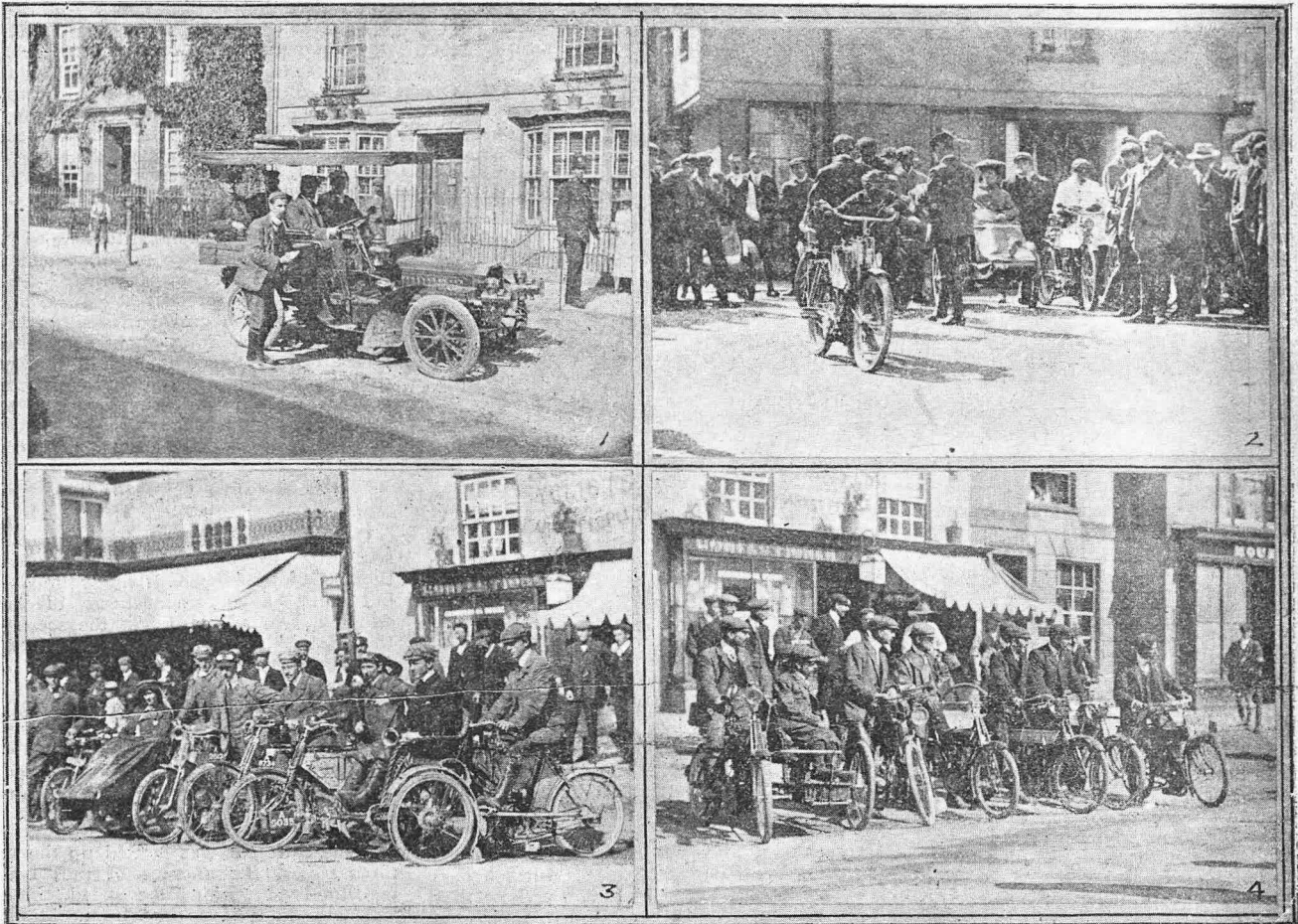
VICTORY OF THE COVENTRY TEAM.

more Hill from each side in good style. The 50 miles has been covered in about three hours, and non-stop runs are recorded in over 30 instances. Oldsmobile had a little pump trouble on Dinmore, the Enfield stopped for a few minutes, and the new two-cylinder Chambers stopped in Ludlow and did not proceed. The Ludlow streets are very tortuous and hilly. Big crowds witnessed the arrival of the cars in Leominster and Ludlow. The cars will be timed this afternoon on Dinmore Hill.

An interesting event that has been looked forward to for a long time by motor-bicyclists was held on Saturday last at Bicester, a pretty little village about 12 miles N.W. of Oxford. The event was an inter-club competition as a test of reliability of motorcycles for a challenge cup, presented to the club by the "Motor Cycle." The conditions and general arrangements were on the following lines:— The cup is to be the award in a competition between teams of riders, members of, and nominated by, recognised automobile clubs, motorcycling clubs, or cycling

seated motorcycles must be motor-bicycles. (d) Two shall drive a two-seated motorcycle, as defined by the Local Government Board, or a motorcycle with passenger attachment.

The Committee will strictly enforce the 3 cwt. limit. The competition shall consist of a 100 miles non-stop run, with a lunch interval after 50 miles. The number of miles, up to 100, accomplished by each rider of each team without stoppage other than during the lunch interval will be added together, and the team scoring the highest mileage thus arrived



(1) The Club Officials being driven by Mr. A. J. Wilson on his 12 h.p. "Cladiator." (2) Competitors being started from Bicester on the first 25 miles. (3) The Southern M.C. Team. (4) The Guildford M.C. Team.

The Coming of Lighter Machines.

We have just learnt that a well-known motor manufacturing company in Holland are introducing a 3 h.p. motor-bicycle into England next season that will come out at a net weight of 112 lb., and that it is guaranteed to stand the roughest usage on English roads. It is pretty clear that the foreigner has already got the idea of what the public want, and he intends to supply them. Meanwhile, English makers are still pondering over the question, and saying the thing is an utter impossibility. The foreigner finished pondering over the matter long ago and intends getting the business if he can.

clubs. In case of doubt as to whether any entrant is or is not a "recognised" club, the Auto-Cycle Club shall adjudicate. No club may enter more than one team. If the cup be won three times, not necessarily in succession, by the team representing any one club, it shall become the absolute property of that club. Each team shall consist of six riders, of whom:

- (a) Two shall drive single-seated motorcycles fitted with engines of a cubical capacity not exceeding the equivalent of 76 by 76 mm.
- (b) Two shall drive single-seated motorcycles fitted with engines of any capacity.
- (c) Two at least of the four single-

at shall be the winner of the trophy.

After an interval of one hour from the conclusion of the hundred miles—during which time no adjustments or alterations shall be made—the competitors who have finished this distance will be declared the winners. The time will be taken from the word "Go!" at the starting point.

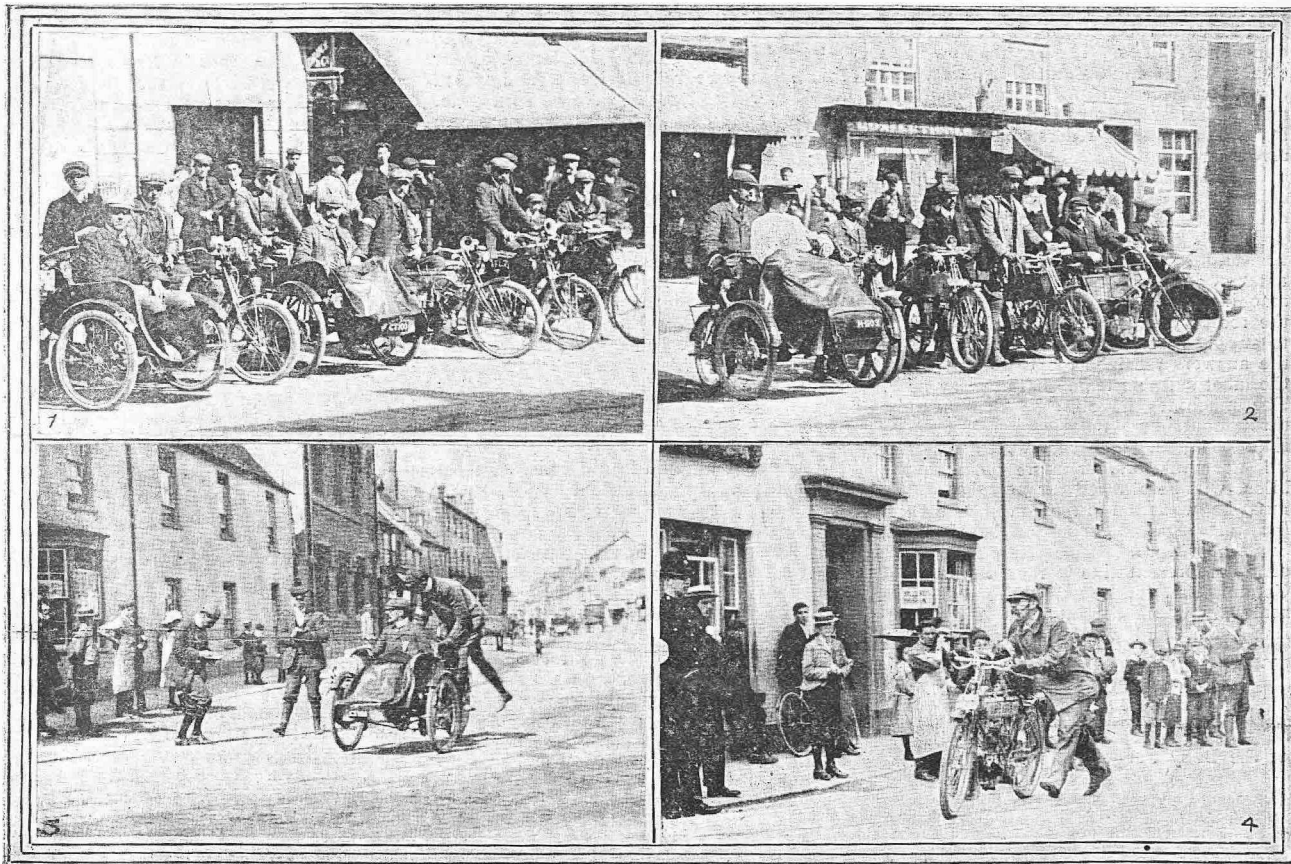
The Crown Hotel was made headquarters, and the majority of the competitors stayed here overnight, having ridden in on their machines. The starting time had been arranged for 10 o'clock, and fortunately the weather was beautifully fine, and gave every promise of a good day's sport, the roads being in excellent condition. Mr. C. W. Brown, having

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Unfortunately been taken ill, most of the work devolved upon Mr. E. Marsh (the M.C.C. treasurer), assisted by Mr. Hall (N.R.C.C.), as official starter. The Rev. B. H. Davies, who had previously mapped out the route, rode over to the turning point at Deddington just before the start. The following is the list of starters in the five clubs competing:— Guildford M.C.C.: Rose (Roc motor-bicycle), White (Quadrant motor-bicycle), Horrocks (Roc motor-tricycle), Gammon (Roc motor-bicycle), Wright (Roc side-car), Wall (Roc motor-bicycle and trailer). Southern M.C.C.: C. E. Pattison (Phœ-

The turning point at Deddington was 12½ miles out from Bicester, and the competitors were started off by the official starter at intervals of 30 seconds. The event created a great stir in the little town, and the main road in front of the hotel was pretty well crowded with villagers to see the start. The local police—after receiving ample assurance that the law was not to be transgressed by the riders exceeding 19 miles an hour—became very friendly disposed, and kept the traffic clear. There are some very fair hills on the 12½ miles course, one (Aynho Hill) being a rise of about 1 in 12, and a few hundred yards long. Amongst the first to be in trouble was Van Hoooydonk, who had a puncture very shortly after the start. Heighton (Peterborough) had a puncture near Deddington, and finished

fifty, and at the finish of the third round (7½ miles) there were left in:—Owen, Duret, Yates, Wright, Riley (all of the Coventry Club), Reeves, Candler, Wells (Motor Cycling Club), White, Wadsley, and Woodman. The Motor Cycling Club were placed still further behind in this stage through Hulbert being compelled to stop, as his high tension wire had broken. It was seen at this stage that the Coventry team, barring excessively bad luck, would win the cup. A fair crowd of spectators had assembled in the afternoon at Aynho Hill, and there was much disappointment that most of the fore-carriages had dropped out of the competition. The turning at Deddington was missed by several competitors, who ran straight on, and who, it appears, had some slight friction with the police, otherwise, up to this



(1) The Peterboro' M.C. team. (2) The Motor C.C. team. (3) The Vinco Fore-car turning to start on the second twenty-five. (4) A Competitor being checked at Bicester.

nix Trimo), C. E. Bygrave (Excelsior motor-bicycle). Motor Cycling Club: Hulbert (Hulbert-Bramley motor-bicycle), Reeves (R. and P. motor-bicycle), Wells (Vindac motor-bicycle), Hoooydonk (Phœnix Trimo), Jenkins (Rover tri-car). Peterborough M.C.C.: Heighton (Vinco motor-bicycle), Mays (Vinco motor-bicycle), Holmes (Vinco fore-car), Wadsley (Vinco motor-bicycle), Gibson (Vinco fore-car), Woodman (Lightstrung motor-bicycle). Coventry M.C.C.: Owen (Humber motor-bicycle), Ayton (Triumph motor-bicycle), Duret (Singer motor-bicycle), Riley (Riley motor-bicycle), S. Wright (Excelsior motor-bicycle), Yates (Humber fore-carriage).

the last 13 miles on the rim. Holmes (Peterborough) experienced a short circuit through one of the wires having rubbed its insulation off against the tank. Several of the fore-carriages failed on Aynho Hill, especially those having a single gear only. The hill, although not very steep, is approached from round a corner, and consequently the drivers, not noticing it ahead,

WERE QUITE UNPREPARED TO RUSH IT.

The following riders finished the first 50 miles:—Owen, Woodman, Duret, Reeves, Hulbert, Wells, White, Candler, Wright, Yates, Wadsley, Pattison, and Riley. After lunch a start was made on the second

point, everything had gone smoothly. The first arrivals in the last stage came in at 4.45. These were Duret, Owen, S. Wright, Candler, White, Woodman, Wells, Reeves, and Yates. It was thus clear that

THE COVENTRY TEAM WERE THE VICTORS, and they received congratulations all round. The necessity for running off the final stage in the starting and stopping test did not arise. Punctures, as usual, were responsible for the majority of the breakdowns in the motor-bicycles, but, as regards the fore-carriages, the performances of these machines conclusively proved that two gears are absolutely necessary for general work. The marshalling

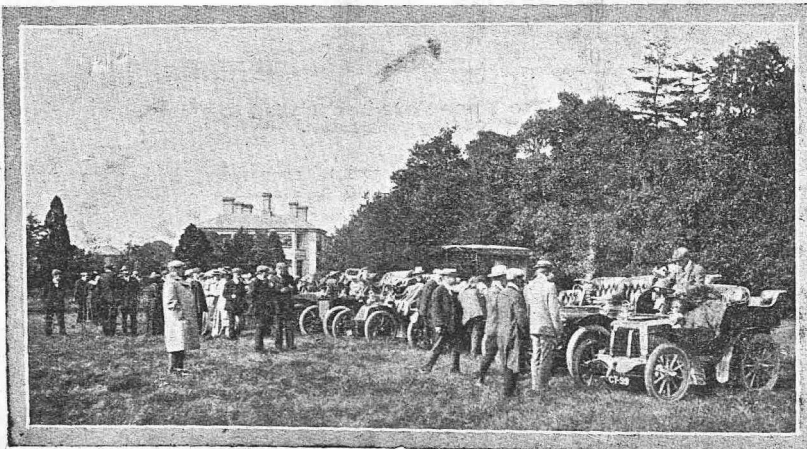
NEWS.

and controlling along the route was considerably facilitated by the timely arrival of Mr. A. J. Wilson, on his Gladiator car, as he was thus able to convey the officials to the control points. On previous Motor Cycling Club events there has generally been an ample supply of cars, but on this occasion they were extremely scarce. On the whole, the event was a great success, and next year's competition will be looked forward to with much interest.

The International Cup Race for Motorcycles.

Despite the exceedingly short notice given by the French Club, the Auto-Cycle Club intends to send a team to represent England in the forthcoming international race for motorcycles which is to be held in France on September 25th on Gordon-Bennett lines. The air has now been cleared of all doubts and difficulties, and the Motorcycle Club of France has now agreed that no country can be represented by more than three riders sent by the one recognised club—such club to be accepted by the Automobile Club of France. The Auto-Cycle Club is the only club in this country which fills the position, so only that club can send a team to represent England. To enable the Club to secure a team, it has invited the makers of the machines which successfully underwent the recent ordeal of the reliability trials to supply machines and riders, and from the answers received the Club will select the most suitable team on Thursday next. The machines have to be British built throughout, and must weigh not more than 50 kilos. (110½ lb.) without petrol, oil, accumulators, or spare parts, but 3 kilos. will be allowed for magneto. They must be presented to the Auto-Cycle Club for weighing and inspection by Monday, September 19th. The Club intends to send a representative to the International Commission, and he will at the same time zealously watch the interests of the English team, and will make all possible arrangements for them.

Friswell Ltd. have not entered any cars for the trials, but they inform us they will be pleased to demonstrate the capabilities of the Baby Peugeot to any purchaser.



Lincolnshire Motorists Meet in Roxholme Park on Saturday last. (See page 96).



Motor C.C. Championship. Going at full speed just outside Bicester.

The remains of Mr. John Dumble, our late business representative, were interred on Saturday last at New Southgate. Amongst the many wreaths was one from his colleagues on the staff of "THE MOTOR."

The Hallamshire Motorcycle Club.

This club, which was recently formed to encourage the use of the light motor vehicle, had its first run last Saturday week, the rendezvous being Castleton. A very enjoyable half-day was spent. Particulars of membership can be obtained from Mr. Haslam, secretary, Louth Road, Walkley, Sheffield.

Scottish Automobile Club (Western Section).

The above club will hold a hill climbing competition at Kirkfield Hill, near Lanark, on September 10th. The event is solely a sporting one and confined to members of the club, and the committee trust a large number of the members will contribute to its success. Kirkfield Hill is about 11 miles south of Lanark, on the opposite side of the river from Kirkfieldbank Hill. The vehicles entered must be ordinary touring cars, and they will be divided into four classes:—(1) Cars having one cylinder; (2) cars having two cylinders; (3) cars having three or more cylinders; (4) steam cars.

Official Awards in the Auto-Cycle Club 1,000 Miles Trials.

The judges have nearly completed their arduous labours; they have had several meetings since Monday, but, although sitting until midnight on Thursday, and 2.30 a.m. on Friday, their detailed report will necessitate one or two more consultations. We are enabled to give the official awards, however, which are as follow:—

Bicycles.—First-class certificate and gold medal: 3 h.p. Bradbury, 2½ h.p. Humber, 3 h.p. Quadrant, 3 h.p. Rover. First-class certificate and silver medal: 3½ h.p. Brown, 3½ h.p. King, 3½ h.p. Rex. Second-class certificate and silver medal: 2½ h.p. Chase, 3 h.p. J.A.P. Second-class certificate: 2½ h.p. Alldays, 2 h.p. Leader, 3½ h.p. Lagonda, 2½ h.p. Noble. Third-class certificate: 3½ h.p. Alldays, 3 h.p. Altena, 2½ h.p. Bat, 2½ h.p. Griffon.

Single Tricycle.—Second-class certificate: 3½ h.p. Rex tricycle.

Passenger Tricycle.—First-class certificate and gold medal: 3½ h.p. Phoenix Trimo.

The awards in each class are alphabetical, and not in any order of merit.

Hill Climbs.—For the hill test at Marlborough the first half-dozen, in the order of merit given below, reached the top up to legal limit of 20 miles per hour:—

J.A.P., King, Rover, Chase, Humber, 3½ h.p. Alldays. In the hill test at Scarborough, the following, in order of merit, approximated to 14 miles per hour:—Humber, 3½ h.p. Alldays, 2½ h.p. Alldays, Rover, Bradbury, Griffon, Altena, Rex, Lagonda, Brown; the 2 h.p. Leader about 13½ miles per hour, and the Phoenix Trimo 11½ miles an hour. This climb occurred with the roads in very greasy condition, and many riders found difficulty in starting under the abnormal conditions. We are glad to notice that of those machines which survived to the finish and receive awards, 13 out of 19 are of British manufacture throughout. Omitting the Phoenix Trimo, with the 3½ h.p. air-cooled Minerva engine, the gold medalists are all fitted with engines produced in their own workshops, and the four of them are turned out by old-established cycle firms, whose names have been household words for quality these many years past. Mr. Hoovendonk's complete mastery of the engine he has always used since the Minerva came into this country again places him in one of the premier position.

THE LIGHT CAR TRIALS.

Particulars of the Routes to be covered and Further Descriptions of some of the Principal Cars entered.

(Continued from page 76.)

Adolphe Clément, the founder of the great motorcar industry bearing his name, began life as a locksmith. In 1878 he settled down in Paris as a maker of cycles in a very small way. On the introduction of the Dunlop tyre, Mons. Clément saw its possibilities, secured the French rights, and practically made his fortune.

Screwdriver as Puncture Fiend.

During the Auto-Cycle Club 1,000 miles trial many curious puncturing objects were picked up by the tyres of the various machines, but we think that the bent blade of a fair-sized screwdriver picked up by the $3\frac{1}{2}$ h.p. Brown machine was about the most extraordinary of the lot. Messrs. Brown Bros. sent the screwdriver to us for our inspection.

A Non-stop Record.

F. A. La Roche completed his long drive on a 15 h.p. Darracq from New York to St. Louis and back, 3,450 miles, on August 9th. He occupied 15 days and 2 hours on the journey, taking turn and turn about at the steering wheel with another driver. This is claimed to have beaten Mr. D. M. Weigel's recent record of 2,013 miles. We hardly think this will be accepted on this side of the Atlantic, as the so-called observation was pretty well non-existent.

Why the Difference?

Army officers owning their own motorcars and using them in the public service are now to be allowed sixpence per mile for wear and tear, but if less than four persons are carried only threepence per mile will be allowed. The ordinary man will fail to see wherein lies the economy to the owner in petrol, oil or tyres when three persons are carried instead of four. Doubtless some wonderful genius at the War Office is in possession of figures on cost of working which would prove this up to the hilt, but we are sceptical. Officers on motorcycles will receive three-halfpence per mile. We can foresee endless correspondence between headquarters and the local military depots over that odd copper.

The Scarborough Fatality.

The recent motorcycle fatality at Scarborough (an elderly lady was knocked down by a motorcycle, and died through shock to the system more than from any external or internal injury) again brings into prominence the ridiculous amount of unnecessary prejudice introduced into any legal matter where motors are concerned. Every particle of evidence both at the prosecution before the magistrates and at the inquest in the Coroner's Court went to prove that the driver of the motorcycle was entirely free from blame, that he was proceeding very slowly, and took all precautions to avoid the accident. Yet the jury, after retiring four times to consider their verdict, and after the coroner had repeatedly pointed out to them that only one result was possible from the evidence, brought in a verdict of "Accidental death," and asked the coroner to severely censure the motorcyclist, and also a friend on a pedal cycle who was with him, and was some yards in front when the accident occurred. The old story of "Not guilty, but don't do it again."

The whole of the current week is being devoted to the Automobile Club's trial of light cars. Despite a certain amount of criticism, the choice of Hereford as a centre has been adhered to, and there can be no doubt but that the choice will prove to be perfectly suitable. The nature of the country over which the trials are being held is such as to afford the competing cars a capital opportunity of demonstrating their hill-climbing and staying powers as well as the efficiency of their brakes.

The programme for the trials is as follows:—On Saturday the competing cars had to be presented at the Drill Hall before noon. Any car arriving after noon, but not later than 5 o'clock, would not be allowed to take part unless a fine of £10 were paid. Each of the 38 competing cars has its allotted position in the Drill Hall to which it has to be returned each evening. The judges commenced their examination and verification of details on Saturday afternoon, whilst Sunday was a *diés non*. Six different routes have been mapped out, and a different one will be used each day, two journeys over it being made. The routes are nominally 50 miles long out and home, but actually they range in length from 50 to 52 miles, so that the total distance of the week's running will be 615 miles. A distance such as this will not really go very far towards testing the lasting properties of the cars, to do which would, in fact, entail an almost endless task. But it will be sufficient to enable the judges to gain enough data for grading the cars in their order of merit.

The first day's runs are from Hereford to Ludlow and back via Leominster, 51 miles each. The second day's runs are to Worcester via Frome's Hill and back via Bromyard, 52 miles each. The third day's runs are to Ledbury via Tarrington, thence to Bromyard and Leominster, and so back to Hereford, 50 miles each. Thursday's runs are to Ledbury, round a loop via Staunton and Long Green, and then back to Hereford from Ledbury, 52 miles each. Friday's runs are to Ross, thence to Ledbury, to the fork roads near Bromyard, and back to Hereford by Stoke

Lacey, 50½ miles each. Saturday's runs are to Kingston, around the Tutley and Walton loop, and thence back to Hereford, 52 miles each.

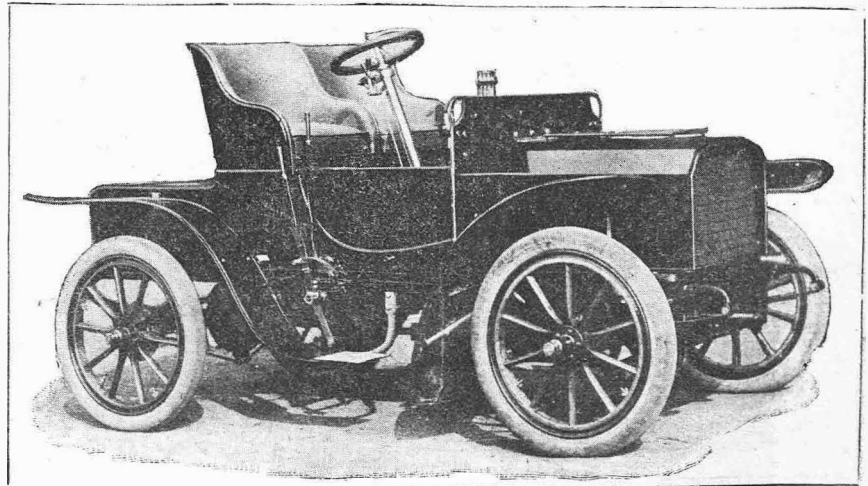
The entry list has received additions in the shape of the 7 h.p. Clyde at £175, and the 8 h.p. Prosper Lambert at £185, whilst the second 7 h.p. Little Stars has been transferred to Class D, its price being £190.

Twenty minutes is allowed to the cars before the start of each run for the purposes of adjustment, replenishment, and overhauling. It is considered that this allowance will practically approximate to ordinary working conditions, the trials being run with the fixed idea of the award in each class going to the car which makes the greatest number of non-stop runs upon this maximum amount of attention before each run. This plan is a very simple one, and it should have the effect of producing results which the public not only readily understand but appreciate. Awards are also being given, at the discretion of the judges, to cars which, in their opinion, have exceptional merit, so that a car which, through bad luck, loses its chance of a non-stop award will still be eligible for notice if it completes the full distance.

We continue our illustrated descriptions of some of the leading cars which have been entered for this important event, but although we have devoted so much space to the subject during the past three weeks, and also in the present issue, we have been unable to include descriptions of all the cars of which we obtained special particulars. We regret this, but the demands on space are inexorable. We hope, however, to find room in later issues for the details which we have been unable to give prior to the trials.

The Humber Light Cars.

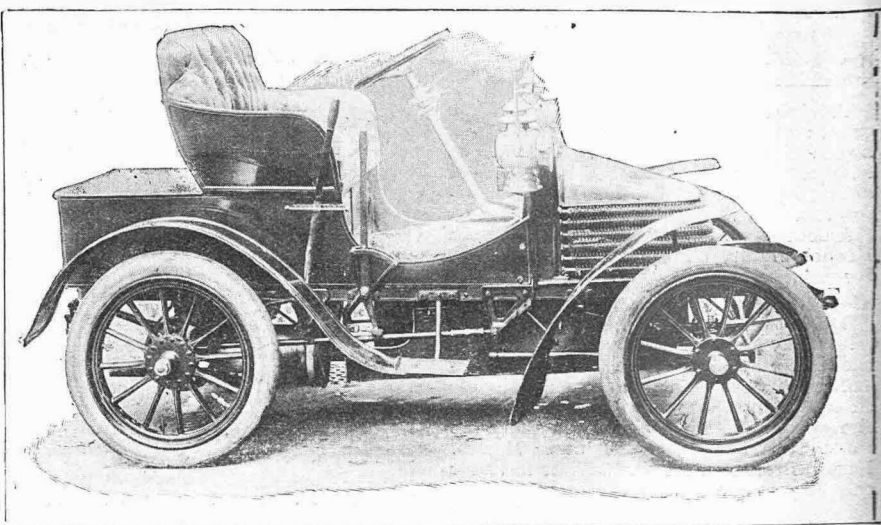
Humber Limited, Beeston, Notts. This old-established company enters two cars; the first in Class C being a 6½ h.p. Royal Humberette. The engine is a single cylinder 4 in. bore by 4½ in. stroke, and is manufactured in the company's own works; normal speed, 1,500 revolutions per minute. It is governed on the throttle



The New 7½ h.p. Humber.

NEWS.

and obtains the charge from a Longue mare carburetter. The cooling is effected through gilled tubes, which finish off the front of the bonnet, circulation through these and the cylinder being carried out by a gear-driven pump. Ignition is high tension by accumulator and coil, with wipe contact breaker. The gear-box is the company's own special design, with three forward speeds and a low-g geared reverse, the high speed giving direct drive; transmission is by universally jointed flexible shaft from gear-box to an extremely strong live axle. Lubrication of engine is by a hand pump on dashboard; this latter is the Company's patent, and is carried by an aluminium bridge secured to the main frame. The frame itself is weldless steel tube, suspended on long elliptical steel springs; the body is two-seated, standard finish, being royal blue with upholstery to match. Equal sized artillery wood wheels are shod with Clincher tyres, 28 by 2½ in. Wheel base, 5 ft. 3 in.; track, 3 ft. 6 in.; weight, 9 cwt. A very complete kit of tools, box wrenches, and spare parts is included in the price of £157 10s. The second entry is in Class D, a 7½ h.p. Royal Humberette, an entirely new type of car, with a two-cylinder Humber engine, 3½ in. bore by 4 in. stroke (normal speed, 1,200 a minute), and with a single throw balanced crank. The engine is governed on the inlet, and can be accelerated by a lever which cuts out the governor when fully depressed. The cooling radiators are immediately in front of the bonnet, circulation being maintained by a gear-driven pump, and additional aid for cooling is provided by a fan running behind the nest of radiator tubes. Ignition by high tension coil, accumulator, and wipe commutator; the commutator is arranged in a vertical position for ease of inspection. The gear-box has three forward speeds (direct drive on top) and a reverse; the main bearings of the gear-box are fitted with ring lubricators. The transmission is from engine to gear-box through a balanced clutch, and thence by universally jointed shaft to a bevel driven live axle. This live axle is of ample proportions for any strains that may be imposed upon it; the ends are provided with ring lubricators. On the dashboard is fitted a pressure feed lubricator, with



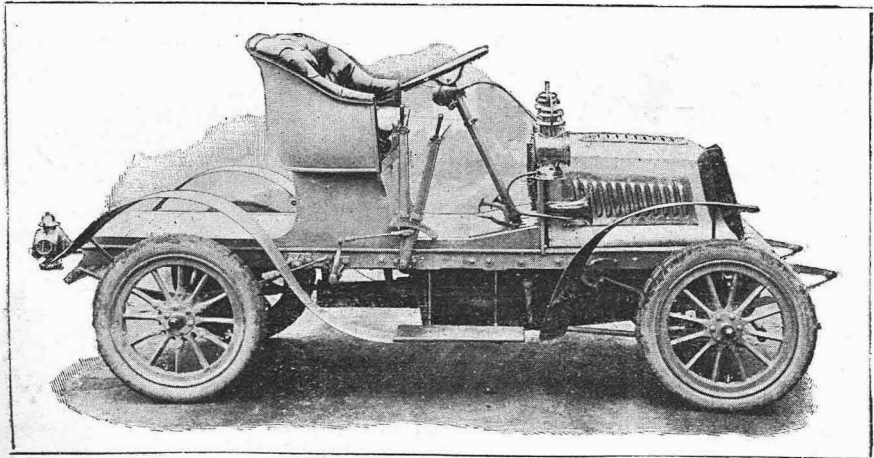
The 6 h.p. Wolseley.

three-sight feed, adjustable, outlets, one to clutch, one to engine, and one to the bevel pinion on the back axle. A hand oil pump is also fitted, connecting to the engine crank-case. The leather-covered steering wheel can be quickly adjusted to any height. Three brakes are fitted: a metal to metal external brake on the propeller shaft, actuated by a pedal, and two internal expanding brakes on back axle, which are brought into action by a side lever. These latter brakes are completely enclosed, and there is no fear of mud and grit affecting their use or causing wear. Equal sized artillery wood wheels carry 28 in. by 3 in. Clincher tyres. Wheel base, 6 ft. 3 in.; wheel track, 3 ft. 10 in. Price, £200. This is another of the entirely new cars the trials will produce, and with the reputation and experience behind Messrs. Humber, it will be expected to further increase their renown. It will be noticed that the details are practically those only usually found on a car costing twice or thrice the entered selling cost, and it is gratifying to find the moderate pocket so well catered for.

The 6 h.p. Wolseley.

The Wolseley Tool and Motor Car Company, Ltd., Adderley Park, Birmingham, have entered two cars in Class C as a team

Both correspond identically. The engine is the well-known Wolseley horizontal, 4½-inch bore by 5-inch stroke, developing 6 h.p. at about 800 revolutions per minute. This transmits the power by a Hans Renold silent chain to the main clutch, which is carried on the projecting end of the first motion gear-shaft; this communicates in turn with the three speeds and reverse contained in the aluminium gear-box, whence the second-motion shaft, by the aid of an attached outside sprocket and roller chain, gives the final drive to the live axle. Both the motion shafts are carried in ball bearings. The live axle is special to the Wolseley, and differs considerably from the type in common use. The differential is of the spur wheel type, and is contained in a shell, tubular extensions of which are carried on either side, viz., to the outside face of both the driving wheels. These tubular extensions or sleeves have adjustable ball bearings which are clipped to the elliptic side springs of the car. The differential driving shafts are carried inside the sleeves above mentioned, and extend beyond the hub faces. Upon the end of each shaft is carried the hub casting, which, whilst being attached by the usual nut and washers, etc., to the differential shaft, is capable of riding freely upon the outside sleeve with its attached ball bearings. The weight is therefore carried by the outside rigid sleeve, the differential shaft only serving to drive. The wheels cannot spread when the car is laden, and power is not wasted in overcoming needless friction. Cooling is effected by the well-known Wolseley bank or tier of stepped radiators around the bonnet (distinctive of this type of car), the water circulation being actuated by a pump drive from the cam shaft. The pressed steel frame is in one piece as to the two sides and rear, the side members being continued forward to carry the ends of the springs, whilst the front cross connection piece is riveted on. The control levers are arranged on the steering column which connects with an irreversible steering gear of the worm and segment type. One band brake is brought into use by the left pedal; two other band brakes are bolted to the rear wheels, a long side lever bringing these into action. The steel brake bands have a lining of cotton belting which is easily renewable. One fea-



The 6 h.p. Sinfms.

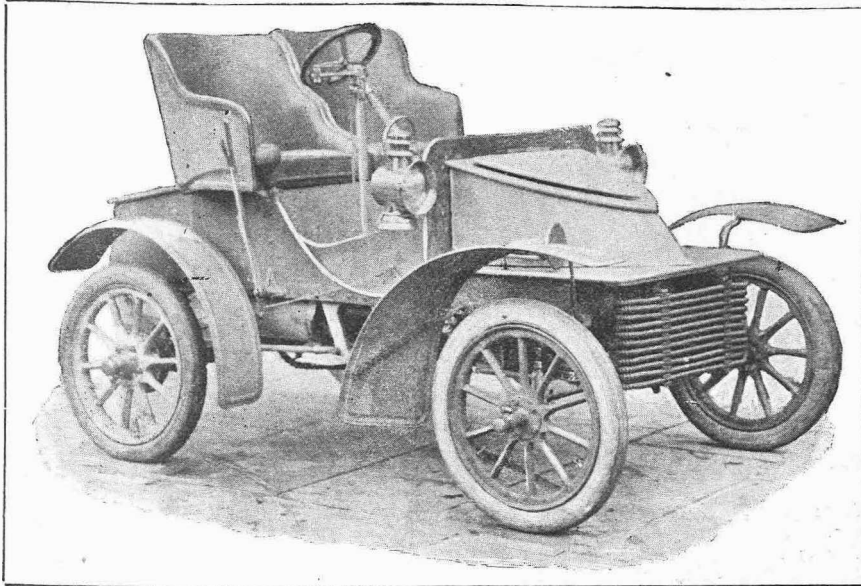
NEWS.

sion trembler coil and accumulators, with the company's own pattern of double spring wipe contact. For the transmission an epicyclic gear (carried on the

suspension of the car is quite a radical departure from the usual elliptic carriage springs fitted to the majority of cars; four spiral springs are arranged (one at each corner) under the body, and from personal experience we can confirm the claims made for them as being as effective as those fitted to heavy cars. An excellent silencer is fitted, the running being very quiet. Very strong artillery wheels, with equal size Dunlop tyres, 700 by 80, complete one of the lightest cars in the trials, the total weight only coming out at 7 cwt. The light weight and saving of numerous losses in transmission make for economical use, as nearly 40 miles can be covered on one gallon of petrol. Pair of side lamps, rear lamp, and a very complete kit of tools is included in the price of £150. This is one of the real "British throughout" cars, and from personal inspection we know it to be thoroughly well made and good value for its cost.

The 6 h.p. "Siddeley."

The Siddeley Autocar Company, 79 and 80, York Street, Westminster, S.W., has entered one car, with a 6 h.p. single cylinder engine (bore $4\frac{1}{2}$ in. and stroke 5 in.), developing its power at a normal speed of 800 revs. per minute; it can be run up to about 1,000 revs., and at that speed the power is proportionately greater. The engine lies horizontally between the side members of the frame with the cylinder head pointing forward. The direction of rotation is therefore in the same line as that of the driving road wheels, and obviates the need for any bevel wheels in the transmission. The frame is of pressed steel, with two cross steel girders which carry the engine, gear-box, etc. This permits of a very stiff and rigid construction, and enables the engine and transmission to be carried in a comparatively small space without any sacrifice of accessibility. A very large fly-wheel, $17\frac{1}{2}$ inches in diameter with a $\frac{1}{4}$ inch face keeps the engine running steadily at slow speeds; between this fly-wheel and the engine crank-case a sprocket wheel is keyed, on which transmits the power by a chain to the gear-box. Three forward speeds and a reverse, with sliding gear wheels, are actuated by a side lever, and the transmission is completed by a chain from gear-box to the rear live axle. In connection with the transmission it should



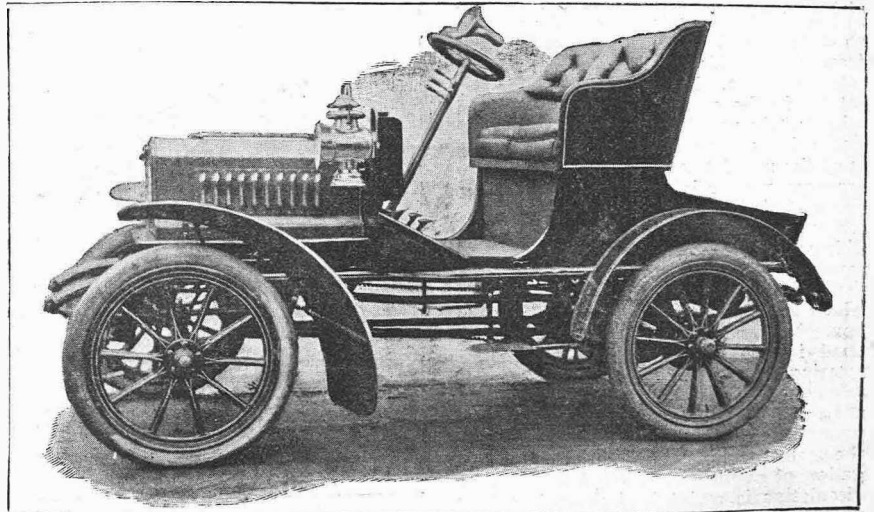
The 6 h.p. Vauxhall.

ture not usually embodied in a light car is the provision of ball thrust bearings to the steering heads. The front wheels are also carried on ball bearings. These and the rear wheels are of equal size, and are completed with heavy Dunlop tyres, 28 by $3\frac{1}{4}$. Wheel base 5 ft. 6 in., wheel track 4 ft., weight 10 cwt. 2 qr. Price, £175. We can only comment on these cars by saying they are built and finished throughout in Wolseley style, and those who have owned a car of this manufacture will know that this means conscientious attention to the minutest detail.

The 6 h.p. Vauxhall.

The Vauxhall Iron Works Co., Ltd., 90, Wandsworth Road, London, S.W., are relying upon one car in Class B. A single-cylinder horizontal engine, 4 in. bore by 5 in. stroke, is carried with the cylinder pointing to the rear of the car and placed in such a position that removal of one of the floor boards gives instant access to the sparking plug and carburetter. The carburetter is the company's own special design, with automatic air inlet; by the removal of three adjacent nuts it can be instantly detached, together with the inlet valve complete. Other details of the engine are ingeniously designed; a large inspection door permits of the easy adjustment of the bearings on the big end of the connecting rod, whilst the top half of the crank-case can be detached in about one minute without disturbance of other portions of the mechanism; the piston, etc., can be very quickly exposed to view. The top of the piston is recessed, thus providing for larger cylinder capacity without increasing the size of the cylinder itself. Lubrication of the cylinder is obtained from a large sight feed drip oil container; this is the only fitting carried upon the dashboard. The engine is governed by a centrifugal governor which can be set (by means of a pedal) to run the engine at any desired number of revolutions within its limits of speed. Ignition is by high-ten-

motor shaft) gives the low speed and reverse, the top speed being direct from the engine to the rear axle by means of a substantial Brampton roller chain. No differential is fitted, and the rear revolving axle is therefore in one piece throughout; free-wheel clutches are fitted for the rear wheels to run upon, and these are locked solid with the rear axle by the same pedal which brings the reverse into action. The frame of the very best ash is strengthened both outside as well as inside by spring steel fitch plates. Wheel steering, with enclosed rack and pinion gear, is now fitted in place of the tiller used on the early patterns; the single control lever which is the only one in sight being brought up in a convenient position below the wheel on a separate light pillar. Powerful double-acting band brakes on the drums of both rear wheels are brought into use by a pedal or a side lever. The



The 6 1/2 h.p. Clyde.

NEWS.

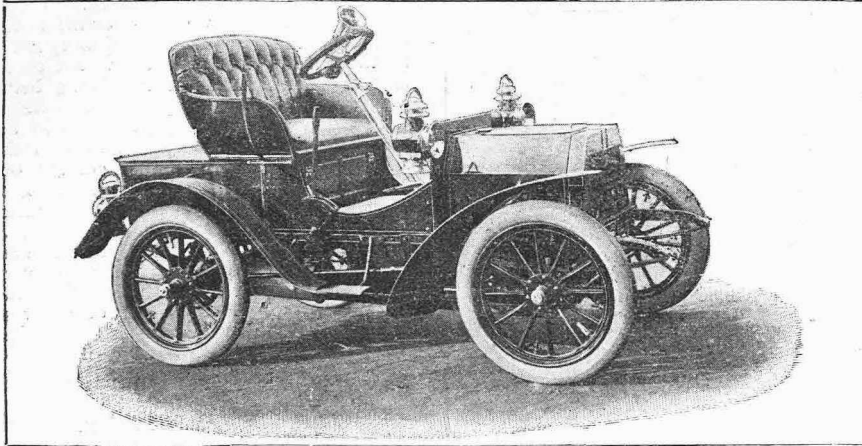
fugal pump. The ignition is by high tension coil and accumulator, with a positive make and break contact of the company's own design. Lubrication is by a hand-

question of accessibility is too often overlooked, but the Clyde folk pride themselves upon the attention they have devoted to enabling every part of the mechanism to be easily reached, and to be as easily removed if desired. This car did exceedingly well in the Reliability Trials in 1903, achieving a speed of 33 miles an hour at Bexhill, with a standard gear, and covering itself with glory in all the hill climbs. There is no doubt that the light weight (about 7 cwt.), and the novel means of transmission help towards economy in all directions; tyres, petrol, etc., etc. Wheel base, 6 ft.; wheel track, 3 ft. 11 in. Price, with side lamps, a large assortment of tools and spares, in a leather holdall, £175.

The 6 h.p. Jackson.

Messrs. R. Reynold Jackson and Co., 11 and 13, High Street, Notting Hill Gate, London, W., have entered two cars, both of same horse-power, but having different tyres and seating capacity. Engine is 6-horse genuine De Dion, with carburettor of the same make; cooling is effected by friction driven pump off fly-wheel, circulating the water through a nest of gilled tubes in front of the bonnet. Two speeds and a reverse are fitted, with direct drive on top speed. Ignition is by dry battery and high speed trembling coil, with wipe-contact breaker. The control levers for gas and ignition are brought up under the steering wheel, the steering being of the rack type. The transmission is by a cardan shaft, with bevel drive on to rear live axle. Three brakes are fitted: one on gear shaft, controlled by usual pedal, and the other two on rear wheels, actuated from a side lever. The petrol and oil tanks are carried on the back of the dashboard: a hand oil pump connects, by a three-way cock to engine, gear box and differential. Wheel base, 5ft. 3in.; extreme width over all, 4ft. 3in.; weight, 8cwt. 13qr. Price, with pneumatic tyres, including lamps and full kit of tools, £125.

[On our centre pages will be found the latest news from the scene of the Light Car Trials telegraphed right down to the moment of going to press. In the next issue of "THE MOTOR" will appear the first complete report of the whole of the trials, with photographic and artistic illustrations of incidents.—Ed.]



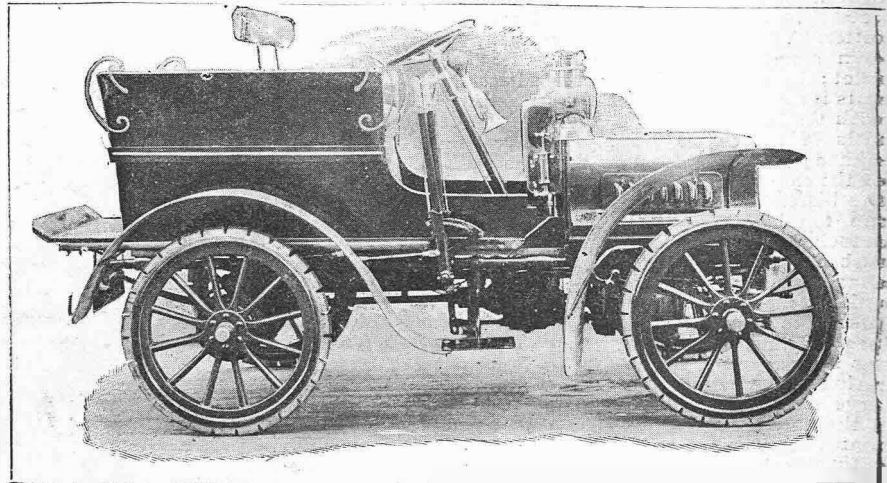
The 6 h.p. "Siddleley" Car.

be noted that the clutch is not connected with either the hand or foot brakes. The radiators are formed out of Clarkson gilled tubes, and complete the forward end of the bonnet; water circulation is maintained by a centrifugal pump, driven directly by the cam shaft. The ignition is effected from accumulator and trembler coil, the latter being fixed upon the dashboard; the dash also carries a four-way adjustable sight-feed lubricator, with separate cut-off to each feed, the pipes communicating with the main bearings of the crank shaft, the big end of the connecting rod, and the piston. Ignition and throttle control levers are brought up on to the steering wheel column, and are so arranged as to be well clear of the driver's knees. Three brakes, together with the engine, provide splendid control. Equal size artillery wood wheels are shod with Dunlop tyres, 700 mm. by 85 mm., a neatly-designed phaeton body (upholstered in real leather) is splendidly finished in proper carriage-work style.

The 6½ h.p. Clyde.

In the excellent car made by the Clyde Cycle and Motor Car Co., Ltd., Shenton Street, Leicester, the 6½ h.p. Aster engine is arranged vertically under the bonnet, but at right angles to the usual position, so that the starting handle is inserted from the off-side of the vehicle, and not from the front. It follows that the engine rotates in the same direction as the road wheels. The gear-box is not carried on the frame, but upon the back axle; the clutch is of the metal to metal type, with ample arrangement for lubrication. A Renold's silent chain communicates the power directly to the counter-shaft in gear-box (this containing wheels for two speeds and reverse with wheels always in mesh), and thence to the spur wheel differential, which is practically in one with the gear-box. No bevel wheels of any kind are used in the transmission; and as all rotating shafts run parallel with the road axles, and the road wheels and counter-shaft run on ball bearings, very little power should be lost in friction; in fact, the makers claim to run 50 miles on one gallon of petrol with a full load. Water circulation is maintained through a new patent radiator by a chain-driven centri-

force pump, with three-way tap to engine, etc. Three double-acting brakes are fitted; the pedal-actuated device operates upon a steel drum keyed to the counter-shaft; two internally expanding brakes within the hubs of the rear wheels are controlled by a side lever. It should be noted that this lever and the one connecting to the change gear wheels are held and released by ratchet teeth of novel design. The front and rear axles are manufactured of a high grade nickel steel. These carry very long and flexible manganese steel springs. The equal-sized artillery wood wheels have spokes of seasoned oak, the tyres fitted thereon being Dunlops, 28 by 3¼ in. In noting the engine we omitted to mention that it is governed automatically on the inlet, and that a foot accelerator is provided. Normally the car is made to carry two persons; but as a third passenger is occasionally required to be carried, the company has designed and patented a most ingenious folding seat for another person at the rear. The standard two-seated body is made of wood and aluminium, the seats being much wider than those usually provided on small cars. The



The 6 h.p. Jackson Dog-cart, with solid tyres.

NEWS.

Messrs. S. F. Edge, Ltd., Mr. John Hargreaves, Lieut.-Col. Mark Mayhew, and Mr. Lionel de Rothschild have already entered cars for next year's Gordon-Bennett. The Automobile Club has decided to hold a selection trial, which may possibly again take place in the Isle of Man.

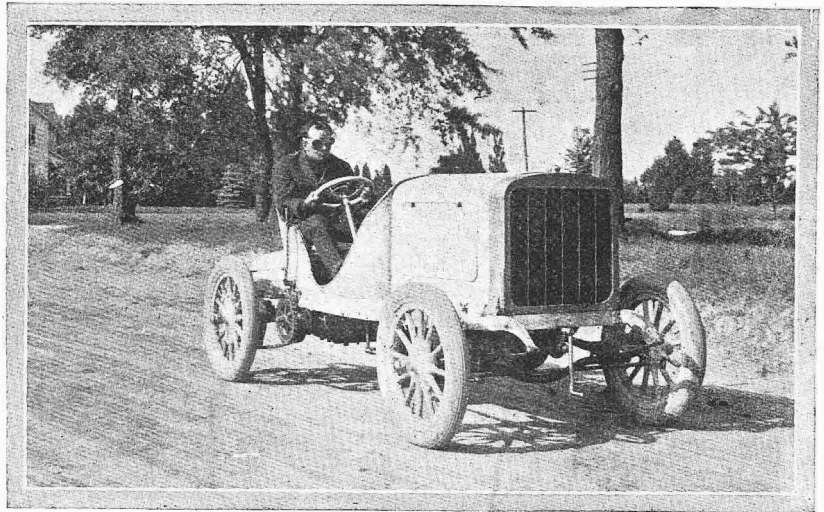
The Derby and District Automobile Club's second hill-climbing competition was held in glorious weather at Aston, Derbyshire, on Saturday week. The club medal for the fastest time was won by Mr. Frank Bolton, on a 22 h.p. Daimler, second place being taken by Mr. Norman Sayer on a Serpollet.

French Non-skidding Trials.

One of the results of the recent trials of anti-skidding devices in France is that it is shown that it is useless to put the same type of band on all four wheels; for the front wheels require round, smooth treads so as to respond readily to the movement of the steering wheel; whilst the driving wheels must have the treads roughened so as to counteract their tendency to skid when the brakes are applied.

Barney Oldfield's Racing Cars.

Barney Oldfield, the American crack racing motorist, who has not been so much in the public eye since the Gordon-Bennett, has been doing some rapid runs on Mooers' reconstructed Peerless 1903 racer. The body has been rebuilt, and a pressed steel frame with sub-frame substituted for the armoured steel frame. The motor hangs much lower than before, the fly-wheel coming to within three inches of the ground. The exhaust from the four cylinders is carried away at the sides of the cylinders through a single silencer fitted parallel to the frame. The reconstructed car has been christened "Green Dragon." Oldfield will race this autumn against his old car Bullet III. The Peerless Company are engaged in building him an entirely new 100 h.p. racer.



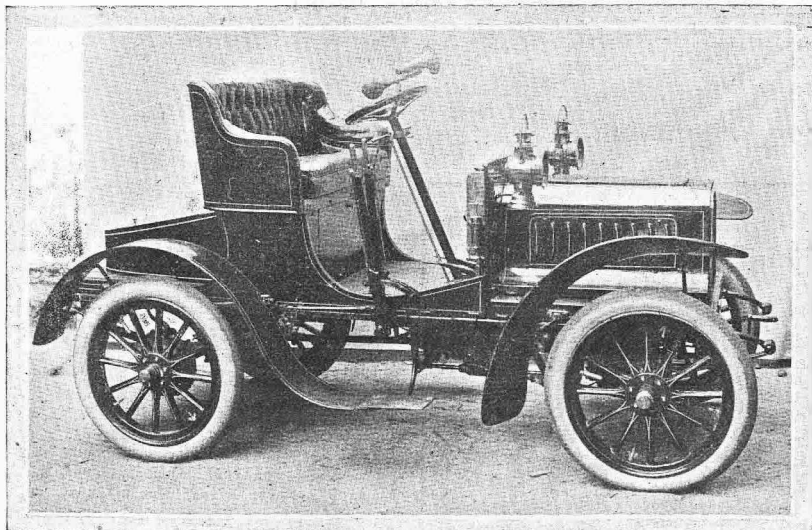
A four-cylinder 80 h.p. Pope Toledo Racer made by the Pope Motor Car Co., Toledo, Ohio. It weighs less than one ton.

The Guildford Police.

Col. W. J. Bosworth, of the Junior United Service and Savage Clubs, has communicated to us a matter of some importance to law-abiding motorists. Col. Bosworth, having seen that a motorist had been fined for driving through Guildford without giving audible notice, instructed his own driver to sound at frequent intervals—the result of which was that on a recent trip through Guildford he was ordered by a constable to "stop that noise." The Colonel thereupon addressed a courteous and clearly-worded letter to the Chief of Police at Guildford, pointing out the apparent inconsistency of the instructions given to the police, and asking for information as to the legitimate procedure when passing along the streets of Guildford. To this letter a reply came, within five days, acknowledging receipt and promising best attention. Up to the present time (more than a month having elapsed) nothing more has been heard from the Chief of Police. Comment is superfluous.

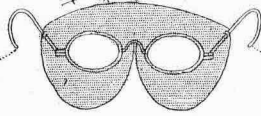
The 6 h.p. Light Car made by Phoenix Motors, Ltd.

As promised in our issue of the 16th inst., we give a few details of the construction of this up-to-date vehicle. The engine is the well-tried De Dion (governed), and is cooled by means of a friction-driven centrifugal pump circulating the water through the bank of gilled tube radiators which form the finish to the shapely bonnet. A gear-box of the Panhard type gives three speeds (with direct drive on top) and a reverse controlled by a single side lever; the transmission is completed by propeller shaft with universal joints to the bevel gear or rear live axle. The inner driving axle of the latter runs on large size adjustable ball bearings. The other details follow the generally accepted practice for the best type of light cars, but, as is usual with anything turned out from the workshops of this firm, many improvements have been effected in those matters which make all the difference between comfort and discomfort. For instance, the governor is interconnected to the three brakes, and, no matter what may be the engine speed, it is instantly retarded and quieted if either brake is used. A large leather apron is fitted as a standard (without extra expense) to the whole of the under portion of the body, thus thoroughly protecting the lower parts of engine, gear-box, etc., from insidious attacks of mud and grit; the carburetter is properly "tuned up" to suit the particular engine before the car is turned over to the customer, etc. One of the customers of Phoenix Motors, Ltd., offered to run his own car (which has already covered over 4,000 miles) in the light car trials next month, entirely at his own expense, in order to demonstrate his satisfaction of the quality of the vehicle. As is well known, both of the managing directors are thoroughly practical men, and prospective buyers can therefore rely upon their wants being properly understood. The company's address is Blundell Street, Caledonian Road, N., a district abounding in steep hills of a nature to thoroughly test the climbing powers of all moderately powered cars, and the Phoenix production has passed all tests successfully.



The 6 h.p. Car made by Phoenix Motors, Ltd.

OTHER PEOPLES VIEWS



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

The Perry Chain Belt.

Sir,—I would be much obliged to any reader using one of Messrs. Perry's chain belts if he would tell me how many miles one belt would be likely to run without renewal. Also is any lubricant required for the links? I understand the leather does not require a dressing to keep it pliable.—Yours faithfully, H.W.C.

The Sunrising Hill Climb.

Sir,—Referring to the Sunrising Hill Climb, you mention that Mr. Instone and Mr. Martin beat Mr. Cecil Edge's time of last year. In referring to the time, in which there is not even a great deal of difference, I think, Mr. Instone, 1904, 169 3-5 secs.; Mr. C. Edge, 1903, 175.8 secs., it is worth while looking at the difference in weight carried. Mr. Instone's car with passengers weighed 1 ton 7 cwt. 2 qr.; Mr. C. Edge's car of last year with passengers 1 ton 14 cwt.—Yours faithfully, S. F. EDGE.

Question of Belts.

Sir,—If "H.M." (Nottingham) will try running another belt on top of the one he has already on his machine, he will get 30 per cent. increase of power. I have tried this on machinery other than motors and proved it correct. It also requires less tension, the only condition is a Jackson's or similar fastener for the under belt. "H.M." will find this plan beat any V belt he can put on, and considerably cheaper. He might send you results as a guidance for your numerous clients in the question line.—Yours faithfully, A.190.

Water Circulation.

Sir,—With regard to "Motorist's" trouble with his water circulation on his 4½ h.p. Cudell car, I think, perhaps, my own experience with a similar type of rotary pump may be of use to him. The symptoms were exactly the same, and on examination of the pump, I found that the pin securing the gear wheel to the driving spindle was broken, thus allowing the spindle to revolve without working the pump. Testing with the cylinder head joint disconnected, and the engine running slowly, only showed that the circulation was a little weak, due, I think, to there being sufficient friction between spindle and gear wheel to work the pump at slow speeds, but directly the engine was accelerated circulation ceased. A new pin cured the trouble at once. Although this may not be the identical trouble in "Motorist's" case, I think it would be well worth his while to investigate in this direction before altering the system.—Yours faithfully, W.W.

An Accumulator Hint.

Sir,—During the present hot weather I have heard of and have experienced cases of failure of the ignition owing to evaporation of the acid in the accumulator, and I think a warning as to this would be useful to your readers, as it frequently happens that the accumulator will show 4 volts on the meter although the current will not ignite the charge in the cylinder.—Yours faithfully, A. R. THOMAS.

Motorcycles as Towers.

Sir,—Riding along the road from Lincoln to Market Rasen on Monday week, I saw a curious procession, viz., a motorcyclist with three young ladies on bicycles in tow, followed by another motorcyclist with two young ladies in tow. On making enquiries, I learnt they had just covered the 14 miles in three-quarters of an hour; and that the two motorcyclists were well-known in the South of London; whilst the five young ladies were from a neighbouring parsonage.—Yours faithfully, S.M.W.

Spark Leakage.

Sir,—I wish to take exception to your answer re spark leakage to "G.W.H." (Hull). He has probably got some acid at one time or another on coil, as he says the spark runs along the surface. The best thing for him to do is to scrape or clean the surface and put on a thin coat of hot paraffin wax or of shellac varnish. Re M. H. Brown (Little Sutton):—I have found that vaseline thinned with paraffin oil is much better for belt than castor oil, as it is not affected by moisture or wet, and always keeps leather pliable, and does not require putting on so frequently. I do not know if other readers have tried this, but I have not seen it mentioned before.—Yours faithfully, W.D.B.

The Zedel Motor.

Sir,—I should be glad to hear if any of your readers have had any experience with the 1½ h.p. Zedel motor (as fitted to the Griffon motorcycle) and what opinion they have formed of it.—Yours faithfully, R.R.J.

The Dust Nuisance.

Sir,—I should like to draw the attention of motorists to the fact that much of the dust raised by cars and cycles is apparently caused by the bad position of the silencer. In a great number of cases this is so fitted as to cause the exhaust to blow up great clouds of dust, often greater than that raised by the wheels themselves. This, in conjunction with the prevailing low suspension of the car body, is a prolific cause of the dust evil. If the attention of manufacturers was drawn to this, there would probably be a rise in the public estimate of the motorcar.—Yours faithfully, "DUSTLESS."

A Dangerous Corner.

Sir,—Regarding the letters from T. Williams and "A Dangerous Corner," I should like to say that while coming round the same corner (which I know well) I was run into by another motorcyclist coming from the opposite direction on the wrong side of the road. Both machines were considerably damaged, and we went to Michell Bros. to have them taken from the scene of the accident. Their assistant informed us he could not fetch the machines, it being Sunday. We then went to Mr. Sullivan, The Hundred, Romsey, who very courteously undertook to get them that evening, and treated us most kindly.—Yours faithfully, W. P. BREACH.

The Rexette Clutch.

Sir,—Having for the last few weeks been using a new Rexette, I have read with special interest the letters in your journal referring to that vehicle, and should be glad to know whether any of your readers have had occasion to dismount the clutch for relining it or otherwise. For such a purpose it appears that the engine and gear-box must be taken down, and I observe also a tendency for the male member of the clutch and the chain wheel to move when the clutch pedal is depressed. A practical suggestion for remedying this would be welcome. The Rexette has a strong frame, but I fancy that the water-cooling system would be improved by taking the pipe from the head of the cylinder in a gradual rise to the top of the radiators, instead of bending it down under the back of the seat.—Yours faithfully, "CIVIS."

"The Motor Manual."

In consequence of the improvements which are frequently made in motor vehicles it is necessary to revise some features of this handy work. As the various additions are disposed of and reprints are necessitated the book is brought up-to-date. A further reprint of the latest edition being required therefore, we have in the Press a further issue which contains much additional information concerning motorcycles and light cars. This will be on sale in a few days at the usual price, 1s.



Water Circulation.

Sir,—If "Motorist" takes an air-pipe, open at top, as shown at A, from top of bend, his troubles will end. The reason water will not circulate is because air collects at bend, and is exceedingly difficult to dislodge; the air pipe will allow this to escape. Personally, I do not like the arrangement of his pipes and tanks at all. They would be much better arranged as in Fig. 2, wherein the cold water returns through the radiators, and by pump, to cylinder jacket, thence by the rising flow pipe to the tank, which should be, if possible, at such a height as to allow the flow to rise from engine and yet be not more than two-thirds up the tank; in this system air cannot collect in the circulating tubes. But even without such a radical alteration as this, "Motorist" will find he will obtain much benefit by merely fitting the air pipe as shown in Fig 1.—Yours faithfully, J. D. WALKER.

Sir,—With reference to the difficulty "Motorist" has to get the water to circulate through the engine of his car, perhaps the following may help him out of his difficulty, as it has done in my own case, in which the arrangement and position of tanks, radiators, etc., are the same as "Motorist's." I had exactly the same symptoms when starting the engine, after having emptied the tank for some reason or other, and refilled. I drilled a small hole in the top of the bend of the pipe leading from top of water-jacket, and soldered a very small tap into it. After having filled up, turn the tap on, start the engine, and in a few seconds the water will spurt out of the tap, which can then, of course, be turned off, and there should be no more trouble until the

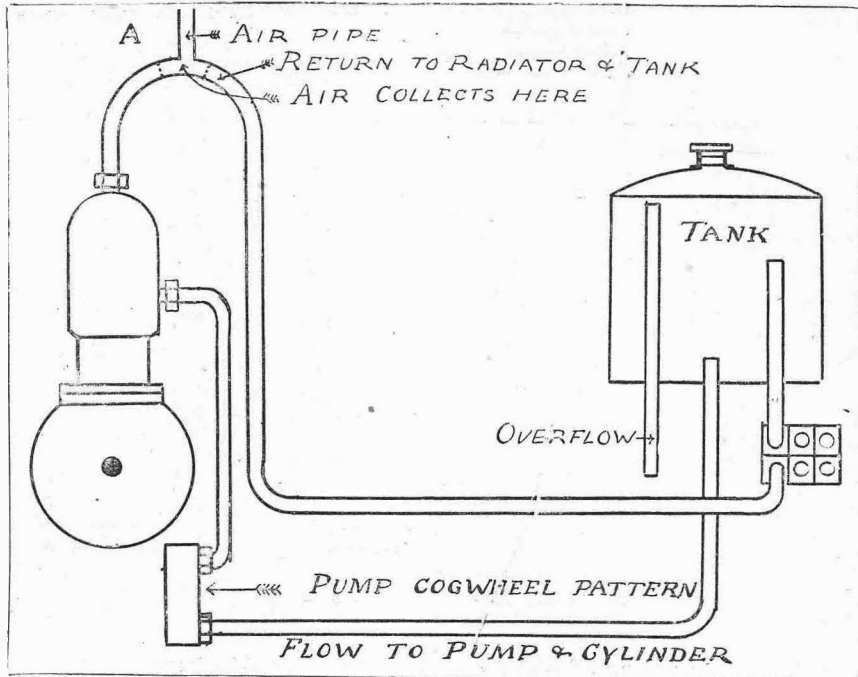


Fig. 1. Illustrating letter from J. D. Walker.

necessity arises for again emptying the tank. The tap is also very useful as a test of the circulation, as mentioned by "Cyclomot" in a recent issue. I think the explanation is that the pump is unable to force the air round, out of the bend, especially as "Motorist" says the water will circulate with the top pipe removed. This might not solve the difficulty in "Motorist's" case, but he could easily try it, with, I hope, a successful result.—Yours faithfully, "ROTOR."

Bristol as a Motoring Centre.

Sir,—In reply to Mr. Crane's letter, re "Bristol as a Motoring Centre," I should say from personal experience that the reason it has so far not been popular is that the roads in the neighbourhood, that is, west, east and south (those on the north I do not know), are the worst in England, both for their uneven, bumpy surface, and fearful slipperiness in wet weather, the local stone used making a surface of slimy grease.—Yours faithfully, P. NAISH.

Spark Leakage.

Sir,—With regard to your reply to "G.W.II." (Hull), headed "Spark Leakage," in your issue of August 16th last, I should advise your correspondent to examine the part of the wood case that holds his coil, on which the terminals are, and see if any acid has been thrown on to it out of the accumulator, this being sometimes caused by severe bumping which occurs when riding on bad roads. When the acid has soaked into the wood, between and touching the terminals, then a short circuit takes place and the wood-work will begin to burn. This happened to me recently, when I, unfortunately, upset my motor-bike when on the stand, about 40 miles from home. On tuning up nothing seemed amiss, but with six miles to go I misfired repeatedly. After a lot of searching, I discovered that the acid had spread and touched all terminals, and I could detect sparks running through the wood. The result was—I pedalled home; and had to have a new side fixed on coil box, and terminals refixed. To prevent a similar trouble, procure a piece of sheet rubber, the length and width of coil box, and about, say, 1/2 in. thick, cut holes to fit around the terminals and then fasten wires. I had to pay 5s. 6d. for the new piece of wood and refixing terminals, when at the most 6d. would have paid for the sheet rubber.—Yours faithfully, "A2,186."

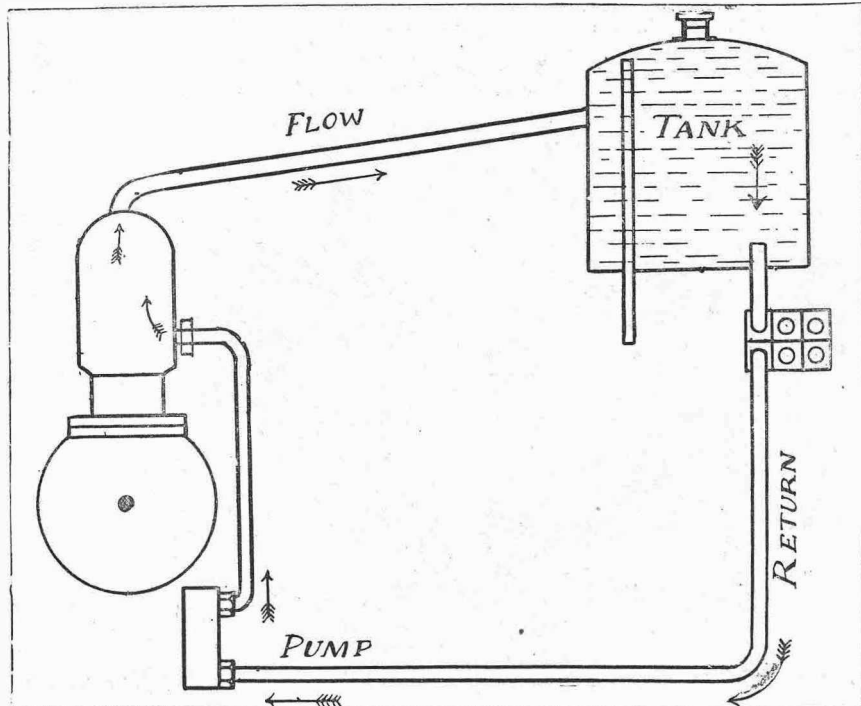
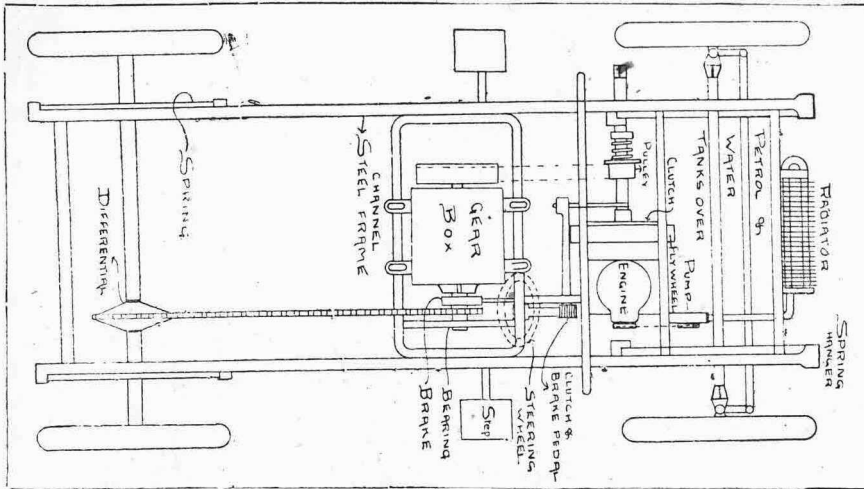


Fig. 2. Illustrating letter from J. D. Walker.

O.P.U.

cently. The silencer is very effective, less than 8 per cent. of power being lost by it. This winter we shall probably fix a set of 1 in. pipes from the exhaust under the



Illustrating letter from E. E. Carver.

An Interesting Type of Home-constructed Car.

Sir,—After studying your paper since its first issue my brother and I have considered it possible for a novice to build his own car if he wishes. The accompanying photo proves this to be so. This car, with the exception of tyres and part of gear-box, is entirely home made. The whole of the machinery is under the bonnet, leaving the entire body free for the use of luggage. For the benefit of readers interested in the design the following particulars may be of use:—Engine, single cylinder, $3\frac{1}{2}$ in. bore by 4 in. stroke, giving $4\frac{1}{2}$ h.p. The engine shaft runs out through side of chassis, the clutch slides on the shaft, and is backed up by spring secured to shaft so as to avoid thrust on bearings, etc. The drive from engine to gear-box is by a 3in. belt, and a $\frac{1}{2}$ in. pitch roller chain is used from box to differential. The gear-box is similar to usual Panhard type, with fork operated through cable drum, and cable running over pulleys in 1 in. tube, slotted to take handle and fixed between seats. Differential: this is of similar construction to one illustrated in "THE MOTOR" about a month back, but is rather neater; as no boss comes on the outside of the wheels it is strong, as we have proved by running the car up a 9-inch stone step under its own power. An E.I.C. coil, two Pfluger accumulators, petrol and water tanks are carried inside the bonnet, thus leaving the whole of the body free as a luggage space. Steering: this is so arranged that no undue wear shall take place on the tyres; there is no play on the steering wheel, and no deflection of the springs can cause any alteration to the front wheels. The carburetter: this is a float feed spray, worked with one air lever only and no throttle. It has carried us 40 miles on one gallon. Of course, there are some things on this car that do not quite satisfy us at present, so we give it a week in dry dock every time it rains and effect some improvement. A water tap is fitted to the top of the water jacket of cylinder for testing water circulation. This has been in use since the engine was finished, so that I can testify to its usefulness as suggested by "Cyclomot" re-

floor of the car and back to silencer, which should have the effect of cooling the exhaust, thereby adding to the efficiency of the silencer, and also keeping the occupants' feet warm.—Yours faithfully,

E. E. CARVER.

Backfiring in the Carburetter.

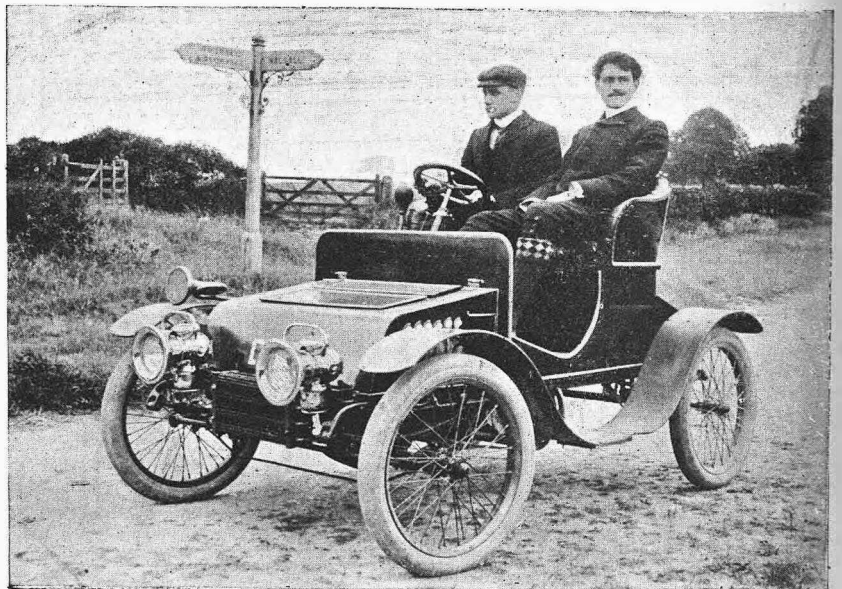
Sir,—For the benefit of cyclists who may find themselves in a similar position, I may say that the other day on reaching Grasmere the top of the tank of my Rex machine suddenly became very hot, and every moment I feared an explosion. Shutting down the air tap, however, nothing happened. On taking off the induction pipe, I found the four gauzes in the gauze-box at the bottom of the carburetter completely blown away. I got a fresh gauze-box, and also put a new spring on the inlet valve, and the machine, a very satisfactory one, is all right again.—Yours faithfully,

H.E.C.46.

Concerning Details.

Sir,—"Veeatch" justly remarked in your issue of August 9th that it is the trivial things which are often the source of most worry to a motorcyclist. I should like to urge again through your columns a few simple improvements to make the motorist's lot more happy. (1) A glass gauge should be fixed to both petrol and oil tanks; the unscrewing of floats, etc., all take time. (2) An exit tap for removal of oil from oil tank. (Have you ever tried to empty one by means of the pump as it is usual to do on taking the machine by train?) (3) More convenient sites and larger apertures to petrol and oil tanks. In filling, the tins often catch on the handlebars, as "Veeatch" rightly remarks, and to use a funnel for the oil is often impossible. (4) Accessibility to nuts, etc. If only the designers became repairers, they would soon find how inaccessible some of the nuts are. One often wishes to know if they are tight, but cannot get good hold of them. Moreover, all nuts should be secured by cotter pins, for when least expected they occasionally work loose. (I once lost my petrol tap whilst riding through the working loose of a nut, and had rather an exciting time till I could get assistance.) (5) The set spanners sent out with the machine are often of no use, for as there are two or three sizes of each head, it is often impossible to turn a nut when gripped, owing to the large size of the head of wrench. (6) Petrol and lubricating oil tins—the orifices are bad, and the means of opening them worse. Why not have some kind of a thumbscrew instead of opening them with chisels, etc.? Why not have a spout fixed to outlet? (7) "Veeatch" deals well with lamp brackets, brake shoes, coils, etc., most of which could easily be remedied. If only makers of motors or motor accessories would ask for and think of offered suggestions, then a motorcycle would become to be used as an ordinary cycle. But only too often rider's suggestions fall on stony ground, and motorists are considered faddists. Let us hope that in the future our suggestions will not be so completely ignored.—Yours faithfully,

S. CLARKE.



Illustrating letter from E. E. Carver.



The Light Motor-bicycle.

Sir,—As an old pedal pusher, and not amongst the newest of the paraffin-pushed brigade, I am pleased to contribute my testimony in favour of the light weight machine if the mass you already have is not too great. I sold a 2½ cwt. mount to get a 1 cwt. machine, and am now doing my best to get rid of this to buy a 70 lb. cycle of not more than 1½ h.p. I say advisedly that such a power with such a weight will do all that most people desire; and it will not be long before your strenuous advocacy of the light machine will bear fruit. Many more perhaps than you imagine are wishing you good luck and a speedy finish in your campaign. By the way, I was considerably taken aback the other day to be informed by the secretary of a big motor manufacturing firm that the trade papers were responsible for the demand for heavy high-powered machines, and that the trade itself was simply catering perforce for a demand that others had created for them!—Yours faithfully,

SIGMA.

Sir,—Seeing the correspondence appearing in your useful paper re above, I am clearly of opinion that if manufacturers devoted their attention to the putting on the market of a light-weight motor-bicycle of, say, 60 or 70 lb. the number of sales would far exceed their expectation. What is wanted is a handy light machine, not one that requires a couple of able-bodied men to move. There is in my opinion a very large demand for such an article. I myself have used a 2 and 2½ h.p. machine of the ordinary make and weight, which after a month's use I gave up, and I would not take a present of a machine of the same weight.

Might I also say that such heavy machines must be injurious to the man of ordinary physical strength, as the strain in starting and moving them about is very great indeed, whereas in the case of a light-weight motor the effect would be the opposite, as it would have all the advantages of an ordinary bicycle with the strain of the hill-climbing eliminated.—Yours faithfully,

G. MUNRO-MEALES,

(Delegate in Ireland to the Touring Club of France.)

Sir,—There seem to be so many divergent views regarding this vexed question, that the experience of all motorcyclists may be useful. I may say that I only weigh 9 stone, and am not particularly strong physically. I commenced motor-cycling about 18 months ago, and at that time professed the utmost dislike for the heavy machine. I bought a 1½ h.p. machine scaling about 90lb. Although living in a flat county (Essex), I found this machine absolutely prohibitive after the first excitement had worn off, for the following reasons, briefly summarised:—

1. Excessive vibration.
2. Impossibility to run the machine slowly, the engine being really efficient at high speeds only. At low speeds the motor would often stop, owing to the necessarily small size of fly-wheels.
3. Necessity to pedal to surmount

any hills at all steep. Pedalling was not very hard, but to pedal a machine, the engine of which is only efficient at high speeds, and to keep up with the revolutions of the engine, was anything but pleasant.

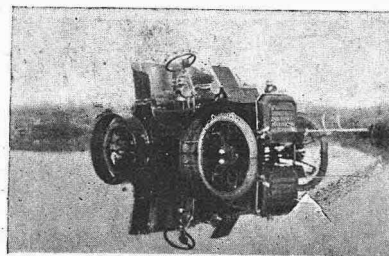
4. Tired feeling after riding comparatively short distances.

Ultimately I strained my heart, which is not a weak one, and the doctor told me that it was a question of giving up motorcycling, or have a machine which would take me anywhere almost without pedalling. Being an enthusiast of the



Illustrating letter from E. J. Pickstone, Johannesburg.

pastime I would not give up, and I bought a 3 h.p. machine weighing about 140lb. all on. The result has been a delightful surprise to me, and I can safely say that I did not know the luxury of motoring until then. I have had my new machine about six months. Now I do not find it any harder to start by pedalling than my 1½ h.p., I never have to pedal, the vibration is trifling compared with the other one, the long wheel base is much more comfortable in spite of what some correspondents have stated in your columns, and I can ride three times the distance at much greater speed without feeling half as tired. In short, I would not return to the light machine and short wheel base on any account, and backed by my own costly experience—both in health and money—of the low-



Illustrating letter from E. J. Pickstone, Johannesburg

powered mount, I earnestly warn begin ners against anything under 2½ or 2½ h.p. When a 3 to 3½ h.p. machine is not absurdly heavy it matters little what it weighs, in my opinion, provided it is kept and driven in a considerate manner. You have an ample reserve of power, feel more confident to go anywhere, to carry a certain amount of luggage when touring, to take a companion in a trailer when desired without feeling that you are going to have a hard time of it, and in addition, you have speed when in the country, and when it is safe to do so. The machine runs much slower if desired,

and is quite as manageable in traffic. A free engine would make it perfect.—Yours faithfully, A. WARNERY.

[We are glad to give both sides of the question. Our correspondent's experience with his first machine should be clear proof that it was non-efficient. Its weight—90lb.—in proportion to power—1½ h.p.—is absurd. What we advocate all the time is an efficient light-weight, and we shall have something to say very soon in regard to further experiments that we are making in this direction.—ED.]

The 5 h.p. Humberette on the Veldt.

Sir,—I beg to forward you photos of my 5 h.p. Humberette light car fording a Natal spruit on the road to Heidelberg. This river is about 2 ft. 6 inches deep and 75 feet wide, with a loose muddy bottom. My little car has forded this spruit a dozen times without sticking. Although I have only had the car 11 weeks it has accomplished 1,750 miles. I should also like to mention that my 3 h.p. Humber motor-bicycle has done 7,400 miles, and is still as good as ever.—Yours faithfully,

E. J. PICKSTONE.

Johannesburg.

An Excellent Ride.

Sir,—If proof were wanted as to the efficiency of the motor-bicycle, a recent tour taken by me may be of interest to your readers. Leaving London on Saturday, the 16th July, I rode to Bath, Wells, Glastonbury, Taunton, Honiton, and thence to a small seaside watering place named Budleigh Salterton; on the following day I returned to London by Honiton, Chard, Sherborne, Shaftesbury, Andover, and Basingstoke, and when I tell you that I weigh 13 stone 8 lb., and that the machine, a 3 h.p. Quadrant with spray carburetter, took me to Devonshire without any help from the pedals, except twice, and that I only walked up two hills, the performance must be considered creditable in the extreme. On the return journey I only helped the machine on one hill and walked none. It is needless to say I have no sort of interest with the Quadrant Company.—Yours faithfully,

"SPARK."

More Gudgeon Pin Set Screw Troubles.

Sir,—While riding my Minerva motor-bicycle at about 16 or 17 miles an hour on a recent Sunday, the motor suddenly jammed; and nearly pitched me over the handlebars. Finding it impossible to move same, I had to pedal 15 miles home. On taking the cylinder off I found one of the set screws holding the crossbar (gudgeon pin) in piston had dropped out, and the other one was just on the point of doing the same. I enclose the one that caused the trouble, and you will notice the miserable little split pin which, by touching the piston wall, is supposed to stop the screw from turning. This, in my opinion, is bad engineering practice. The split pin used is more suitable for a toy engine than for a motor. Had my machine happened to be a chain drive, I should certainly have been thrown over the handlebars. The cylinder is slightly scored, and I should not be surprised to find that some damage had been done inside the crank case, where the screw finally wedged itself; and it is no fun pedalling a motor-bicycle 15 miles. Is it not a pity to "spoil the ship for a ha'porth of tar"?—Yours faithfully, "SET SCREW."

OUR INFORMATION BUREAU

SPECIAL NOTICE.

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

1. Plain writing. Type writing for preference.
2. All letters to be written on one side of the paper only.
3. Questions to be clear, terse, and to the point, without tedious preamble or needless flattery.
4. Should an immediate reply be required, an envelope must be enclosed bearing a penny stamp, and the name and full address of the sender. NOT a stamped undirected envelope.

H. Mather (Brighton).—Messrs. Dunhill, 359, Euston Road, London, have a motorcycle speed indicator that we think would meet your requirements.

K.C.B. (Dawlish).—You will most probably find that the compression in your engine becomes weak after it has been running some time. The heating up of the crank case points to the rings being slack. The joint between the cylinder and combustion chamber should be carefully tested to see if there is any leakage or not.

"Paraffin" (Bristol).—You can use a mixture of about one part paraffin and two parts petrol in any good type of spray carburetter if you keep it warm by fitting it close up to the engine, or having an exhaust by-pass. To use paraffin alone, you would require a carburetter of the Cremorne type. You will always get smoke to a certain extent by using paraffin. Benzoline vaporises more readily than paraffin, and will work in a spray once you get a start. None of the heavier paraffin products are of the slightest use in a surface or wick carburetter.

Fitting Drain Tap.

A.J. (Kilkenny).—(1) I propose to fit drain tap or plug in side of crank case ($3\frac{1}{2}$ h.p. Humber Olympia) in order to ascertain with accuracy how lubrication stands, this at present being mere guess-work. At what height from bottom of case should this be fitted? In other words, what depth of oil should lie at bottom of case in order to ensure adequate lubrication?—We think that if you fit the tap so that the hole is $\frac{1}{2}$ in. from lowest point of crank case it would approximately be in the right position. This would show a depth of $\frac{3}{4}$ in. of oil inside, assuming the thickness of the case is $\frac{1}{2}$ in. This depth of oil ($\frac{3}{4}$ in.) should be ample.

C.H.W. (Armagh).—It would be rather a risk to fit solid tyres to the driving wheels of such a lightly-built car. You would be tied down to a very slow pace. In our opinion you would do better in spending a few pounds in having an extra thick running tread vulcanised on your present pneumatics.

B.R.G. (Windsor).—It is quite evident you have got hold of a piece of very poor quality high tension cable for it to appear covered with cracks in a short space of time. This accounts for the leakage of current all along the frame when the cable got wet. You can tell a piece of really good cable by the tenacity of the rubber and difficulty in cutting it. Poor quality stuff you will find cuts as easily as a piece of soft wood.

Connections.

G.S. (Avon) writes:—I have a this year's Rex machine, and am doubtful as to the wiring connections. The coil (trembler) has three terminals, plug, P, and C. Will you inform me if C ought to be connected with handlebar, and if N of accumulator should go to contact breaker, which is a plain make and break. There is about $\frac{1}{4}$ in. side play on the shaft carrying ignition cam. Should this be so? There is far too much sparking at platinum points of contact breaker, and at coil. Can anything be done to remedy this, as it appears to weaken the spark at plug?—The connections will be as follow:—P terminal on coil direct to accumulator, C on coil to contact screw of make and break, negative of accumulator to the plug switch, and from this to handlebar. The side play is intentional, there is no objection to it, but there is a strong reason why there should not be any up and down motion of the cam. A plain make and break is not as good as a wipe contact for trembler coil, as the period of contact between the platins is too short. Should say your coil was not much good if the sparking is heavy. You can reduce the current in primary circuit by a length of resistance wire; this will effect some improvement. This is about the only thing you can do with it.

A NOVELTY!

"The Motor Strip Maps."

A most interesting series of strip maps of handy size for motorists are now ready. The following are obtainable at once:—London to Bath and Bristol; London to Birmingham, Liverpool and Manchester; London to York, Leeds and Harrogate; London to Exeter and Teignmouth; London to Southampton, New Forest and Bournemouth; London to Brighton and Portsmouth.

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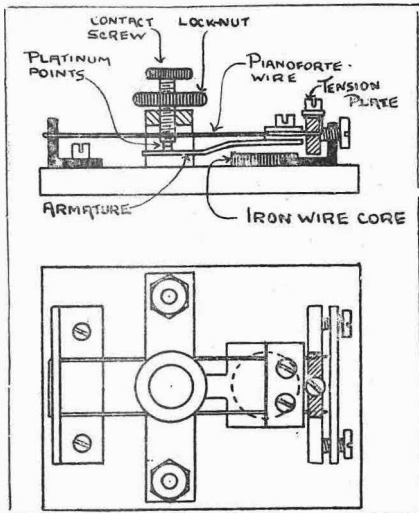
W. Spindlelow (Rainhill).—The machine you have is a very out of date pattern, and as far as we can judge from the details you give, the surface carburetter as originally fitted does not work, but has been converted into a tank to supply the Roubeau spray carburetter. This is a fairly good type, but more liable to give trouble than a float feed spray such as an F.N. or Longuemare. (2) It will be necessary to fit a standard type of lubricator to the engine; that is to say, you will have to fit a small tank and a pump with two-way tap. (3) Any pulley having a sharp V section groove, and sufficiently deep will do for a round belt.

Fails to Restart.

"No Name" writes:—Can you advise me re the following difficulty with motor-bicycle?—All conditions for good running perfect. Petrol, current, oil, in good working order. After the machine has been running a few miles the engine ceases to work—(1) Fitter after switching off for a corner, traffic, etc.; or (2) whilst running steadily, shutting off the air, or advancing the spark has no effect. If I pedal for a short distance, and then switch on, it still refuses to spark. Nothing does any good but getting off and waiting for, perhaps, half a minute, when the engine will run again for a time, then it plays up again and stops. What is the cause, and what is the treatment?—This looks suspiciously like a weak accumulator; or, failing this, the engine gets overheated and starts off again when it has cooled down sufficiently. If a spray carburetter is fitted, it would be as well to see that the petrol feed is all right, and the jet clear. A slight block in the spray might cause the stoppage.

Two-Stroke Motor, etc.

W.V.F. (Edinburgh) writes:—(1) I am making a two-stroke motor, $2\frac{1}{2}$ in. bore and stroke, and am using a second cylinder to act as a pump, somewhat after the Bichrone principle. While the one piston travels up the other travels down. Thus fresh mixture is forced through an induction valve in head of working cylinder, and the exhaust is expelled through eight $\frac{1}{4}$ in. holes in side of cylinder. I take it that a four-cycle engine of $2\frac{1}{2}$ in. bore and stroke will give about $1\frac{1}{2}$ h.p. Is there any reason why this one I am making should not give at least $2\frac{1}{2}$, as there is an impulse every stroke? (2) Can you inform me where it is possible to get liquid asbestos? (3) Is it possible to solder cast iron?—(1) We do not think you can safely reckon on getting more than $1\frac{1}{2}$ h.p. out of a 2-stroke motor, $2\frac{1}{2}$ by $2\frac{1}{2}$. Power for power the 2-stroke cylinder is larger than the 4-stroke. (2) We have never heard of liquid asbestos. There is such a thing as silicon paint, we believe, which might be what you want. We cannot say, however, where this can be got. (3) Yes, if you get the parts hot enough.



Illustrating reply to E. Grays.

The Syntonic Trembler.

E. Grays (Edinburgh) writes:—Would you please explain the action of the "Syntonic" trembler, as used on the Fuller coil? I particularly wish to know how the intensely high speed of vibration is obtained as compared with an ordinary trembler.—The principle will be best understood from the diagram. A length of piano-forte wire of rather fine gauge (about 32s) is looped across between two brackets, but one end can be tensioned by screws; the wire can thus be drawn very tight. The soft iron armature is rigidly clamped across the wires at one end, and this part just rests above the magnet core of the coil. As will be seen, the armature is extended to about the middle of the wires, and at this point the platinum contacts are fitted. When the current is passing through the coil the armature causes the piano-forte wires to be set into intensely rapid vibration, and the make and break at the contacts corresponds with this vibration, and thus, no matter how rapid the speed of the engine, a stream of sparks always occurs at the plug. The coil, when in action, gives a clear musical note.

A Timing Mystery.

"Eless" writes:—I have a 1903 Minerva 2 h.p. fitted with spray carburetter (by Minerva Company, an F.N., I believe), also a 1904 Noble 2½ h.p. fitted with D.R. carburetter. Some months ago I overhauled both machines; I got 26 miles an hour on the level out of the 2 h.p. and 28 out of the 2½ h.p. Both these machines have come in to be altered. Minerva for new valves and overhauling; the Noble to be re-bushed. I have carefully timed both engines. The inlet to open 1-16th down on the induction stroke, and exhaust to close on dead top centre. The piston rings are tight, valves properly ground in, all carburetter passages clear and free, compression and ignition perfect, ignition set two teeth in sector on retard position when piston is at top of compression stroke, allowing a good range for advancing spark, no misfiring. The result is that the maximum

speed of both machines is about 12 miles per hour. Although I have had dozens of motors through my hands (and am an engineer) I have never had anything so puzzling.—The best thing to do in this case, we think, would be to slightly alter the timing in both machines so that the inlet opens slightly earlier. As it is now, it most probably opens rather later than you think from an experiment in turning engine round slowly. You must also very carefully verify so that you can produce the spark far enough down on the compression stroke to give sufficient range for advancing. This part of the timing is often very deceptive. Also make sure that the combustion chamber and top of piston are quite clear of charred oil. You would do well to see that the exhaust cam is not worn, and lift of the valve thereby lessened. This is not unlikely in an engine that has had a lot of use.

Faulty Construction.

J.W.T. (Burnley) writes:—I have a motor which I have constructed myself 3 3-16ths in. bore by 4 in. stroke, and have fitted it with an F.N. spray carburetter. I am unable to get regular explosions, and only an odd one now and again, and then they are only very weak. I have a good spark at plug from a trembler coil, and use Pratt's motor spirit. I have a throttle to carburetter for mixture, also a slide for throttling air supply. Can it be that the funnel in carburetter needs altering?—It would be a difficult matter to point out the fault in a case like this. The majority of home-made engines refuse to run properly at first, usually because some fundamental feature in the construction has not had due attention paid to it. Thus it may be there is no compression owing to defective piston rings, the timing of exhaust valve or ignition cam is incorrect, inlet valve has too strong a spring, contact breaker does not work properly and sparking is a difficult matter to set properly. It is very probable you will find the fault lies in the engine itself. The best plan would

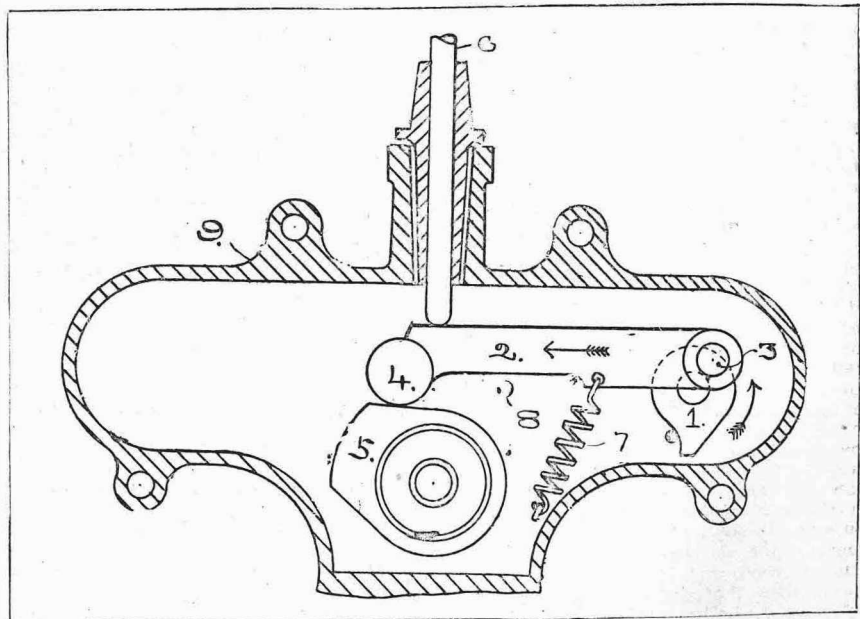
be to take it to pieces and go very carefully through every detail till you locate the fault, paying special attention to the timing.

Customs Regulations, etc.

H. G. Innes (Upper Parkstone).—(1) According to a letter published in "O.P.V." recently, the British Vice Consul at Dieppe states that the customs regulations are being strictly enforced. (2) It does not necessarily imply that an escape of exploded gas past the piston rings is due to a broken ring. There may be a slack or badly shaped ring, or the slots of the three rings may have worked close together. You would have to remove the cylinder to see what was wrong. It is fairly certain that some of the exploded charge does get into the crank case, if this becomes too hot to hold the hand on after a short period of running.

The De Dion Valve Controller.

"Six h.p. De Dion" (Peterboro') writes:—I should be glad if you could enlighten me as to the action of the De Dion exhaust valve regulator, and in what respect it differs from an ordinary exhaust valve lifter.—This ingenious device can be readily understood by reference to the illustration which shows the mechanism and case (9). There is a cam (1) having a lever (2) pivoted to the outer edge of the rocker at 3. A boss is fixed at 4 against which the 2 to 1 cam (5) strikes and causes the valve tappet rod (6) to be pushed upwards. If the cam (1) is moved in the direction of the arrow, the lever (2) will move forward and the main cam (5) will cause it to lift at a proportionately later period, and less lift will be given to the tappet (6). The exhaust valve, therefore, does not open the full amount, and a certain amount of burnt gas is retained in the cylinder. The lever (2) is kept down to its work by the spring (7), and there is a stop (8) to limit the amount of movement. In an ordinary exhaust valve lifter the compression is diminished, owing to the valve being kept permanently open to a greater or less extent.



Illustrating reply to "Six h.p. De Dion."

BUREAU.

J.L.R.—(1) You can obtain indices for each volume from our publishing department. (2) Would not the "Castle" electric lamp suit you?

Coal (Workington).—You are clearly liable to pay the Revenue tax. You can only claim exemption if the machine is used for the conveyance of goods.

A. 5904 (Sydenham).—If the facts are as stated in your letter, we are of opinion that you were overcharged for the repair. Half the figure should have been ample.

W.W.A. (Dublin).—Evidently you have had a temporary seizing of the piston, through something being amiss with the lubrication. The engine having been run at a very high rate of speed previous to the seizing would tend to use up all the oil available in the crank case. If a small amount of paraffin sufficed to free the piston, it is not likely the cylinder is scored.

Carburation Difficulty.

D.P. (Anfield) writes:—I would be very much obliged if you could explain or suggest a remedy for the following behaviour of a 2½ h.p. motorcycle. It has an A.I. valve, Longuemare carburetter with throttle, and extra air inlet, belt drive. A little time ago a new piston was fitted. Afterwards, when running the machine on the road for a few minutes, it got very hot, and continued to fire after the spark was turned off. Also, after raising the exhaust valve and then dropping it again it knocked badly. This was pre-ignition, I suppose. Now, the valve and spark timing seem to be all right, and the carburetter I was using happened to be a new one. Also it does this even if gas is turned almost completely off, and the air inlet opened as much as possible. The only thing I notice is that compression is not as good as it was before alteration. If I stand on the pedal (I weigh 9 stone), it very slowly goes down. I think it leaks at joint between cylinder and valve-box (the latter is separate). The valves are tight. I should be very glad if you can suggest a remedy. (2) What difference in driving should the new Longuemare with air regulator underneath make?—There is no doubt but that the engine has been overheating seriously for the engine to continue running with the spark switched off. We fancy that the new piston you have had fitted has not its rings in good condition yet, and a little compression is lost. This will improve in time if you do not under-lubricate the engine. You could easily test the cylinder and head joint for leakage by smearing the joint with soapy water and noting if the leakage creates some small bubbles. If you make sure about the compression, it would be well to see that you have not too large a spray jet in the carburetter. This seems probable from the fact that you are able to use so much air. Finally, make certain that you have not got too much advance range on contact rocker. About ¼ inches down on compression stroke would be the maximum. (2) The new Longuemare carburetter is supposed to be automatic and regulate the air supply according to the engine speed, and it is not necessary to manipulate the air lever. In practice, however, a small amount of manipulation is necessary.

D.E. 34 (Pembroke).—(1) It is very probable you could have a Garrard two-speed gear fitted to your engine, but the low gear has not such a large reduction as you specify. (2) It seems that you have scarcely sufficient range of advance and retardation on your ignition rocker. Of course, if the compression is weak, the engine will fail to respond to the spark.

J.C.R. (Tenbury).—(1) The two-stroke motor illustrated in the Manual has no special or patented features about it. It is a standard principle, just as the ordinary four-stroke cycle motor is. (2) No; you could not reckon on getting more than two-thirds of the power that you would out of the other engine, assuming equal size cylinders and the same compression to be used.

J. Yule (London, E.) writes:—I have for some time past been using a trailer in conjunction with my 1902 Minerva 1½ h.p. motor-bike. The way the machine has tackled the extra load has satisfied me so much that I am converting the trailer into a fore-car. At present the engine pulley revolves 5½ to 1 turn of the 28 in. back wheel. Do you consider this is too high for the new venture, which will be used mostly on Essex roads? If so, what size pulley do you recommend, without running the risk of overheating?—The idea of using a 1½ h.p. engine for a tri-car is quite impracticable. Even if geared abnormally low, it would not tackle a hill of the most moderate grade. It cannot even be done with a 2½ h.p. engine, single geared.

Slack Piston Rings, etc.

F.W.F. (Leicester) writes:—My machine is a 2 h.p. Peugeot. It has taken to making a threshing noise when starting, and runs with very weak explosions. After going half a mile it picks up and goes well, but repeats when starting again. The compression is not very good, exhaust valve seems all right. The crank case gets rather warm after it has been running half an hour. Would it be that the piston rings want renewing? Should I have any difficulty in getting them? Can you also give me a remedy against oil working out of the contact breaker shaft bearing, which gets on the platinum points and causing misfiring, the platinum gets pitted and burns away rather quickly?—We should surmise that the noise was caused by the gases escaping past the piston rings. It is just possible that when starting you paraffin the cylinder pretty freely, and this washes off the lubricating oil, and it is not till the lubrication of the cylinder is effected again that the compression becomes strong. The engine will then run all right. If you examine the rings you will probably find them rather slack in the grooves, and the slots of all three almost in line. They should be set out so as to be 120 degrees apart. If you get the exact measurements of the rings you could obtain similar ones through any of the large factors in motor parts. With regard to the leakage of oil into the contact breaker, you cannot very well prevent this. The best thing is to keep the contact breaker well cased in so as to keep dust away. If the platinums are well trimmed up and make firm contact, the oil will not affect the sparking in the least. Of course it is as well to see that the ball valve in crank case is working, and not to use too heavy a charge of oil.

J.W.M. (London) would be obliged to any reader who could tell him where he could obtain a two-inch strip of goatskin to fit inside the tyre cover of his motorcycle.

E.J.J. (Battersea Park).—The diameters of the gear wheels you refer to were not drawn to scale, hence they do not appear to give the correct ratio. The engine would probably have to be started on petrol till it warmed up.

ANSWERS BY POST.

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

Monday, August 22nd.—J. W. Morris (Retford), Facer Bros. (Northampton), J. Baird (Thorhill), W. F. Copeland (Whitby), W. Lancaster (Kendal), W. T. Clark (Plaisiow), J. Gillingham (Guildford), H. Hurst (London), E. J. Wandsworth (Manchester), W. Mitchell (Bollington), J. H. Clark (Elgin), R. L. Kiniston (Salisbury), G. Eason (Walthamstow), A. R. Rutherford (Lochmaben), F. G. Alden (Oxford), E. H. Mumford (S. Petherton), C. Duboscq (Stanford), E. G. Greenfield (Burgess Hill), F. H. Walker (Birmingham), A. E. Gibbs (Anglesea), J. Scott (Edinburgh), W. H. March (Sheffield), H. Stark (Plumstead), A. Neigh (Stoke), F. Spensley (Bridlington), E. Christie (Sheffield), E. W. Spring (Sierra Leone), J. Gunn (Newton Swiney), J. Kerry (Downham Market), H. Carter (Ashby), R. J. Copin (Mildenhall), G. Richmond (Bradford), H. G. Ley (Derby), J. Euman (Innerleithen), T. A. Hunt (Plymouth), J. A. Keating (Liverpool), A. T. Dickson (Edinboro'), W. P. Hedsar (Surbiton), G. Phillips (Hull), R. Bolton (London), B. Wagensieder (Chiswick), A. R. Kellett (Burnley), L. H. Curtis (London).

Tuesday, August 23rd.—F. R. Harrold (Fairford), K. Spensley (Chertsey), G. Everiden (Brighton), E. Caswell (Hornsey), W. H. Powell (Wembley), A. Makin (Pontefract), J. Hawker (Longparish), G. P. Oppenheim (Chatham), H. Finney (Goodmayes), H. W. Bowman (Ashwell), G. I. Haslehurst (Lincoln), T. H. Scott (Crumlin), C. S. Young (Henley), J. W. Scott (Penrith), J. B. Buchanan (Amsterdam, Transvaal), H. Goodwin (Newcastle, Staffs.), A. C. Hill (Clapham Common), W. J. Girvin (Killoglin), R. Ovenell (Abingdon), E. Hadley (Heaton Moor), H. R. Home (Newchurch), G. B. Hall (Ely), Johnson and Wright (Northampton), J. O'Cromber (Brighton), J. Holmes (London), G. E. Gregory (Peterboro'), H. Blair (Inlithgow), T. F. Gaskell (Liverpool), T. G. Wait (Burgh), J. A. Cowie (Cardross), L. J. Vosper (Snodland).

Wednesday, August 24th.—J. B. Keith (Aberdeen), H. Goodwin (Bovey Tracey), W. Glen (Callander), R. M. Heanley (Andover), F. Bird (Brauching), J. Holmes (London), E. E. Early (Witney), F. A. Schmidt (Tunbridge Wells), E. H. Phillips (Dresden, Staffs.), F. Billinghurst (Kensington), S. Laxton (Bourne), A. G. Westcott (Bridgwater), T. C. Ogills (Portsmouth).