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HANDLEBAR CONTROL FOR MOTORCYCLES.

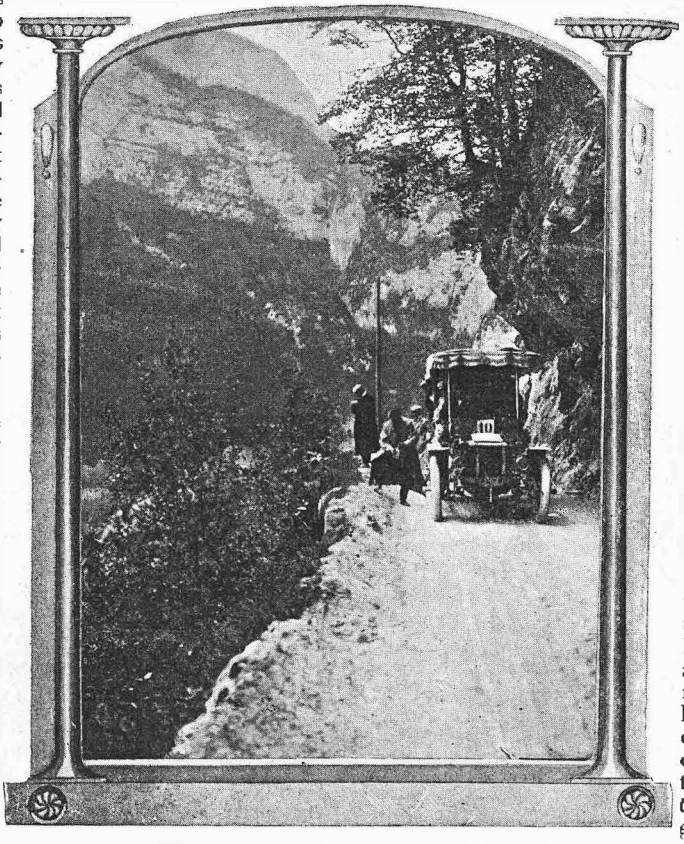
The Article opens up a very interesting subject upon which we invite the opinions of our readers.

In view of the claims made as to the superiority of handlebar control by certain enthusiastic users of this system, it may be of interest to discuss the pros and cons, to see where we really stand in regard to the important feature of control of motorcycles generally. A.—In the first place it is highly desirable that the handlebar should be kept as clear of clips, levers, and projections as is consistent with security and comfort: and that (i) because of the rust which inevitably forms by rain sinking into their joints and crevices (ii) to allow of changing one's hold occasionally; (iii) to make a very light grip possible, and thus avoid vibration from the front wheel; (iv) to avoid the necessity for extending the fingers like the claws of a cat sliding down a steep slate roof. B.—At the same time, it is absolutely essential that the rider should be able (i) to start the machine without removing his hand, as a "pull" on the bars is a help in pedalling work; both hands are required to steer at a slow pace; if the running mount is used, both hands are needed to prevent the steering becoming erratic at the moment when he jumps into the saddle; (ii) to stop the machine in a similar way, preferably with either hand singly, and to stop it instantly and permanently: i.e., if he and the machine unexpectedly part company, the removal of his hands should not let the engine restart, and proceed alone on its devious path. C.—It is further very desirable that he should have handlebar control of the speed, so as to slow down or accelerate in traffic, while devoting both hands to the steering and both eyes to the surroundings. D.—In the case of a machine with a susceptible carburetter, the mixture should also be controlled from the handlebar, for comfort in hill climbing. Having laid down these two desiderata, viz., that I should like my handlebars to be as smooth as the Brixton Road, and yet that I must have either three or four functions controlled therefrom, I will proceed to draw up a scheme for what constitutes my idea of the best control. I have to arrange for:—1, Switch; 2, exhaust valve lifter; 3, throttle; 4, air; 5, spark advance; 6, horn or bell; 7, two brakes; 8, clutch; 9, silencer-cut-out; 10, variable inlet-valve-lifter; 11, adjustable carburetter spray.

1. *Switch.*- Practically every up-to-date motor-bicycle has a two-way switch on the tank, just above the accumulator-box. Now, in my opinion, switches are not desirable things, because they are so seldom positive; and, if positive, they are liable to become deranged. Of all switches, a handlebar switch is the worst, because it is almost invariably inaccessible, and because it lengthens the low tension wiring. I shall, therefore,

OMIT THIS SWITCH ALTOGETHER,

as in practice I have done for nine months; and when it is desired to cut off the current, the switch immediately over the accumulator-box can be used.



Road through one of the gorges in the French Ardennes.

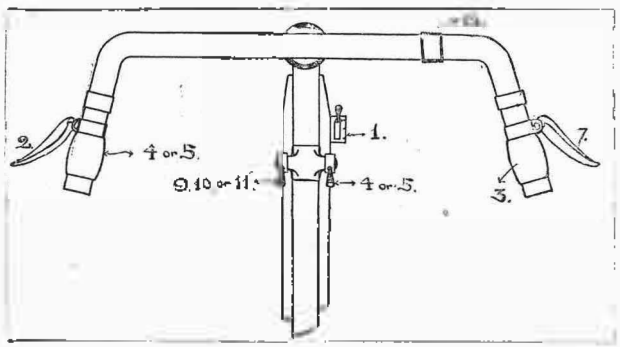
2. *Exhaust valve lifter.*—This question has been thoroughly thrashed out lately, and I need only say that, personally, I would not dispense with it for worlds—I would rather go back to lamp ignition. But that is not saying that the perfect exhaust lifter is already with us. The usual Bowden trigger is ridiculously small—necessarily so, when two hand-brakes are fitted. If we use the exhaust valve lifter at all, we use it much. Let it then be a large, comfortable lever fitted under the left grip—large, because infinite gradations of pace in traffic can then be obtained—on the left, because the more powerful right hand can then be devoted to the brake. At the extreme end of the bar there should be a snap clip to hold up the lever, as on the Bat or Rover machines. (If a clutch is fitted, the clutch must be worked by the one lever permissible at this end of the bar. It will then be desirable for the exhaust lift to have one or more fixed positions, so that it may act as a governor: the best plan is to attach it to the clutch lever,

Handlebar Control for Motorcycles—Contd.

so that with the clutch fully out, the valve is slightly raised, but the valve drops just before the clutch faces engage.) 3. *Throttle.*—As I have taken the rather unusual step of dispensing with a handlebar switch, the throttle must be used as a secondary stop,

IN CASE OF THE EXHAUST VALVE LIFTER BREAKING.

This once happened to me when driving without a switch, and the delay in reaching the ordinary throttle lever nearly cost me the machine. As the exhaust valve lift is on the left, the throttle must be on the right: and it must obviously be either a twisting handle or a thumbslide—quick in action, and remaining at exactly the point where it is set. Either method will give 1½ in. range, which is ample. The thumbslide is more apt to rust visibly, but you cannot see from the twisting handle how far it is open: doubtless the makers will soon nick the metal ring at intervals. By this position we have the throttle which we ought to use most ready to hand: and it provides a safe means of stopping the machine if the exhaust lifter breaks. 4. *Air control.*—In the present rage for an automatic carburetter, this is missing on most modern machines, and I am very sorry to see it go, as I think it made both for interest and efficiency. If we are not riding a pour-in-the-petrol-and-it-does-the-rest make, the extra air inlet should be on the handlebars, unless the carburetter is so far automatic that the mixture never alters on hills; this is true of some Longuemare carburetters which run all day with the air inlet wide open, but require it closed to start. On most modern machines it may be worked from the top tube. But with a surface or other sensitive carburetter it can be controlled by the left-hand twist-grip. 5. *Spark advance.*—It is very tempting to have this worked from the handlebars, for if one recognises some former police acquaintance, and desires to slow up for a friendly word, it impresses Robert that you can do so apparently without mechanical action. At the same time, there is no real need to have it on the handlebar; and, except with a thumbslide, there is always the danger of your re-starting, and often a sudden halt, with the ignition fully advanced, and so straining the engine. This, then, is an operation which can safely be relegated to the usual lever above the tank.

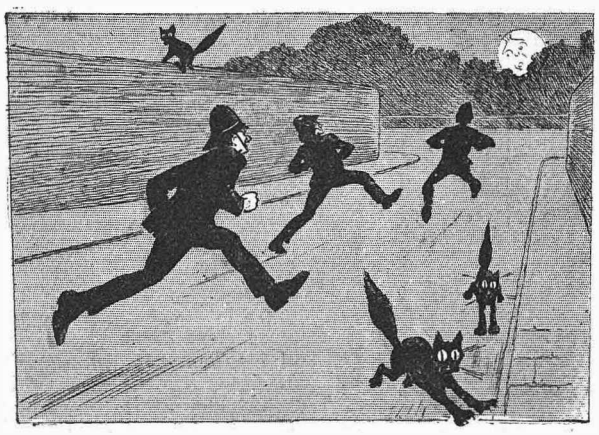


6. *Horn or bell.*—"No philanthropist," says Mervyn O'Gorman, "has yet showered inaudible motor-bicycles on a reluctant public"; and I honestly believe that when one does begin, he will meet no warmer reception than is usually accorded to his kind. Silencers can now be bought that produce a gentle swish-swish like a fan. A motor so fitted called on me recently. I was annoyed, first because I did not hear it, and so could not tell the maid I was out; secondly, because, on departing, the driver squawked down a monstrous funnel, and played chimes on a still more monstrous bell. If such silencers become universal, we shall have to choose between continual use of the unmelodious horn, a peal of cathedral bells, or an apparatus for projecting the fumes of the exhaust a hundred yards ahead instead of behind, as at present. In the meantime, silencers of reasonable efficiency are common, and an ordinary horn is sufficient. A tame genius on the staff of this journal suggests the bulb should be incorporated in the saddle, and warning of approach given by bobbing up and down, like an equestrian on the trot. Personally I use a horn of everyday pattern, clipped near the right grip. In traffic the throttle is kept constant, speed regulated by the exhaust lift on the left, and the right forefinger taps the bulb when necessary. 7. *Two brakes.*—If handlebar control is desired, it becomes almost essential to work one brake by the foot; and in this connection the Rex belt rim brake is excellent, provided the rim is built up stoutly to withstand the additional strain. Some riders have no objection to foot-brakes worked by the pedals. The other brake can be

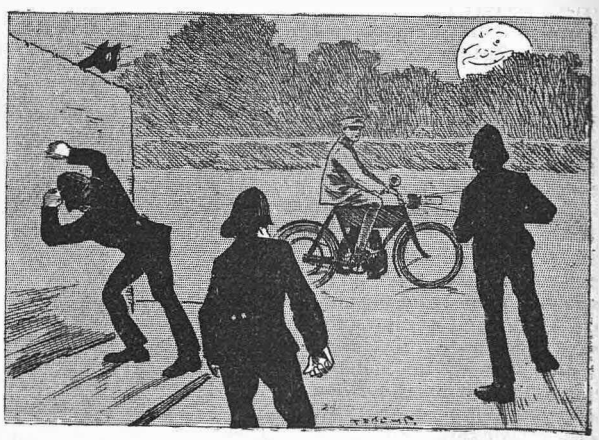
WORKED BY A RIGHT-HAND LEVER OF THE ORDINARY TYPE.

8. *Clutch.*—I have allowed above for this being worked from the handlebar by a lever taking the place of the exhaust valve lift in any specification. *Nos. 9, 10, and 11* are little refinements that few trouble to employ: but their levers will be well placed on the top tube, or in a convenient position other than the handlebar. I am a very recent convert to this system of control, as I am earnestly assured it is a practical necessity if one lives within the four-mile radius: previously I imagined it was intended as a safeguard against theft of the machine except by the expertest of the expert: and even now I still remember lovingly traffic-riding on my old Excelsior, thumb-switch on the left, exhaust trigger on the right, and air, spark, and throttle on their well-remembered spindles above the tank.

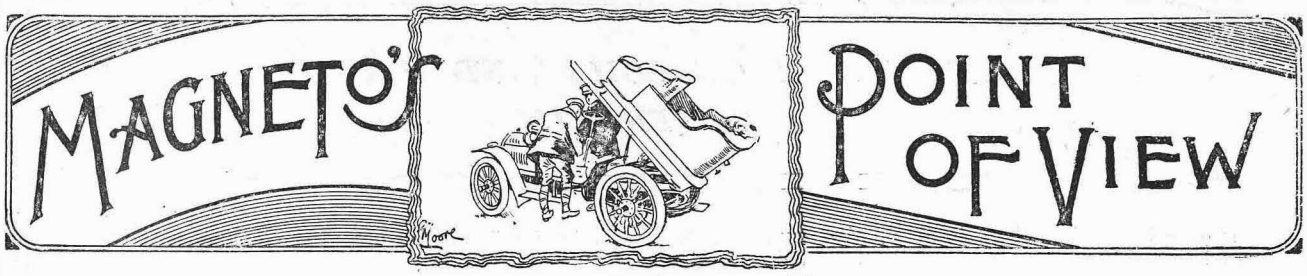
B.H.D.



Suicide or murder?" said the zealous officers, as they ran to effect an arrest.



But it was nothing more serious than a series of explosions in Jones's silencer.



Errors in Timing and How to Remedy Them.—Contd.

Exhaust throttling is rarely suspected, and as every other matter such as compression, ignition, carburation and lubrication may be perfect, it proves a veritable puzzle to the rider to locate what is wrong. It is, as a rule, best to get a new cam to effect a remedy, but it is quite possible to screw on the old cam a piece of sheet steel, bent and filed to shape, and then well hardened and tempered. This means that the cam itself must be softened so that it can be drilled and tapped. It is a delicate piece of work to enlarge a cam, and only to be recommended to those who have a good mechanical experience. The method will be readily understood by reference to the illustration (Fig. 2 last issue).

TIMING THE CONTACT BREAKER.

Now to come to the important matter of timing the spark. The contact breaker must occupy a position relative to the exhaust cam, so that it comes into operation just by ¼ revolution of the gear wheel before the exhaust cam does. This will ensure the spark occurring just at the time the piston is beginning to descend on the firing stroke, provided that the contact spring is set in the right place. To make this quite clear it will be necessary to explain the principle underlying spark advance and retardation. The diagram (Fig. 3) shows a cylinder and piston in outline, and alongside of it is the contact breaker cam or disc. The figures 1, 2, 3 and 4 represent positions of the piston during the compression stroke, and *a*, *b*, *c*, *d*, positions of the piston on the firing or impulse stroke. To make the action easily grasped the contact breaker disc is supposed to be rotating in the direction right to left. The contact sector on the disc—as a little consideration will prove—will occupy a definite position relative to a fixed point for every position of the piston indicated; thus when the top of the piston has reached mark 4 the sector on the contact disc will have reached position 4; therefore, if the brush happens to touch it when it is passing this point, the spark would occur at the plug at that instant and the charge be fired. If the brush is at positions 3, 2 or 1, the spark occurs at the respective instants when the piston reaches 3, 2 or 1 in the cylinder. The figures represent early ignition, and the letters late ignition. This much being understood it will not be difficult to determine how the contact rocker should be set.

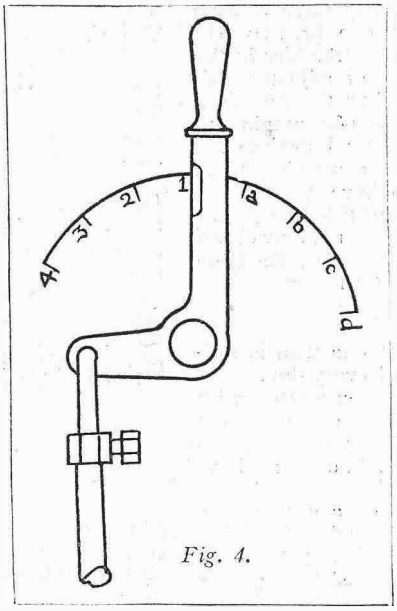


Fig. 4.

THE POSITION OF THE LEVER.

First put the adjusting lever in a vertical position (Fig. 4), which, it will be assumed, allows an equal amount of movement on each side. The connecting-rod which actuates the rocker is in most machines capable of being adjusted as to length. This will enable the contact rocker to be set exact to correspond with the piston being at the end of the compression stroke. This position is readily ascertainable from the previous markings on the pulley and crank case. If a trembler coil is fitted to the machine, all that is necessary is to switch on the current, turn the pulley round till the piston is at the end of its stroke, then carefully bring round the contact rocker till the coil just begins to buzz, then tighten up the adjustment, and the thing is done. This operation ensures that with the ignition lever in a vertical position the spark is occurring at what might be termed a neutral position; that is to say, the ignition is neither advanced nor retarded. There is one very important matter which must be seen to, and that is, not to have *too much* range for advancing. As a general rule it might be said that under no conditions of running should it be possible to fire the charge before half the compression stroke has been completed. If there is more advance than this, it might result in a broken crank pin some time or other. Retardation may safely occur as late as two-thirds of the stroke. No serious harm can result by firing later, but some unpleasant banging in the exhaust pipe and box may be caused through the explosion occurring just about the time the exhaust valve is due to open. When starting an engine it is important to remember that the spark should always be well retarded. On some machines having chain transmission neglect of this precaution may cause serious damage both to the rider and driving mechanism, more especially to the chains themselves.

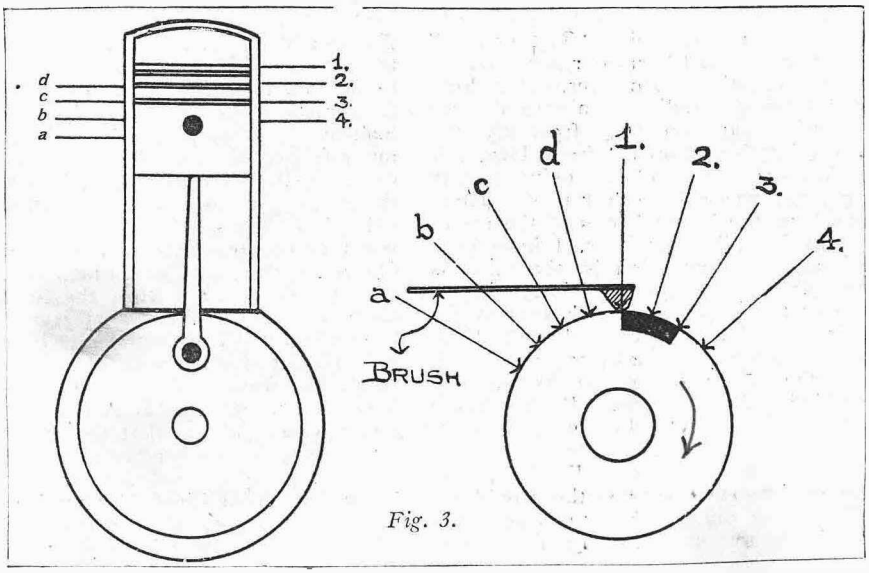


Fig. 3.

BQ

SOME NOTES ON COILS AND IGNITION GENERALLY.

For once in a while there is an opinion expressed in a recent issue of "The Motor" with which I do not at all agree; and this is an affair of such infrequency in my favourite paper as to call for some comment from me. In an article dealing with light car trials the writer, after a general review of features to be found in most of the cars entered for the trials, refers to the ignition system adopted. "Only one machine (the 8 h.p. Simms) has magneto ignition, all the others relying upon high tension with the usual coil and accumulator. Whilst the majority have a wipe contact breaker." He also observes, "one or two still retain the troublesome and out-of-date notch trembler in the commutator with all its attendant worry of adjustment." This is such a curious example of begging the question, that I feel impelled to raise my voice by way of championing the "mute," or "non-trembling" coil. May I preface my remarks by a little personal word? I am a member of an English motor manufacturing firm who have been in the business for the past four years, and during this time it has been my lot to test and drive scores of engines, not only of our own turning out (for the first two years we used De Dion engines exclusively) but also those made by the most eminent manufacturers in England and France. I merely mention this little personal matter to show that writing here I am not an ignoramus or a theorist, but one who is intimately connected with engines all day and every day.

I can imagine the writer with his little car fitted with a De Dion engine fiddling about the commutator on the roadside with a screw-driver and the look of one from whom all confidence in human nature has fled. I know it; I have "had some" myself.

Never shall I forget my first long trip on a car: it was to London, two hundred miles away. I had a De Dion engine of 4½ h.p., and fitted with a trembling coil. At Great Haywood, a Staffordshire village, consisting of one street, a hill, and a coaching inn,

THE IGNITION GAVE UP THE GHOST,

and had it not been for that very useful man, Burnell, of Rugeley, I might have been there yet. He and I worked at the thing from nine o'clock at night until midnight, aided by a stable lantern, "whose fitful glimmer," etc., etc. It was quite poetical—all but the language; that was, I am afraid (I speak for myself alone), full of dark and dreadful words; and in the same adjusting of which "The Motor" writer complains, both Burnell and I burnt our hands on the exhaust pipe—a delicious sensation! However, get to London I did, two days afterwards, and a fortnight's driving in wet weather in London took ten years from my life. Shortly afterwards, coming into London from Hertfordshire, the same old trouble; instead of our doing twenty miles an hour, our average was a little over three. However, these things teach us the ins and outs of the art of motoring. Recently, as I shall show later, I have been having more trouble, and my contention is, the cause is the use of trembling coils on high speed engines.

Now there are one or two points to which I want my readers to devote their particular attention. It will be admitted that De Dion is amongst the finest makers of high speed petrol motors in the world: then comes Buchet, and then, a long way behind, quite a crowd. Buchet is, as many people know, the engine maker who supplied Santos Dumont with all his airship engines. Is it likely, to say the least of it, that these two makers, especially De Dion, who makes changes in his engines every six months, would not have adopted the wipe contact and trembling coil long ago had there been the merit in this system of ignition which its fond adherents would have us believe? I remember we fitted a 16 h.p. Buchet engine to a car about a year ago. The Buchet engine has not a slit for the hammer on the trembling blade to fall into, but a "shoulder" on the cam—a "positive make and break" in other words. We fitted a four-cylinder trembling coil, and, dissatisfied with results, fitted a non-trembling coil; the effect was almost miraculous, the change almost doubled the speed of the vehicle. No more misfiring; the engine raced and roared away in the works, and, what was still more satisfactory, on the road. There could be no other explanation than that

THE COIL HAD MADE ALL THE DIFFERENCE,

for no other adjustment had been made. Monsieur P. J. Truc, the manager of Buchet's works, is a firm believer in the non-trembling coil, and the De Dion manager is also of the same opinion.

Let us look for a moment at the ignition system on a De Dion engine. Four or five years ago one might have made that request in fear and trembling, for nobody seemed to know how to start about adjusting the wonderful screws and blade. If you wish to get the best results out of a De Dion engine with non-trembling coil, turn the engine (for your health's sake, with the switch off) until the hammer falls right with the slot, as far as it can. Then put your platinum-tipped screw in the place provided for it and watch carefully. When you have screwed this up to such a point that the screw lifts the blade slightly, lock it up by the lock-screw provided for the purpose. Four years ago people were told to "slacken the trembler until it buzzed." No wonder there were so many breakdowns;

THE CONTACT WAS NEVER SURE.

If you do this correctly, as I have described, and your other conditions are correct (plenty of petrol, a well-charged accumulator, and above all the switch on) and you cannot get good results, you can call me "Denis," as they say in America—a term of reproach obvious to all but politicians. Providing that you have, say, a De Dion engine on your car, and you are suffering from trouble, I wager that if some misguided man has fitted you a wipe contact and a trembler coil you will find the coil a little one. That, of course, is the manufacturer's fault. He pays so much less for one of these little tiny coils, with something like a Carpentier trembler on it, than for a big, sound, wholesome Bassée and Michel "first quality," that he is saving money thereby; but, what is more important to him, that coil is going to give trouble. I can buy a trembling coil in Paris for something under a sovereign, and if taken to pieces to look for the condenser, you will find it will need your best magnifying glass to find it. Your car has an expensive engine, but the ship is being spoiled for a ha'porth of tar in the shape of a good coil. "Oh, but the coil buzzes splendidly." I know it. You bring the engine round to contact, you turn on your switch, and there is a fine healthy buzz like a circular saw; it reminds you of the "Honeysuckle and the Bee." You turn the handle round and "she" starts off wonderfully. That is no news to me; they do it excellently. The trembler coil helps you to start more quickly, but starting your engine easily is not everything. What you want to do on the road is to keep on, and to keep on keeping on. It is when you get over your 1,000 revolutions a minute that you get your misfiring, so you start changing your mixture, trying more gas, and less gas, and every other dodge at "tap twiddling" that you know. Down at Lichfield a week or two ago, Lester, the local motor agent, told me of certain overhaulings he was effecting on his De Dion car, and what do you think the

Some Notes on Coils and Ignition.—Contd.

first was? He was putting the wipe contact and trembling coil away for the old, old system referred to as being "troublesome and out of date." Nor is this the case by any means; my contention is that, given a thorough understanding of all your car and its parts, the "notch trembler" system is

BETTER THAN THE "WIPE AND TREMBLING COIL."

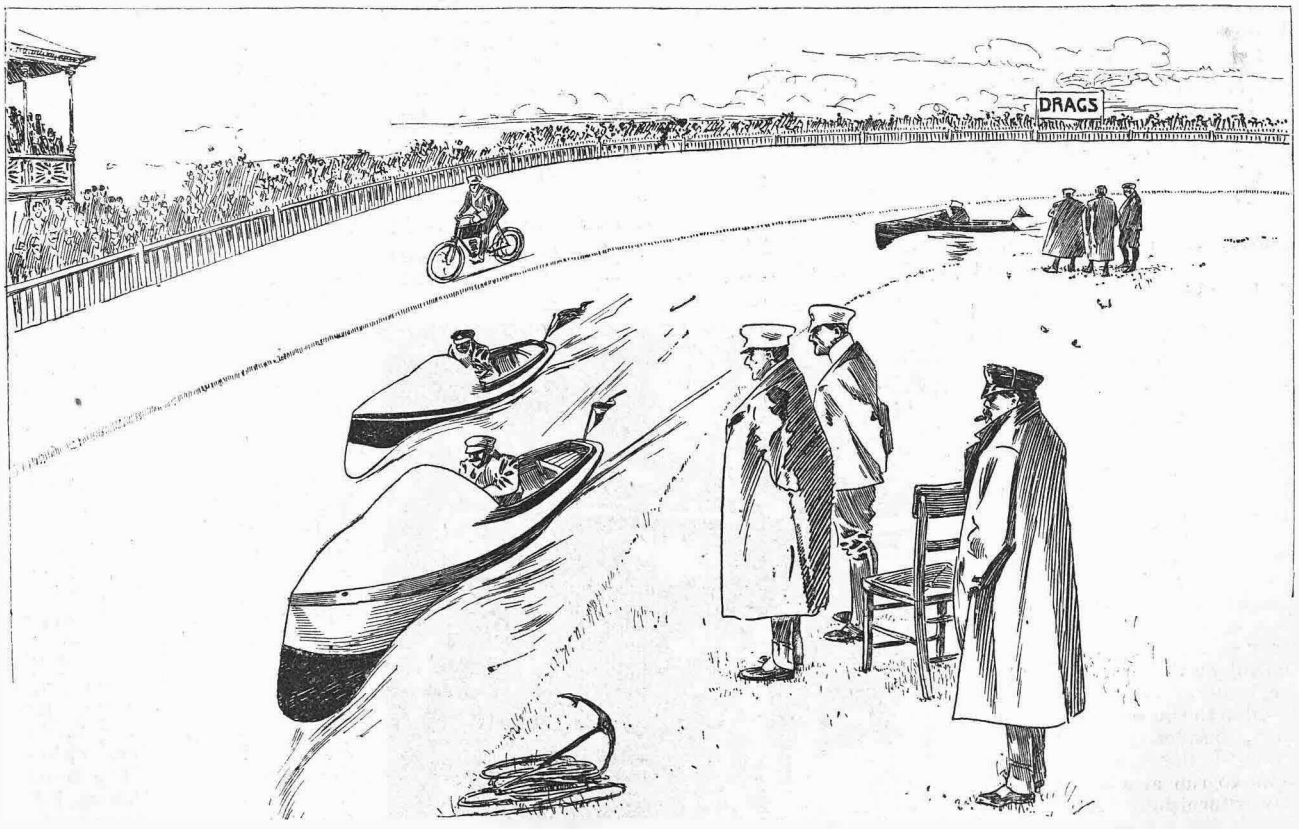
If you buy a car with a De Dion engine, stick to the De Dion ignition. They know, and besides, you are getting precious metal in your trembler blade and contact screw that will give a good spark where it will do the most good, and that is at the plug, not at the coil, and when these contact points have been filed down and worn away to nothing, don't be misled, whatever you do, into buying "imitation" parts to replace them. Buy "imitation" petrol if you like—there is heaps of it to be got. Buy "imitation" plugs if you will; I've been using one constantly ever since February, and it is as good as ever; it cost 7½d. wholesale. Buy "imitation" valves if it suits your pocket—sometimes they *do* fit—but if you value your peace of mind, your engine, and your gears, do not be tempted to buy "imitation" contact blades and screws. For the last two months I have been driving an old car with a 9 h.p. De Dion engine, and I have been having the time of my life with the "just as good" coils. There was one with a "high speed trembler," we will call it the "Magnificent," for it had a name similar to that marked on it. Inside of fifty miles the coil gave up the ghost, and I took the trembler and screw off. The old, old story; instead of shining like all good metal, the points were dull, and as white as paper—and you know what that means. Then the coil took a new fit into its head, it started "governing." As soon as the engine got over 700 revolutions a minute, this infernal coil would put some of its fine work in, and the engine would stop firing for fifty or a hundred revolutions, and then it would start firing again. Imagine what this was for the gears, especially with a live axle; one moment the engine is driving the car, the next the car is driving the engine. All this pleasantness happened on the road, I need scarcely say, and another trembling coil that came from Vienna was tried. Standing still, it buzzed in a most satisfactory manner, but on the road it behaved exactly as the first trembling coil did; so in desperation I got an old non-trembling coil that had kicked about the place for years, and had been dropped and run over a dozen times.

IT ACTED LIKE A CHARM,

and added a good five miles an hour to the speed of the car. Of course there are all varieties of coils, and of the trembler coils which I have used on both slow and quick-running engines I have found the Bassee and Michel without doubt the best. The United Motor Industries have put a new trembler on these coils with their trade-mark, a castle, stamped on them, and these I have found extremely effective in all circumstances. The New Lodge coil I shall be able to criticise surely in a week or two.

Finally, let me impress upon those about to buy a car the following:—Ask your manufacturer who is building the car, or the agent who is selling it, what sort of a coil is supplied; I am presuming now that the standard of your car ordered is wipe contact with a trembler coil. Ask him if there is a better quality of that coil made, and, if so, see that you get it, no matter if you have to pay a pound or two extra for it. If you attempt to economise on cars you are sure to get trouble, but a pound or two judiciously spent is better than hours by the roadside in wet weather.

C. E. WHITTAKER.



Why not modernise our tracks so as to lend variety to sport? We fear the suggestion will not hold water.

AMERICAN TOPICS

NEW YORK, *August 23rd*, 1904.

The Vanderbilt Cup.

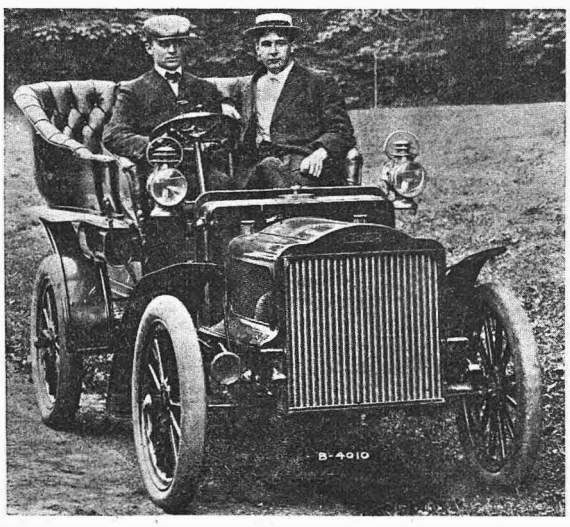
First definite assurances of the entry of foreign automobiles in the Vanderbilt Cup Race have been received in this city by cablegrams to private persons. Two 90 h.p. Panhards and two Napier racing cars are to be shipped here early in September for the contest. The drivers of the Panhards will be Mr. Heath, the winner of this year's Ardennes Circuit, who resides in Paris, and M. Tarte, the famous French driver. The information concerning the Napiers added that the passage across had been engaged for S. F. Edge and another. It is understood that one Panhard and one Napier machine will remain to compete at Ormond Beach in the winter. Unofficially it is announced that Clement-Bayard, Mercedes, and Wolseley machines are also to be entered. It is also possible that Théry, the winner of the last International Cup contest, will come over with his Richard-Brasier.

A Big Projected Tour.

America will invade Europe in 1905 with a large number of home-built automobiles. The tourists will arrive in time to witness the International Cup race. The proposed trip across the country from the Pacific to the Atlantic has been practically postponed until the year following, in order that all the energies of Augustus Post and other promoters of American automobile touring may be given full sway in the arrangement of this project. Inasmuch as America will be represented next year in the International Cup race in France by a strong team selected from nearly one score cars now constructed or about to be constructed, the tour takes an additional interest. America is going after the cup next year, and Americans are going in the hope of seeing her win it.

The 1905 White Car.

Since early in January the makers of the White steam cars have been busily at work designing and experimenting with a new and larger vehicle—the 1905, or Model E. This new car will be ready for delivery about September 1st, and embodies improvements, particularly in the way of increased dimensions, which make it, at least, equal in design and appearance to any automobile produced in this country, regardless of selling price. The Model E is destined to be one of the most popular cars of next year, combining, as it does, the smooth-running and flexible control features characteristic of the White with a King of the Belgians body, long wheel base, large wheels, plenty of room, great luxury of upholstery and fittings, higher power, and greater speed. Probably the most noteworthy feature of the new car is the arrangement for the elimination of any necessity for pumping water by hand after the car is once primed. This is accomplished through providing a hill-climbing gear, consisting of a pair of sliding gears enclosed in a casing on the rear axle. On a long, heavy grade it will be found desirable to run on this low gear, which, besides increasing the torque of the axle, allows the engine to run at a higher speed, thereby furnishing the generator, through the power pump, with an increase of water supply for a continuous climb, no matter how long. This should prove a great convenience.



The 1905 White Steam Car.

Some Improvements.

In connection with this hill-climbing gear, there is a neutral point between the gears at which the engine is disconnected from the car. This enables the operator, on starting, to warm up his engine and to increase the steam pressure to full amount without any hand pumping, as there is always enough water in the generator to make steam for running the engine, but sometimes not enough to move the car. In the operation of a steam-propelled automobile, using a compound engine, it has been found that in opening the throttle a sensitive place is encountered at a point where steam is first admitted to the cylinders. This sensitiveness manifests itself in a knocking or rattling sound, and is caused by the back-lash in the bevelled driving gears. In the new car this has been completely overcome by providing a light flywheel. This flywheel also naturally furnishes a steadying factor for running the engine light. Garage men will appreciate the facility of disconnecting the engine from the car, enabling the easy moving of the car by hand to and from the wash stand and the like.

Track Racing Records.

A rival to the famous Barney Oldfield has arisen in the person of a comparative novice at track racing—Earl Kiser, who lowered the mile record last month at the Glenville Track Meet at Cleveland. The performance was accomplished in the course of a five miles' race for the Diamond Cup on "Bullet II.," the Winton car with which Oldfield himself broke so many records. The record mile was the last of the five, and was the result of a phenomenal spurt by Kiser who, owing to some delay at starting, had got behind the rest of the competitors. Although he succeeded in putting up fresh figures, he did not win the race, a most exciting finish ending in a "nose-length" victory for Herbert Lyttle on a new eight-cylinder Pope-Toledo. Kiser's figures for the last mile were 52⅘ secs. The danger of motorcar racing on unbanked tracks has again been exemplified by the recent mishap to Barney Oldfield, when he ran into the rails. Oldfield himself was not seriously hurt, but two spectators were killed, and the car was wrecked.

Miscellaneous Items.

An ingenious method of drawing attention to the disgraceful condition of the streets has been devised by the motorists of Columbus, Ohio. They are holding an obstacle competition on Broad Street—one of the worst thoroughfares in the city. Prizes are given to those cars which most successfully avoid the various holes, trenches, posts, etc., etc., which line the street.

The Chicago Automobile Club has obtained an injunction against the recent numbering ordinance. The arguments advanced by the Club in favour of an injunction were that numbering leads to confusion and the arrest of innocent persons, and that the police and the park commissioners had every facility for arresting offenders without the aid of numbers. The injunction also absolves drivers from the necessity of being examined by the board of automobile registry.

The Motor
INCORPORATING Motor Cycling & Motoring

The sale of "The Motor" exceeds that of any FOUR motor papers combined.

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OPINION.

A Moment of Supreme Importance to the Trade.

The opportunity afforded by the excellent results of the Light Car Trials and the publicity given thereto is one which must not be neglected by the trade. Many a man in business would pay a substantial premium if he could get a large public interested, not so much in his own wares as in the article itself in which he deals. Given that interest, he would at once put forth the whole of his efforts to show that his particular brand was as good as the best, and he would, by thus striking the iron whilst it was hot, forge for himself a strong connection which he could retain and extend afterwards by the usual methods of business. The wine merchant, for instance, would rejoice when some circumstance suddenly convinced the public that wine was better for the human race than any other liquid. He would at once improve upon the opportunity, show that his particular vintages were perfect, and would do a large business in consequence, and it would be his own fault if he allowed this business to fall away afterwards. So with light cars. The popular event run on simple lines, for which we have all along asked, which we even sought to promote ourselves, because there seemed to be a lack of interest at headquarters, has now been held, and the one result which stands out above all others is that an enormous public has suddenly learned that the light motorcar is a practical article and something well worth buying. They find that there is no longer any justification for the impression—hitherto widespread—that the small car is unreliable or is poor stuff. They learn that a large percentage of the starters in a sufficiently stiff trial can complete that trial with no more untoward occurrence than an occasional stop for some trivial matter such as the tightening of a slack nut, or the replacement of a broken sparking plug. Whilst taking cognisance of these stoppages, and noting their causes, the discriminating potential purchaser remembers that nothing is perfect in this world, and he therefore places such little incidents as those which produced momentary stoppages in the Light Car Trials in the same category as he would a nail picked up in the hoof of one of his horses or a cast shoe or a loosened trace. He concludes that the mishaps must be trivial in nature, and therefore capable of being avoided by care, or, when they occur, of being rectified, from the fact that in most cases they entailed a delay of merely seconds, or at most of a few minutes. As he has to suffer many delays with his horses, and, moreover, has to tax his pocket, his time and his labour because the beasts cannot be neglected for a day, he is in a position to realise that, after all, the light motorcar is the more efficient and the less inconvenient mode of locomotion. In a word, the public has, by the recent trials, been brought up to the purchasing point, and it is to be hoped that the trade will grasp the opportunity to make customers, and by treating such customers fairly and well to thereby attract still further business. In this connection we are compelled to wonder whether Mr. Edge was correctly quoted in an interview recently reported in the "Daily News," or if he has suddenly lost confidence in the future of the industry? He is said to have stated that there is no such thing as the cheap motorcar, that, in his opinion, £200 is the lowest sum for which a reliable car can be purchased, and that it will be many years before cars will be cheaper than that. Why, Mr. Edge is surely not unaware that one of the most popular light cars, the 6 h.p. De Dion, is sold in large numbers in Paris at £160! Mr. Edge must, we think, have been misunderstood when he said that "the man of moderate means had better walk," unless it is that Mr. Edge, who caters for the high-class trade in expensive cars, cannot see his way to compete with the other people in the trade who have not been slow to foresee the enormous demand for cars at a considerably less price, and who are already building up a big business in this direction. No, the recent trials have distinctly proved that at £200, and even at a much lower figure, there are a number of cars which are just as much worthy of purchase as are the more luxurious vehicles. Each type of car is suited to its purchaser, for the man of moderate means is a man of moderate ideas, and he has no desire to emulate the magnate who wants a moving palace that will carry six people at forty miles an hour, and which needs its lower gears on very few occasions.

Air v. Water-cooling for Tri-car Engines.

A very debatable question at the present time in connection with the development of the tri-car is whether air-cooling is likely to be eventually superseded by water-cooling. There are undoubtedly strong arguments to be adduced in favour of both systems, but we think, taken all round, the advantages of air-cooling greatly outweigh its disadvantages, and therefore we are inclined to the opinion that by far the greater majority of machines in the future will retain air-cooling. In fact, a little consideration will go to show that it is in the best interests of the future development of the tri-car that every effort be made to increase the efficiency of the air-cooling system. The aim must be to simplify the construction and management of the two-seated motorcycle to the utmost degree, so long as the general efficiency of the machine is kept to a high level. Those who drive cars know well enough that the water-cooling system requires constant care. It is scarcely an exaggeration to say that the tank, pump, and radiators on most cars require more looking after than does the ignition. At one time it was usually said that nine-tenths of the motorist's troubles arose from the electric ignition, but this does not hold true now by any means. As to the efficiency of air-cooling for engines up to 4½ h.p. at least, there are many striking examples. A fan properly designed for the work, and fitted in the right place, can work wonders with an air-cooled engine. There is nothing complicated about a fan. There is no tank or tubes to spring a leak or get choked with lime, and there is, moreover, a big saving in valuable space. Why then revert to water-cooling? We were not a little surprised at a recent very successful performance of a 4 h.p. air-cooled tri-car, which actually had no fan fitted, and took hills over a mile long on the low gear with ease; no trace of overheating could be detected. This fact was most convincing to us that water-cooling was unnecessary. Moreover, this has an important bearing on the price and upkeep. The water-cooled tri-car is going to cost more.

A Vacancy.

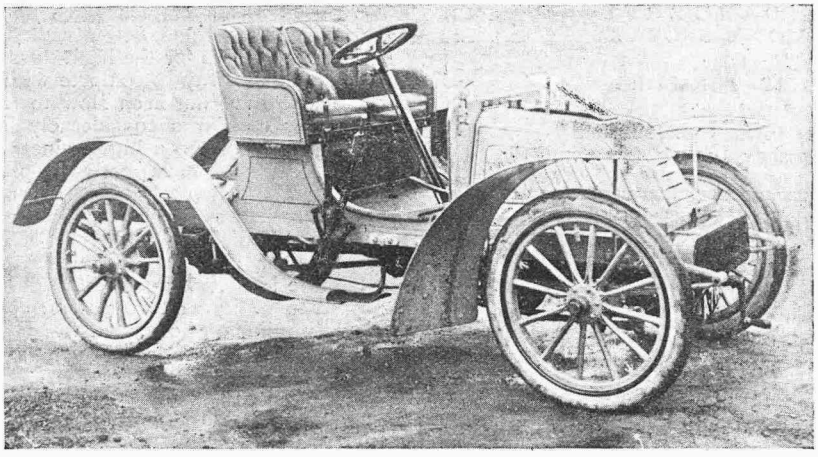
We are prepared to consider applications for the post of business representative of this journal in the London district. Letters stating previous experiences and qualifications should be addressed to The Manager, "THE MOTOR," 7-15, Rosebery Avenue, E.C.

THE CROXTED LIGHT CAR.

DETAILS OF THE MECHANISM.

We intend giving a series of articles, fully describing and illustrating the details of the Light Cars which were successful in the recent Light Car Trials, and below will be found the first of the series, dealing with the 8-10 h.p. Croxted car which secured first award in Class D by accomplishing 12 (the highest number possible) non-stop runs.

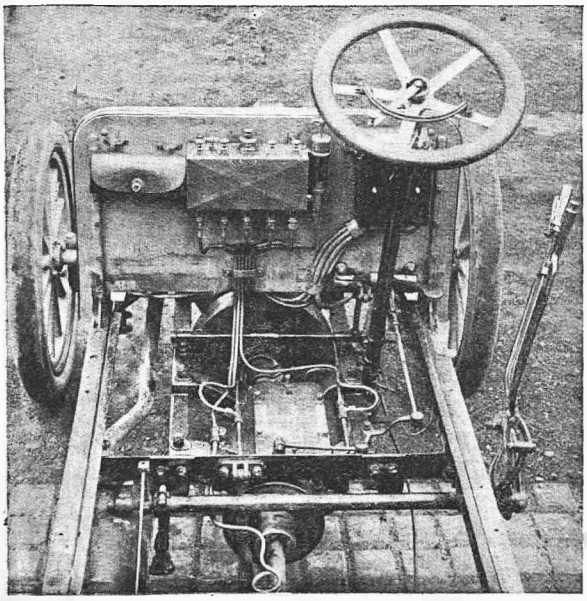
This new car, which upon its first public appearance in the Light Car Trials (just concluded) secured the highest non-stop award in its class by completing the 600 miles without a road stoppage of any kind, is being put upon the market by Messrs. F. Garner and Co., Croxted Road, Herne Hill, S.E. With the aid of the photographs accompanying this description we hope our readers will be enabled to obtain a good idea of the various details of the vehicle.



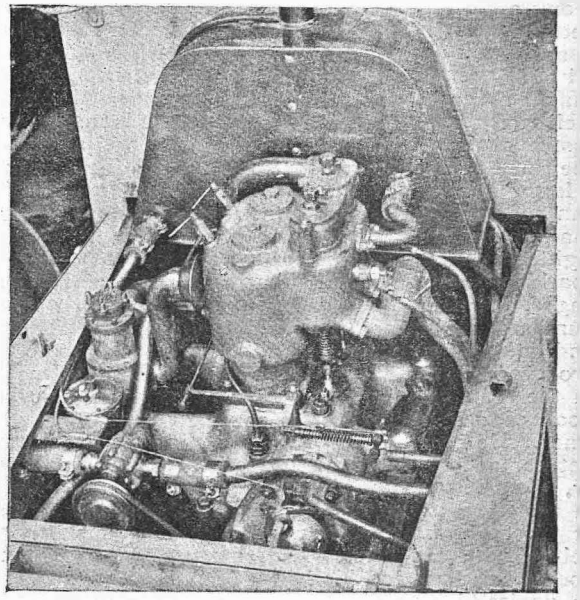
The Croxted Light Car.

The main frame is built up of ash timbers, 2¾ inches in depth by 1 inch wide; the front portion of the frame upon which the bonnet rests is further stiffened by a second framing of 2 inch timbering bolted to the first framing, and this helps to further stay the dashboard. This dashboard rises 19 inches from the main frame, and is composed of ⅜ in. ash. At its base it is stayed by two knee or angle irons to the front framing, and by two similar irons to the main framing immediately behind it. Reference to the illustration depicting the dashboard will show how these rear irons are carried nearly to the top, and that at their base stiffeners are inserted in the angle. The main wood frame is strengthened both as to ends and sides by steel flitch plates ¼ inch in thickness: these are flat at front and rear of the car, the side plates for two-thirds of their length having a depth of 4 inches and being rolled up into "L" section, further strength being given to the frame construction by steel knee pieces inserted at each corner. At a distance of 4 feet 4 inches from the rear of the frame a steel girder of "L" section is carried from side to side: this braces the frame in the centre, and forms a support for two steel girders which are bolted to the cross member, and are then carried forward and bolted to the front of frame. The subsidiary frame thus formed carries the engine and all mechanism connected therewith, as also the gear box; the cross-member serves as the fulcrum for the foot brake control.

The engine employed is a two cylinder Aster, each cylinder having a bore of 3½ inches and a stroke of 4¼ inches; the valves are automatic, and are situated immediately over the exhaust valves; each of the valves can be separately inspected, whilst the removal of three nuts permits both inlets and their seatings to be detached. A compression relief cock is carried in the head of each cylinder. The exhaust valve lifting cams, the timing gear, and the governor are all enclosed in a front and side extension of the crank case, and the cam shaft also carries the timing wheels for the ignition. Upon the extreme front of the crank case the wipe contact breaker is fitted: this has an internal fibre ring, with a brass contact piece upon its inner circumference; to the half time shaft is keyed



View from rear showing oil pipes and ignition details.

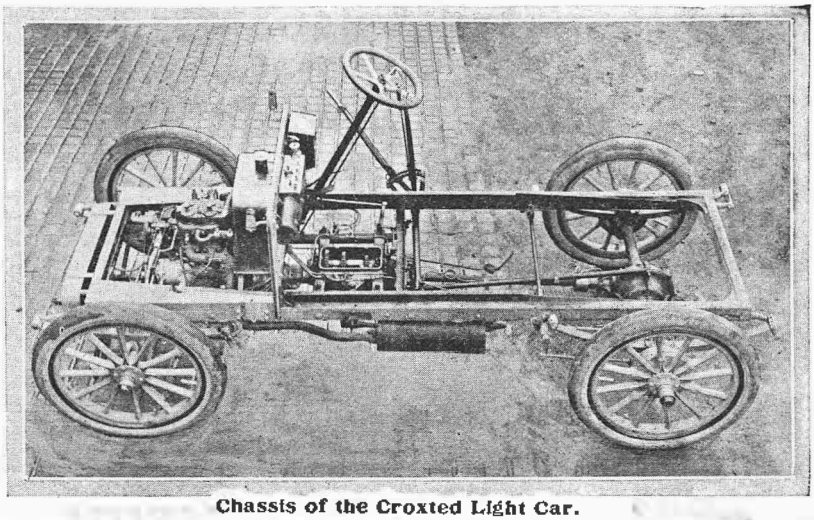


View of engine, carburetter, and other details.

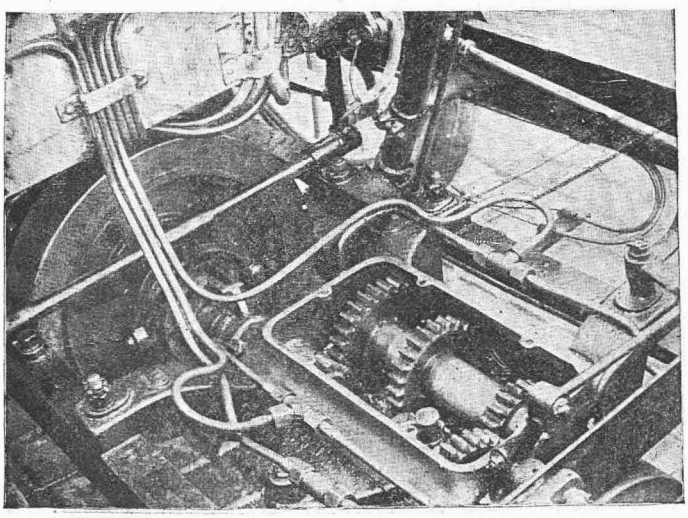
a small bell crank lever, which carries upon one end a small roller, the other end serving as anchorage for a small spiral spring, the rear end of this spring being carried by a second small bell crank, also keyed to the half-time shaft, which serves as an inner support for the small roller previously mentioned. The spring, being constantly in tension, keeps the roller rubbing round the inside of the fibre ring, and makes good contact an absolute certainty. Provision is made on the exterior of the contact breaker case for the necessary lubrication. The engine is governed on the inlet by a barrel type of throttle: the throttle case is circular in form, and the throttle itself is of similar shape, and slides freely to and fro inside the case. Around its sides are pierced a number of holes, and when the throttle is right home upon its seating (the motion being a horizontal one) no gas can pass; as the throttle is opened more or less, gas as desired can enter the barrel by the holes from below, and can then pass through similar holes at the top on its way to the cylinders. The governing action is as follows:—Attached to the end of the throttle barrel is a long rod passing out through the casing, and projecting some distance beyond the front of the engine: at the front end of the rod a small spiral spring, which abuts upon a stop at the end of the long rod, is free to slide; upon the front of the crank case on the valve side

A TUBULAR BRASS UPRIGHT

is fixed, which serves as a rest and fulcrum for a bell crank. The longest arm of the bell crank is formed into an eye at its extreme end, which can slide along the long rod attached to the throttle barrel for a certain small pre-determined distance, a stop upon the throttle barrel rod preventing too great a movement; to the short end of the bell crank another straight rod is attached, carrying a sliding spiral spring, and having its other end attached to a vertical lever, which in its turn is attached at its base to the crank case; this last vertical lever has a slight to-and-fro movement permitted to it: through an eye near the top of this latter is threaded one end of a powerful spiral spring, with its other end fixed to the side of the car framing; at the top of the vertical lever is anchored one end of a Bowden wire, which is led away to the sector on the steering pillar; inside the timing gear-case is fitted a wheel carrying two expanding fly-bobs or gimbals, which tend to fly outwards as the speed of the engine increases, these gimbals being connected to a striker, which normally rests upon a worm screw carried upon the shaft of the gimbal wheel; the striker is also connected up through the brass tubular upright upon the crank case to the bell crank lever. Now, when the engine attains too great a speed the gimbals fly outwards; this moves the striker along the worm, and in its turn the long arm of the bell crank is moved towards the engine and pulls in the same direction the long rod attached to the throttle barrel, which thereby cuts off some portion of the gas and immediately slows the engine. The engine being thus slowed down permits the governor gimbals to close together, and the striker moves inwards again, bringing with it the bell crank, which in its turn is thus allowed to slightly open the throttle, and the engine again begins to pick up speed. The action of this (or any other) governor can be clearly understood if considered as a cycle of operations, it being always arranged that the governor must permit a certain minimum quantity of gas to pass when running at its slowest. The operations are as follow:—(1) Engine running too fast, throttle $\frac{1}{8}$th open; (2) governor comes into action and closes throttle to 1-16th; (3) governor gimbals close, and again allow throttle to commence opening to $\frac{1}{8}$th; (4) throttle now open to $\frac{1}{8}$th, and engine commences to race, when operation No. 1 re-commences the cycle. It should be noted that the small spring on end of long throttle barrel rod is only for cushioning the bell crank, the actual governing being effected by the spring on the short end of the bell crank and the spring fitted to the governor gimbals. When it is desired to open the throttle against the action of the governor the Bowden wire pulls the short end of the bell crank over, and the governor only partially acts up to a certain limit; beyond this limit the governor ceases to act, as, for instance, when climbing steep hills or running at top speed on the level.



Chassis of the Croxted Light Car.



Gear Box and Dogs on Clutch.

The carburetter has the usual float feed and spraying slotted nipple of somewhat similar pattern to the Longuemare, but it has

A DISTINCTLY NOVEL AUTOMATIC AIR INLET,

which entirely shuts off the air for starting and permits the air supply (taken entirely from a gauze-covered bell-mouth pipe abutting against the hot cylinder wall) to be gradually increased as the engine attains speed. The mixture is a constant one as to quality, as the smaller the amount of petrol the smaller the amount of air taken in, and vice-versa.

The water tank holds 5½ gallons, and is fitted on the dash-board; the centrifugal pump, driven by a round hide band off the engine shaft, circulates the water through the 14½ feet of gilled radiator tube in front of the car. The leather-covered cone clutch forms the internal member of the 14 inch diameter fly-wheel; the end of the first motion shaft before it enters the gear-box is forged up into a hollow cylinder, inside which is contained the clutch spring: upon the exterior of this cylinder two flat "dogs" are forged, and upon these slides a concentric steel forging having its faces squared to fit the "dogs"; this latter forging is carried by a tri-

union, and this in its turn is carried by the cross shaft attached to the clutch pedal. The gears are of the Panhard sliding type, giving three forward speeds and a reverse, with direct drive on the top speed. The wheels are all ¾ inch wide over the teeth; both motion shafts are carried on long phosphor bronze bearings, which extend outside the gear-box, and the gear wheels on the second motion shaft are cut solid with the shaft itself. From the gear-box the motion is conveyed to the rear live axle by a universally jointed propeller shaft; two radius rods are carried centrally from the steel cross-beam to top and bottom of the differential casing. The live axle is carried in a 2¾ inch diameter hollow axle, which takes all the weight, leaving the live axle to perform its function of driving. The artillery wood wheels are all on ball bearings, the rear wheel bearings being carried by sleeves which are carried by extensions of the hollow axle. All the three brakes are of the internal expanding type, two being on the rear wheels and one on the propeller shaft. The ignition is the normal high tension, with two accumulators and high-speed trembler coil: the coil carries two "try" buttons for testing each cylinder circuit. The oil tank on dashboard has five drip-feed lubricators communicating with engine and gear-box bearings and differential; a hand force pump gives oil to the crank case. On the top of the steering wheel a toothed sector actuates the throttle by a Bowden wire, and below the wheel is the ignition lever. Steering is of the irreversible type, with adjustment for taking up wear; front springs are 32 inches, and rear springs (carried outside frame) 38 inches long. Tyres are 810 mm. by 90 mm. Michelins. These details were obtained after the completion of the Light Car Trials, and inspection of the Croxted car shows no sign of wear on gear-wheels or any working portions after over 1,000 miles of running.

NEWS.

"The Motor Boat" is illustrating some interesting types of pleasure motor boats each week.

The motor racing on the sands at Portmarnock was successfully carried out. We describe and illustrate the various events elsewhere.

On the preceding pages we give a very full illustrated description of the Croxted light car which performed so well in the Light Car Trials.

Mr. Lewis Stroud, the old-time racing cyclist, who has been an enthusiastic motorist for some time, has just purchased a racing motor boat.

Mr. Loxton Hunter, a well-known member of the A.C.G.B.I., offered a cup for presentation to the driver of the car in the Hereford trials who showed the greatest skill and consideration in his driving.

The Automobile Club has received offers for the loan of cars from the Rover Cycle Company, Messrs. Dennis Brothers, and Messrs. Wilson and Pilcher for the forthcoming dust trials. The Club is anxious for more help in this direction.

The Bavarian authorities have given instructions that motorists causing an accident are to be arrested on the spot and kept in prison pending trial. This measure is especially intended for the benefit of foreigners. A couple of Frenchmen were the first victims.

Excellent testimony to the high quality of Clincher tyres is the fact that out of the seven motorcycles that secured first-class certificates in the A.C.C. 1,000 miles tour four of them were fitted with Clincher A won tyres. Two of the machines so fitted obtained gold medals and two others silver medals.

We have received a copy of a new motorcar, cycle, and accessories catalogue from Messrs. Lintine and Co., 23, Great Eastern Street, London, E.C. This is a very complete list, well illustrated and every indespensable accessory is to be found described therein. Lintine and Co. will be pleased to send one to any reader interested.

C 4

Coming Events.

Sept. 15, 16. Auto-Cycle Club's Members' Reliability Trial—London to Exeter and back.
,, 17. Southern M.C. Hill Climb (singles).
,, 24. Auto-Cycle Club races at Crystal Palace.
,, —. Midland A.C. Speed Trials.
Oct. 1. Auto-Cycle Club's Consumption Trials (members only).
,, 5. D'ourdan Kilometre Trials.
,, 8. Vanderbilt Cup in America.
,, 9. Gaillon Hill Climb.
,, 14. Leipzig Motor Show.
Nov. 18 *to* 26. Stanley Cycle and Motor Show (Agricultural Hall, London).
Dec. 9 *to* 26. French Automobile Salon (Grand Palais, Paris.)

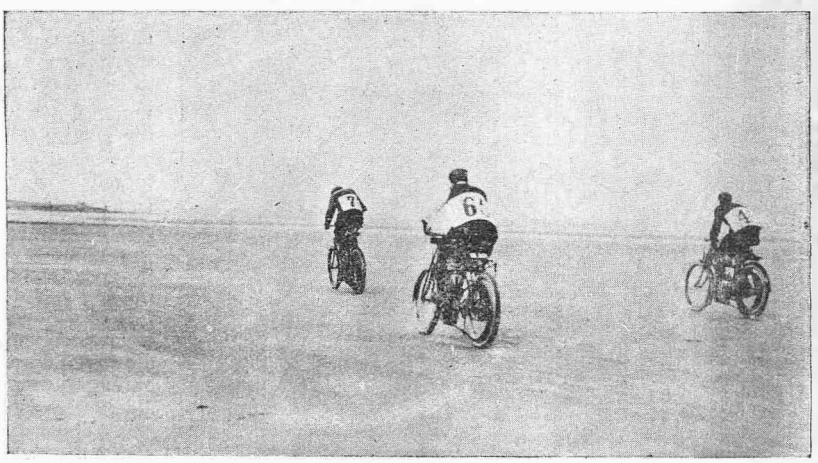
The newly-formed Highways Protection League has a busy time before it if it intends to achieve its object of compelling all users of the road to conform to law. Nevertheless, the ambition, even if it be incapable of realisation, is a praiseworthy one which every motorist should endeavour to aid, and one which will tend to greatly ameliorate the lot of all road users.

"Cycling" again issues a Special World's Championship Number containing very full reports of all the championship races and some wonderful illustrations.

Next February a motor exhibition will be held in the Landesaustellungspark under the auspices of the German Motor Club and the Union of German Motorcar Manufacturers.

Dr. Wood, of Woolpit, on a recent occasion drove his two-cylinder Little Star to town by Chelmsford, and back by Newmarket, a distance of nearly 180 miles, on 4½ gallons of petrol. This is very economical running indeed.

In the first three months of this year the number of registered motor vehicles in England increased from 12,194 to 28,073: in Scotland the increase was from 831 to 1,903: and Ireland raised her New Year's Day total of 496 to 1,445 by All Fools' Day. This gives a grand total for the United Kingdom of 31,421 motor vehicles registered up to April 1st, 1904, as against 13,521 on January 1st, 1904—striking evidence of the increasing popularity of the sport and industry.



Motorcycle race on the silver strand at Portmarnock. **(See page 157.)**

NEWS.

The Progress Motor and Cycle Co., Ltd., of Charlottenburg (Berlin), has entered two 5 h.p. Progress motorcycles for the Motorcycle Club de France Cup Race.

Strange news indeed is concocted in the dog days! Some Teutonic papers have been spreading the report that the French Motor Club has applied to the German for its friendly intervention with a view to the Taunus course being used for the coming Gordon-Bennett race, as the French fear that their Government will object to the contest taking place in their own country. With Mr. Partridge, "Next, please!"

A.-C.'s Meeting.

The annual race meeting of the Auto-Cycle Club will take place at the Crystal Palace on Saturday, September 24th, at 2 p.m. The events to be competed for will be:—(1) Hour scratch race for machines not exceeding 70 by 70 mm., or the equivalent volume swept out. (2) Five miles handicap limited to machines 76 by 76, or the equivalent volume swept out. (3) Mile time trials, also for machines not exceeding 76 by 76. The entrance fee is 10s. 6d. each event.

Winter Fixtures.

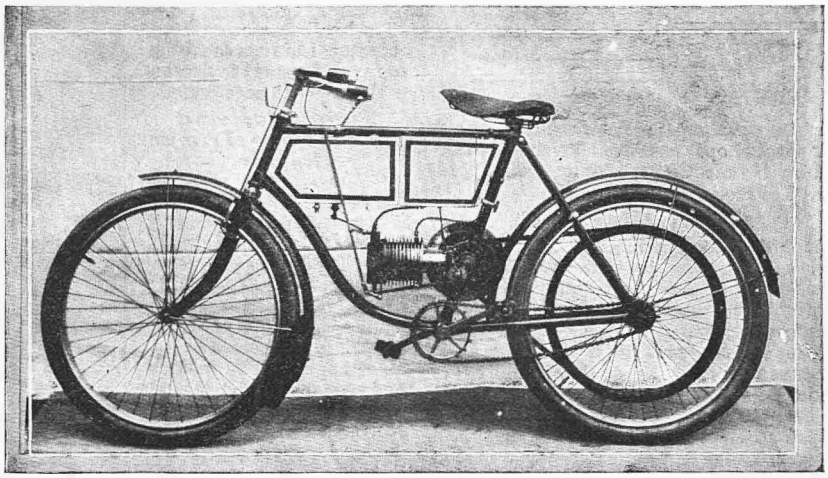
A very interesting list of winter fixtures is being arranged by the Auto-Cycle Club. The annual dinner will be held at the Automobile Club on Wednesday, November 30th, and will be followed by a musical evening. The monthly dinners, followed by an interesting paper, which were so popular last season, will be resumed in November, and Messrs. van Hooydonk and Campbell have been invited to give an account of the recent 1,000 miles trials by means of lantern slides at the first monthly dinner.

Worth Knowing.

Mr. Ernest H. Arnott, when passing through Mansfield late one night recently, had occasion to need a small repair, which, although trifling in itself, would be a matter of trouble and time if done upon the road. He desires to inform readers of "THE MOTOR" that there is an excellent and practical motor engineer at Mansfield in the person of Mr. C. Lock, of 31a, Stockwell Gate. His repair was willingly undertaken long after business hours, and the price charged was very moderate.

An Interesting Booklet.

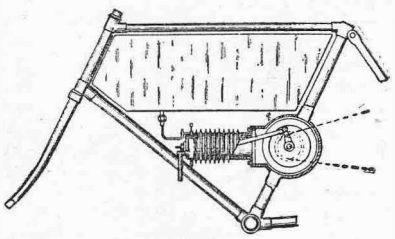
Messrs. Michelin and Co., the well known tyre manufacturers, have recently issued a remarkably well-written and well-printed booklet, which might almost be called an illustrated history of the motor vehicle. Some of the pictures are quite unique, and it is difficult to realise when looking at them that they were not taken generations ago instead of within a single decade. To present day eyes the machines look very curious; in fact, one almost laughs at some of the vehicles in which Chevalier René de Knyff is shown seated—and yet those were the racing machines of six years ago! Truly does the book say of itself that it tends to show the marvellous rapidity with which the new industry has developed. The book will be sent post free on application to the temporary London office of Messrs. Michelin and Co., namely, M. Wolff, 44, Bedford Row, London, W.C.



A Simple Lightweight Machine.

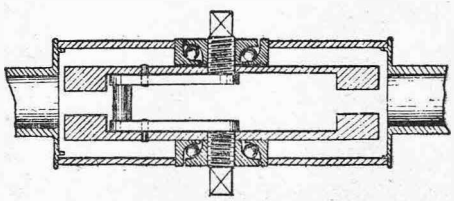
A Simple Lightweight 2½ h.p. Motor-bicycle.

The motor-bicycle illustrated has many interesting features. It has a 2½ h.p. horizontal engine with valve gear worked almost exactly in the same way as a gas engine. The crank case is supported by the down tube in a special manner; easily



Method of attaching engine crank case to diagonal tube.

followed from the diagram. The crank shaft runs on ball bearings, which are adjustable. The usual carburetter is dispensed with and a simple vaporiser on the engine takes its place. The engine has a large diameter outside fly-wheel



Section of crank case showing ball bearings of crank shaft.

fitted. The petrol, oil and accumulator and coil are carried in the tank compartments. Transmission is by V belt. The frame, it will be noted, is a very simple one with a curved main tube. In view of the fact that it is often contended that a horizontal engine on a cycle will not work, this machine is interesting. The makers claim that the weight of the machine is 85 lb. only. It is the patent of, and manufactured by, Howard and Co., Cycle Makers, Coalville, near Leicester.

Two "coloured" chauffeurs made a trip recently round New York clad in suits of mail like mediæval knights. The cars bore the inscription—"Friends of Magistrate M. Cornell, do not shoot!" The idea was to ridicule the recent advice of Magistrate Cornell to shoot furious drivers on sight.

The Steam Engine and the Motorcar.

Commenting on the marvellous reliability and endurance of the motorcar as a touring vehicle, or as a means of locomotion, an American journal says:—"Take the finest locomotive, fit it with pneumatic tyres in proportion to its size, and how long would it last in a 1,500-mile trip through all sorts of weather, over hill and dale, plunging from rut to rut, and into chuck-holes too numerous to mention?"

The Lion Motor Band.

An improved non-skidding and puncture proof tyre band has recently been introduced by the Lion Motor Band Co., Nantwich, Cheshire. The special features are that the leather is tapered off and secured right down to the beading of the outer cover, the vulcanising being done by a special process. This entirely overcomes any chance of the band lifting. The studs are of steel, securely fixed, and to prevent the ends from damaging the cover an intermediate leather band is fixed. The makers claim as one of their strong points that they are enabled to guarantee speedy delivery of both car and cycle covers.

The Duke of Montrose's Arbitrary Action.

A correspondent writes:—Some time in July the Duke of Montrose closed all the private roads about Loch Katrine, and between that and Inversnaid on Loch Lomond. I was in that part of the country on a motorcycle last week, and found that all motor traffic, even on the main road from Callendar along Loch Vennachar to the Trossachs, was prohibited. The road is by no means dangerous, and prejudice alone can have led to the shutting off of one of the prettiest rides in the British Isles. I had to go right to the south of Loch Lomond and up the west shore, instead of cutting across from one loch to the other and then across in the steamer, as ordinary cycles.

NEWS.

A new motor garage with extensive repair workshops has been established in Dublin by the Central Motor and Cycle Co., 6, Fleet Street.

Motorcycle on Fire.

At Merton, on a recent Sunday evening, a motor-bicycle with wicker forecarriage was observed burning away merrily; the driver and passenger were standing by, watching the conflagration, but taking no steps to abate same. In the absence of any sand, they could have made shift with some dust off the road; or even handfuls of earth would have helped to smother the flames.

New Garage.

The Seaford Motor Engineering Works and Garage is now open. The premises are conveniently situated on the main Eastbourne road. The building is a new one of very substantial construction, comprising extensive garage accommodation, with inspection pit, and is equipped with modern machinery and appliances for the carrying out of repairs, etc., and plant for charging electric cars and accumulators. Motor repairs of every description will be undertaken day and night.

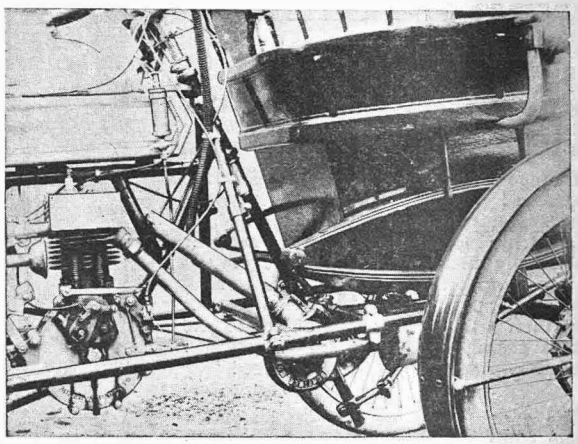
Troubles in Store.

Motorists are threatened with two new terrors in the shape of a "Canine Protection League," and a "Highways Protection League." With the aims of the latter body we might have some amount of sympathy but for the fact that the moving spirits in the organisation have publicly expressed their determination to drive motorcars off our roads. As to the "doggy" body of faddists: we would suggest putting everyone of them on a pedal cycle and sending them around a few London suburbs—and when they have brushed the mud off their torn clothing and collected the scattered remnants of machines, perhaps their opinions of dogs—and dog owners—may undergo a change.

The hooligan mechanician threatens to do considerable harm to the sport unless he is treated with severity.

Rotary Fan and Shield for a Tri-car Engine.

There will be seen on top of the Minerva engine illustrated a sheet metal screen, and directly in front of it the delivery pipe from a rotary blower, which is driven by a belt from the engine. The object of the fan is to concentrate the air draught. The makers and patentees, E. G. Young and Co., London Road, Nottingham, say that the device works very satisfactorily.



Rotary Fan and Shield for a Tri-car Engine.

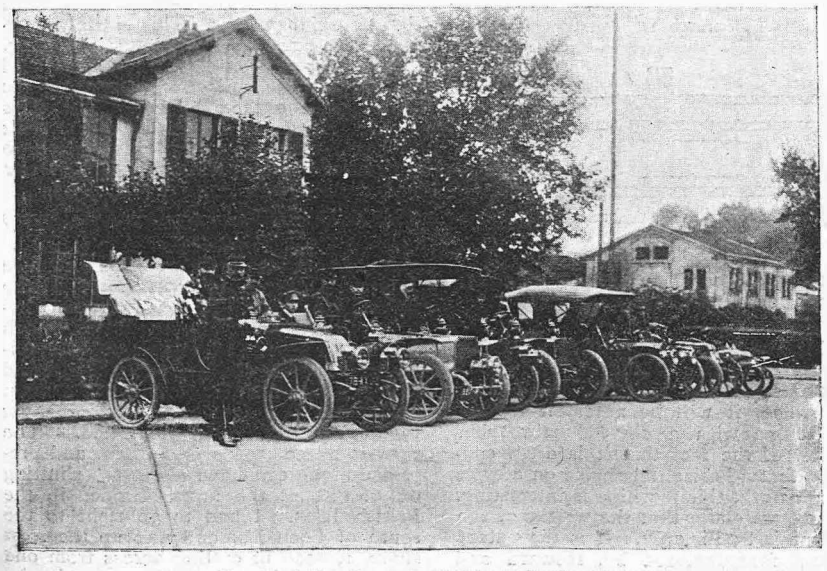
Manchester Motor Club: Final for the 100 Miles' Non-stop Reliability Trial.

The twice-postponed 100 miles non-stop run of the above club was held on Wednesday, September 7th. The start was delayed by a heavy downpour, which lasted from 7 to 11.30 a.m. The course was the same as on the occasion of the second day's trial—from Rudheath Corner, six miles from Knutsford, to Shrewsbury, and back to Plumbley. At 10 a.m. only the judge (R. Fisher, Esq.) and one competitor had arrived. The next half-hour brought up J. T. Ward, on a Humberette small car, to act as marshal, and a few more competitors, all in a half-drowned condition. J. Hall, with his Bradbury fore-car (fresh from the 1,000 miles trial), was noticed at Knutsford laying in a stock of petrol, but it transpired that on leaving Knutsford he had trouble with his two-to-one gear shaft, which necessitated retirement. By noon, six out of the ten eligible were present, and as it was known that J. Baynes, Esq., the president, had gone to Shrewsbury by train to turn the competitors, a conference was held, and, the rain having ceased, it was decided to carry the trial through. At 12.15 p.m. the first three men were started:—G. Brown (Lloyd), W. Andrews (Bat), and F. Bullock (Clement-Garrard); ten minutes later J. W. Leech (Bradbury), C. J. Maitland (Humber), and A. Wilkinson (Bradbury) were despatched with the marshals, Messrs. Fisher and Ward remaining to check the men home. The weather fortunately kept fine, but the roads were muddy. A parade at Whitchurch proved a nuisance to some competitors, and a level railway crossing at Nantwich hindered one, such unavoidable stops being, of course, disregarded. Brown was the first to reach the finishing point at 5.27 p.m., and Bullock arrived one minute later, both of these riders having accomplished non-stop runs. Andrews turned up at 5.41, having been stopped several times owing to his belt stretching and slipping with the wet. Leech arrived at 6.5, and Wilkinson 30 seconds later; the former had done a non-stop run, but Wilkinson had been delayed by minor troubles. Maitland failed to turn up owing to a burst in his front tyre. Messrs. Brown, Bullock, and Leech, having effected non-stop runs, were adjudged the prize winners, and they will each receive gold medals of different values. After the finish an adjournment was made to the hotel at Lower Peover for tea. The club contemplates holding a hill climbing competition before the close of the season.

Our Berlin correspondent learns that Herr Arents, of the German Motor Club, is proceeding to the United States to compete in the races for the Vanderbilt Cup. Like Mr. Dinsmore's, his car is a Mercédes.

A Ridiculous District Council.

In May last the Keswick Urban District Council asked the Cumberland County Council to obtain an order to close (for motor traffic) the road leading from the Old Toll Bar to the gate leading from Castle Hill. The County Council, as requested, duly made application to the Local Government Board: and now the Keswick U.D.C. has sent a strongly worded resolution to the L.G.B. *protesting* against the proposed closing of the road!! In a multitude of councillors there may be wisdom; we doubt whether that ancient adage would include the K.U.D.C.



Captain Gentil, Chief of the French Military Motor Service, inspecting Motors at the Grand Manœuvres.

NEWS.

Spicer and King starting from Redbourn for the "Brown" Trophy.

In consequence of the great pressure on our space, we are compelled to hold over several news items and illustrations this week, including some pictures of motors at the military manœuvres.

King Edward is evidently struck with the Parsons non-skid attachment, as, in addition to several pairs already in use, His Majesty has now given an order for a further pair to be fitted to his new Daimler car.

The Dinmore Hill Climb.

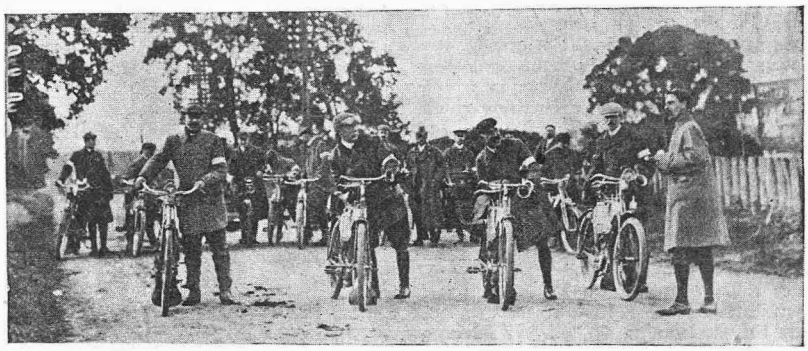
The Mobile Motor and Engineering Co., John Bright Street, Birmingham, ask us to state that the four-seated 8 h.p. Mobile car in the 600 miles trials, having an allowance of 25 per cent. for carrying four passengers, accomplished the fastest time in the competition on Dinmore Hill. It averaged 15 miles per hour, and consequently secured first place in the hill climb.

MOTOR CYCLING CLUB COMPETITION FOR THE "ALBERT BROWN" TROPHY.

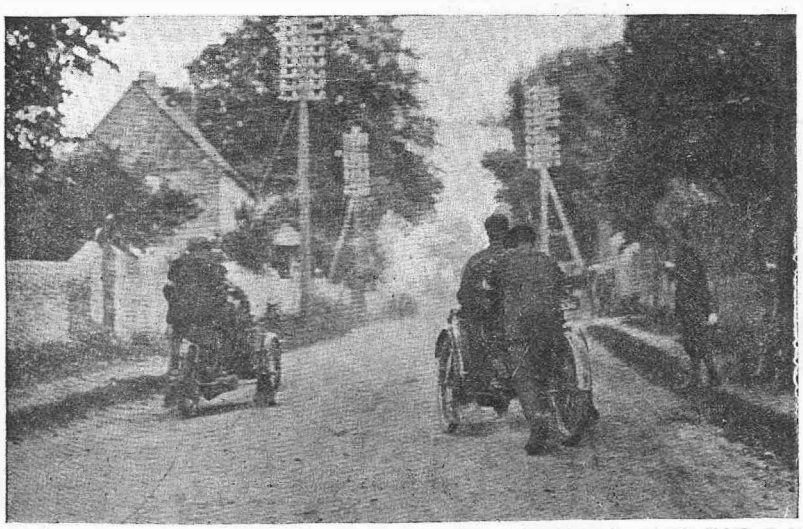
The competition organised by the Motor Cycling Club, open only to motorcycles of British manufacture throughout, and for which Mr. Albert Brown had presented the Club with a handsome trophy, was decided at Redbourn on Saturday last. The conditions were that any type of motorcycle could compete. Machines for two passengers had to be ridden with full complement, and the combined weights of the passengers had not to be less than 18 stones. The distance was to be a total of 150 miles, with one non-stop run of 100 miles, and then, after one hour's interval, a further non-stop run of 50 miles. No adjustment was allowed that could not be effected from the saddle. During the interval it was permitted to refil the petrol tank. The maximum speed had not to exceed 19 miles an hour, whilst the minimum was 17 miles. In the event of a tie the contest was to be decided on the lines of the starting and stopping test. The start was fixed for 7 a.m., and the weather was, as it always has been on the Club events, as good as could be wished for. There was very little dust and an entire absence of wind. Out of 17 entries 16 competitors actually started. These were Hulbert (Hulbert-Bramley 2¾ h.p.), Silver (Quadrant 3 h.p.), W. Priest (Quadrant 3 h.p.), R. Priest (Quadrant 3 h.p.), Brice (Brown 2¾ h.p.), Johnson (Humber 2 h.p.), Crundall (Humber 3½ h.p. forecar), Gray (Humber 3½ h.p. forecar), Maffert (2¾ h.p. Bat), Elliott (Millennium 2¾ h.p.), Densham (Anglian 2¾ h.p.), Penzer (Ariel 2¾ h.p.), Hoffmann (Ariel 3½ h.p.), Riley (Riley 3 h.p.), Spicer (Excelsior 3¼ h.p.), and King (King 3¼ h.p.). There were thus

FOURTEEN BICYCLES AND TWO TRI-CARS.

The route was via Markyate, Dunstable, Hockliffe, Woburn, and Ridgmont Hill to within one mile of Ampthill. This made a distance of 25½ miles. Ampthill was the turning point. The road from Hockliffe had not been taken on previous occasions, and to prevent mistakes at the turnings marshals were stationed to direct the riders. Ridgmont Hill is about 400 yards in length, and does not exceed 1 in 13, so that the competitors had nothing severe in the way of hills. Timekeeper Hall despatched the men at intervals of one minute. On the first 50 miles Hoffmann had some trouble with his contact breaker, and a puncture as well, and had to retire. Later on Riley had to stop through a broken belt. Maffert was in difficulties with his engine lubrication, and Densham had a fault in the coil. This accounted for four of the competitors. All the others came along in good style, and turned for the second fifty miles. Out of the group of twelve there was one more casualty, Gray just reaching ninety-nine miles when he found he had no current in either set of accumulators. The non-skidding band on his driving tyre also had disappeared from the tread, but a fair amount of it had held on to the sides of the tyre. After lunch a start for the last fifty miles was made. Those left in now were Hulbert, Silver, W. Priest, R. Priest, Brice, Johnson, Crundall, Elliott, Penzer, Spicer, and King. Very unlucky was Silver in being unable to start, try as he would. The trouble was merely a flooded carburetter. All the others got away in good style, but it was noticed that Spicer's back tyre was slowly deflating, and the chances were he would not get many miles before he would have to stop. The others all made non-stops, with the exception of Elliott, who had very hard luck at the 147th mile through running short of petrol.



Start from Redbourn for the first 50 miles for the "Brown" Trophy.



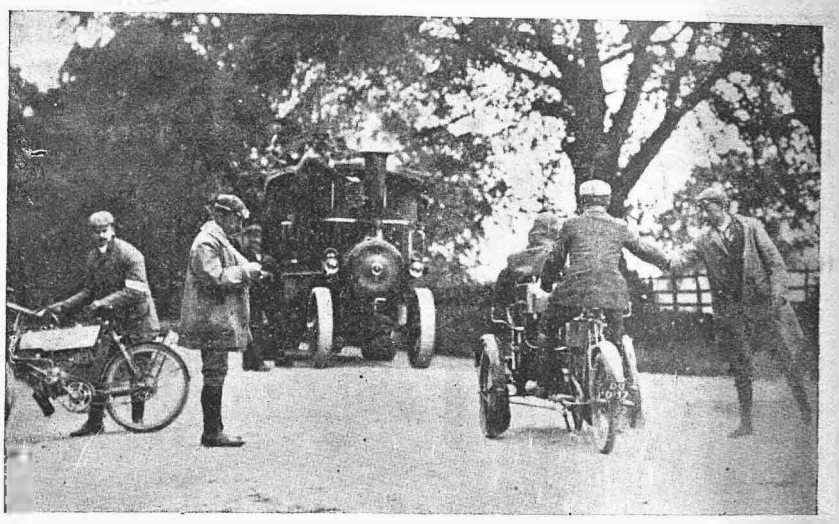
The two Humber Tri-cars just outside Redbourn on the second 50 miles in the trials for the "Brown" Trophy.

NEWS.

Spicer had to stop at Dunstable through his tyre. After tea it was decided to at once run off the mile starting and stopping test across Redbourn Common, and for this there were eight competitors left in, viz., King, Brice, W. Priest, R. Priest, Johnson, Crundall, Penzer, and Hulbert. This test was looked upon as the event of the day, and created an immense amount of interest. There is no doubt it requires a good deal of practice and skill in manipulating the machine to do a mile in good time, and make six stops at fixed points on the way. Although the test proves to some extent that the machine is an easy one to start and that the brakes are efficient, it is really a test of the driver's capacity in handling his mount and ability to put in a smart bit of pedalling. R. Priest had bad luck just before the start off, as his belt happened to break. The approximate times were: Crundall 4 mins. 25 secs., Johnson 4.58, W. Priest 4.20, Brice 4.8, Hulbert 3.54, King 3.42. The performance of King was undoubtedly the best, and the way in which he got his somewhat heavy mount away each time was very smart indeed. Hulbert was a very good second, but Brice looked at one time as if he would have done better time and beaten Hulbert. Priest had bad luck through a trap getting in his way. Subject to the judges' inspection of his machine, King is the winner of the trophy. The officials are to be congratulated upon the excellent manner in which the event was organised, everything going off splendidly, Messrs. C. W. Brown, Jackson, Arnott, Reeves, Voss, J. van Hooydonk, and Jenkins especially putting in some good work.

"The Complete Motorist," a handbook for the amateur motorist, by Filson Young, makes its appearance on Thursday next. The publishers are Methuen and Co., 36, Essex Street, London, W.C. We hope to review this book in an early issue.

The 6½ h.p. Royal Humberette with Cabriolet body won the hill-climbing competition of the Lincolnshire Automobile Club at Gainsborough on the 1st inst. Out of 18 competitors the Humberette made fastest time, even beating 16 cars of higher power.

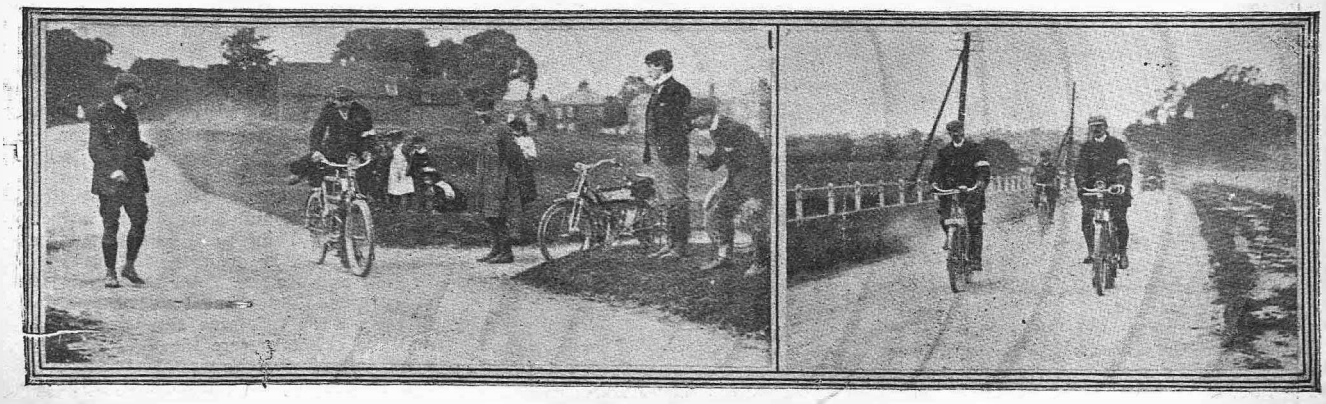


The Trials for the "Brown" Trophy: Crundall giving up check at Ampthill.

The Scottish Automobile Club (Western Section).

A hill-climbing competition took place over the Kirkfield Hill, Lanark, on the afternoon of Saturday, the 10th inst. The competition was purely a sporting one, and was confined to the vehicles owned by members of the Scottish Automobile Club, and members of the Club only were eligible to drive the cars. The contest took place from a standing start over 821⅓ yards of road, with an average gradient of about 1 in 9, the steepest stretch being about 150 yards of 1 in 7·8. A large number of members of the Club and interested spectators were present, over fifty cars being on the ground, and the arrangements worked admirably. The police gave every facility and assistance. The times were taken by Messrs. Alex. Blair, Jas. M. Inglis, and A. G. Rennie. This was done by means of synchronised chronographs, and an electric timing apparatus was also employed, and a special telephone fitted up between the start and finishing points. Single-cylinder cars carried two, and all others four adult passengers. The following were the results:—Class I.—Vehicles having one cylinder: William Weir, 6 h.p. Wolseley, 2 mins. 32⅘ secs.; Dr. David Lamb, 6½-9 h.p. Cadillac, 4 mins. 36⅕ secs. Class II.—Vehicles having two cylinders: Sir Duncan E. Hay, Bart., 10 h.p. Renault, 3 mins. 30⅘ secs.; Alex. Mackenzie, 12 h.p. Albion, 2 mins. 54⅗ secs.; Hugh Kennedy, 12 h.p. Darracq, 2 mins. 20 secs.; George Owen, 10 h.p. Argyll, 3 mins. 1⅘ secs.; A. Ure Barr, 12 h.p. Peugeot, 2 mins. 46⅗ secs.; P. G. S. M'Hatchen, 12 h.p. De Dion, 2 mins. 34⅘ secs.; James T. Forgie, 7½ h.p. Wolseley, 4 mins. 22⅘ secs.; Henry M. Napier, 10 h.p. Wolseley, 3 mins. 38⅘ secs.; Prof. Archd. Barr, 12 h.p. Albion, 3 mins. 20⅕ secs.; John P. Wright, 12-16 h.p. Albion, 3 mins. 14⅗ secs.; J. Hunter Steen and C. J. Campbell Steen, 12 h.p. Wolseley, 2 mins. 25⅗ secs.; William Macdonald, 12 h.p. Darracq, 3 mins. 13⅕ secs.; L. C. Seligmann, 10 h.p. Wolseley, 3 mins. 9⅕ secs.—Class III.—Vehicles having three or more cylinders: J. B. Shanks, 12-14 h.p. Daimler, 3 mins. 15⅕ secs.; John R. Richmond, 15 h.p. Darracq, 1 min. 54⅗ secs.; Owen R. Williams, 15 h.p. Darracq, 2 mins. 34 secs.; W. L. Sleigh, 16 h.p. Argyll, 2 mins. 1⅘ secs.; Col. Andrew Pearson, 16 h.p. Renfrew, 3 mins. 20⅕ secs.; Claud Hamilton, 16 h.p. De Dietrich, 2 mins. 42⅕ secs.; Hugh Reid, 14 h.p. Renault, 2 mins. 39⅘ secs.

[We have received photographs of this event too late for inclusion in this issue. These will appear next week.—ED.]



TRIALS FOR THE "BROWN" TROPHY.

Brice in the stopping and starting tests. **Hulbert and Priest entering the Dunstable Cutting.**

NEWS.

The Croxted Light Car.

For a first public appearance, the 10 h.p. Croxted car did exceedingly well in the Light Car Trials, and doubtless Messrs. F. Garner and Co. will quickly reap the harvest of orders which should result. They inform us that they are supplying an exactly similar car as to mechanical details but fitted with a tonneau (removable at will) body at the rear, and thus giving seating accommodation to four persons. The price, as thus finished, is £250, and cars can be delivered within six weeks of order being placed.

The New Woman.

A young lady was fined 20s. and costs last week for furiously driving a motorcycle along Broad Street, Birmingham. A police constable assessed defendant's speed at 12 to 14 miles an hour, which he considered dangerous among heavy traffic. To the best of our recollection, this is the first time a lady motorcyclist has been fined for furious driving, although ladies on motorcycles are not an uncommon sight, especially in Birmingham, where numerous representatives of the fair sex may be seen disporting themselves on Clement-Garrard machines.

The Lincolnshire A.C. Meet at Little Grimsby.

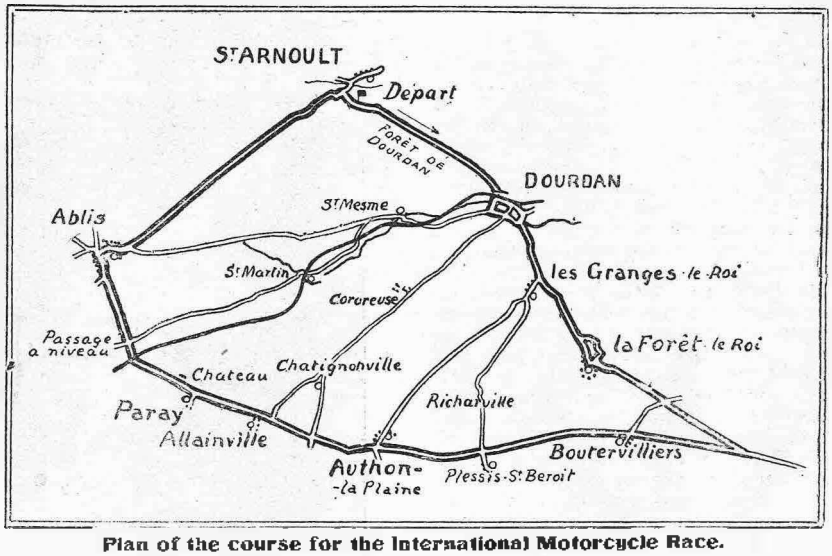
Though the weather was very unfavourable on Thursday, when the members of the Lincolnshire A.C. went up to Little Grimsby, between Louth and Great Grimsby, the wonderful fishing metropolis, there was a very fair muster to accept the hospitality of Mr. W. Hadden Owen at his beautiful old house. Cars came from Sleaford, Lincoln, Brant Broughton, Grimsby, Grantham, and other parts of the large county, and all had to tell of driving rains, but beautiful views over the Wolds. The fine old church adjoining the hall, and the gardens were visited, and the house was thrown open to the motorists. A meeting of members was held in the billiard-room, at which it was decided to confirm the recommendation of the committee as to the amalgamation of the South Lincs. Motor Club. Tea was served in the drawing-room, and an early start home was made, owing to the distances to cover, and to the rain which unfortunately came on again.

THE MOTORCYCLE "GORDON-BENNETT."

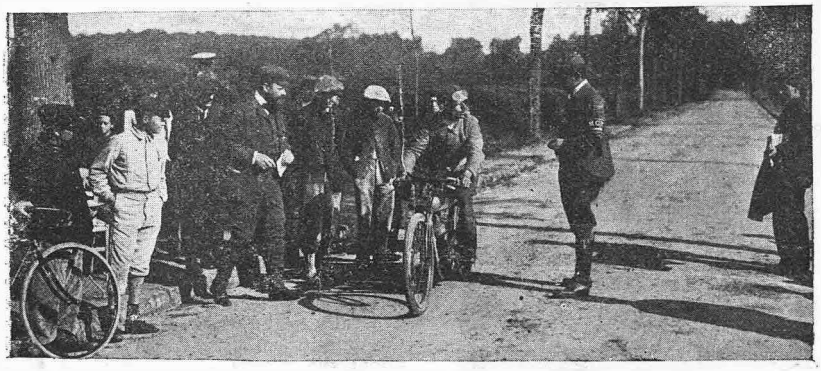
We publish to-day some preliminary information and a plan of the course of the international motorcycle cup race which is to be held in France next Sunday week, September 25th. This event has aroused great interest in motorcycling circles in England and on the Continent since its organisation by the Motorcycle Club of France, and has been dubbed the motorcycle "Gordon-Bennett." When we consider that entries form five great European nations have been received, the importance of the result will be manifest. The competing nations will be:—Austria, Denmark, France, Germany, and Great Britain; who will be distinguished respectively by the colours—black, red, blue, white, green. The course, as the map will show, is a rough isosceles triangle with its apex pointing south-east. The start will be made from near the most northern extremity at the fourteenth milestone between St. Arnoul and Dourdan, and the competitors will travel in a south-easterly direction through the forest of Dourdan to the town of that name (famous for its association with the "Flying Kilometre" which has successively set up and knocked down so many motor records). After leaving Dourdan, the course passes Forêt-le-roi, Boutervilliers, Allainville, Paray, Ablis, and back to St. Arnoul, the distance of the complete circuit being 54 kilometres. The course will be covered five times, giving a total distance of 270 kilometres (about 170 miles). Controls will be established at the starting point, and at Dourdan (eight minutes), Forêt-le-roi (three minutes), Ablis (five minutes). A big stand has been erected at the starting and finishing point. Teams will, as in the Gordon Bennett itself, be limited to

THREE MACHINES FROM EACH NATION.

The British team, selected by the Auto-Cycle Club, is as follows:— J.A.P. (W. Hodgkinson), Lagonda (H. P. Harding), Quadrant (T. Silver). Denmark will be represented by the Dansk Humber machine piloted by Mich. Petersen, of the Danish Motorcycle Club. For Germany, the German Motorcycle Club has deputed Emil Folksdorf to ride a Progress-Charlottenburg motor-bicycle. The Austrian representatives have not yet been definitely selected. Finally, France is (at the time of writing) making a selection out of the following 15 machines and riders: (1) Buchet I. (V. Balajat); (2) Buchet II. (Louch); (3) Buchet III. (Anzani); (4) Peugeot I. (Lanfranshi); (5) Peugeot II. (Cissac); (6) Peugeot III. (Yourassoff); (7) Aiglon (Lachiche); (8) Griffon I. (Lamberjack); (9) Griffon II. (Demester); (10) Griffon III. (Inghilbert); (11) Lamaudière-Mauger I. (Canesse); (12) Lamaudière-Mauger II. (Mauger); 13 Lamaudière-Mauger III. (X.); (14) Rigal (Rigal); (15) Mayeski (Mayeski). The names in brackets are those of the riders. These 15 competed on Sunday last in an eliminating trial over the cup course. At the time of going to press the results of this had not reached us.



Plan of the course for the International Motorcycle Race.



The French Eliminating Trials: Scene in one of the Controls.

The delegates of the International Cyclists' Union after a visit to the Rudge-Whitworth works were conveyed by motors to Kenilworth and Warwick.

The results of the Walthamstow Town Cycling and Moting Club's meeting, held on Saturday in conjunction with the Albany C.C. at High Beech track, are as follows:—Five miles scratch, F. A. Applebee, 8 mins. 56 sec.; five miles handicap, H. Fletcher (scr.), 8 mins. 28⅘ secs.

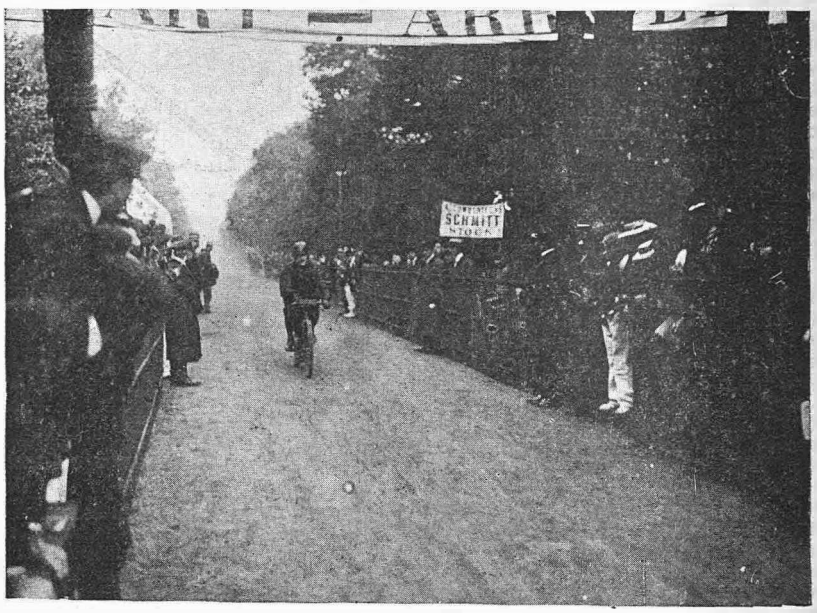
THE LIGHT CAR TRIALS.

DIGEST OF JUDGES' REPORT.

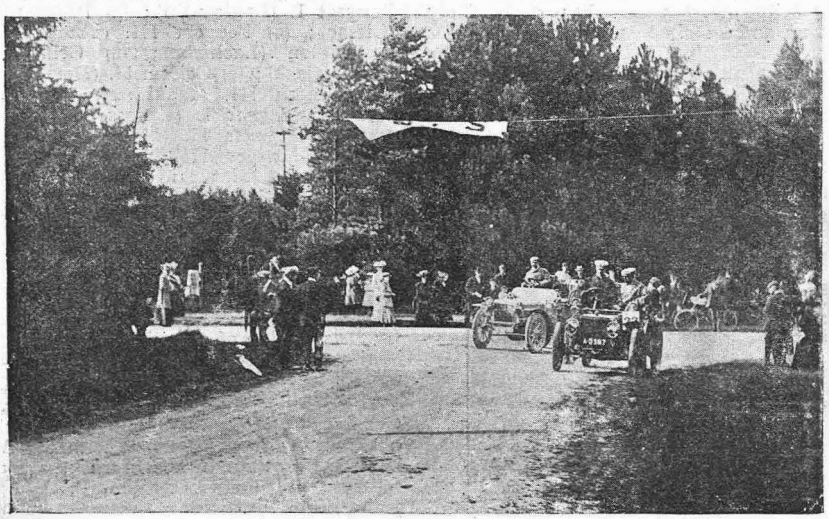
Just as we go to press we are in receipt from the Automobile Club of an advance copy of the report of the judges who were appointed to watch the trials of light cars at Hereford. The report would fill some pages of this journal, and it is to be hoped that the Club will take steps to issue it as a pamphlet to the public, because it is obvious that no paper could publish the whole of it. To very briefly summarise the report and indicate the points which receive attention from the judges, it may be said that their comments deal with the constructional features of the cars, and, although some of the criticisms are merited, it is obvious that the judges have not considered it their duty to award praise, and unquestionably praise was due in a large number of cases. The result is that the report conveys rather a false impression, bearing the imprint of a man who, driving a big car himself, regards the light car with prejudiced eyes. Many of the defects pointed out by the judges are of a minor character, and if the trade will give heed to them, and, now their attention is drawn to them, will entirely eliminate them from future models, the resulting effects will be good, for many an unnecessary stoppage will thus be averted.

In addition to the non-stop awards announced in our last issue, which were the results automatically arrived at under the rules, the judges have awarded three gold medals, three silver medals, and six bronze medals, as well as two honourable mentions. The gold medals are awarded to the Wolseley Co. (two cars), the Siddeley Co. (one car), and to the Swift Co. (two cars), for general excellence of construction and workmanship, and for hill-climbing, whilst in the case of the Wolseley and Siddeley cars the phrase of general excellence includes "design," and in the case of the Swift the award is also for smoothness of running. The silver medals are awarded to De Dion-Bouton, Ltd. (for excellence of workmanship, for consistent running, and for hill-climbing), to Humbers, Ltd. (in respect of their two-cylinder car, for general excellence and attention to detail), and to the Alldays and Onions Co. (for general construction, neatness of design, and smoothness of running). The bronze medals are given for more varied reasons, more in the nature of details, such as construction and performance with reference to price, low petrol consumption, etc. The bronze medals are awarded to the Speedwell, the Brown, the two Little Stars, the Oldsmobile, the Prosper-Lambert, the Crouch, the Clyde, and the Mobile. The judges conclude this portion of the report with the opinion that the distance should have been more than 600 miles, in order to bring out by automatic records the qualities of the cars, and they draw attention to the fact that, although the non-stop performances provide an automatic indication of some of the qualities of the cars and drivers combined, the important matters upon which depend the durability of the cars and their choice by purchasers are chiefly shown by the examination after the trials, and that these important matters have on this occasion determined the distribution of the medals. Thus, it is evident that in their own minds the judges consider their own awards to be superior to the automatic non-stop awards. Certainly from the former the element of bad luck is eliminated, but in its place there is individual bias and prejudice, although in the medal awards there is very little, if any, of the latter apparent.

The tables which follow the report give the order of merit under each of the following heads: Number of Non-Stop Runs, Brakes, Petrol Consumption per Car Mile, Petrol Consumption per Ton Mile, Vibration, Noises, Ease of Manipulation, Comfort of Passengers, and Hill-Climbing. Two other tables give (1) the leading dimensions and a few other particulars of the cars, and (2) the full record of their road performances. Brakes are divided into eight grades, the Brown, De Dions, and Oldsmobile being first grade.



The French Eliminating Trials for the International Cup Race. Auzani finishes in the first round.



Scene at the start of the Berkshire Hill Climb on Saturday last.

For petrol consumption the 7 h.p. Clyde figures at the top of the list with 47 miles to the gallon, and .033 gallons per ton mile. Some cars only went a third of this distance upon the consumption of one gallon, whilst, taking weight into consideration, the worst used two and a-half times the quantity used by the Clyde to do the same work. For vibration, absence of noise, and comfort of passengers the 7 h.p. Swift figures at the head, and it is also bracketted first for ease of manipulation. The Light Wolseley is placed first for hill-climbing, with the De Dion second, the whole of the 26 cars to finish being given in their order of merit. Altogether the judges' report is very complete, and is full of interesting matters. We understand that it will be issued to the competing firms during the course of this week. It would, as we have said, be a particularly useful document if it were issued generally to the whole of the trade, and to the public, and we hope the Club will adopt the course of supplying it to all upon receipt of stamps for postage.

NEWS.

"The Times" in a recent issue draws attention to the material of which certain roads about Nottingham, Grantham, and Newark are made: this is known as "tarmac," and is composed of crushed iron slag treated with tar and creosote.

The Motorcar Trials in India.

In the forthcoming Indian motorcar trials, announced in our issue of September 6th, a special prize will be awarded to the car which gives evidence of being most suited to the Indian climate and roads. The test is a run of 880 miles—to be covered between December 26th and January 2nd—at a minimum speed of 12 miles per hour and a maximum of 30 m.p.h. Cars have to start with all tools and spares on board, the regulations prohibiting the taking on of any such necessaries.

Sweeping Assertions.

The Rev. E. Husband, of St. Michael's, Folkestone, is a representative of the cloth who is deservedly popular with all classes of the community. In connection with the sister sport of cycling, Mr. Husband's annual church parades do much to foster a kindly feeling amongst cycling and non-cycling Christians, besides giving considerable monetary aid to various charities. We do not think, however, that Mr. Husband will advance his own reputation or benefit the cause of cycling by such remarks as he is reported to have made on the occasion of his last church cycle parade. We quote from the "Eastbourne Chronicle" some sentences referring to motorists:—"He thought them the greatest nuisance of the country!" "They were taking away the enjoyment of cyclists out for their rides." "Far heavier fines should be inflicted upon the too often idle rich." "There is no sound so terrible as that of a motor horn, except perhaps the screech of cats in the middle of the night!"

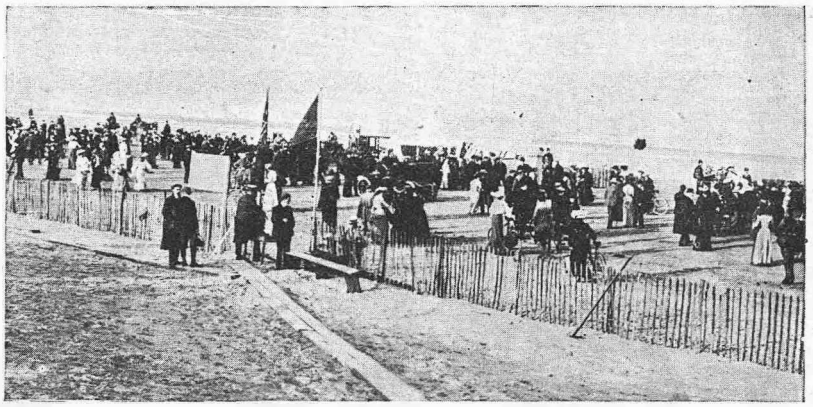
RACING ON THE SEA SHORE.

SUCCESSFUL MOTOR RACING AT PORTMARNOCK.

An unqualified success in every sense was the two-day race meeting held by the Irish Automobile Club, at the Velvet Strand, at Portmarnock, on Tuesday and Wednesday of last week. Favourable weather, magnificent racing, and a track that left nothing to be desired combined to make the meeting one of the most successful events of its class that has ever been held in the British Isles. The races held earlier in the year by the Motor Cycle Union of Ireland demonstrated the suitability of the Velvet Strand at Portmarnock for the purpose of motor racing. It is a really magnificent course, stretching for some two miles from the Martello tower near Malahide, past the residence of Mr. J. Jameson and the links of the Portmarnock Golf Club, and down towards Baldoyle. When the tide is out the course is sufficiently wide to race as many as half-a-dozen cars abreast. The club was, perhaps,

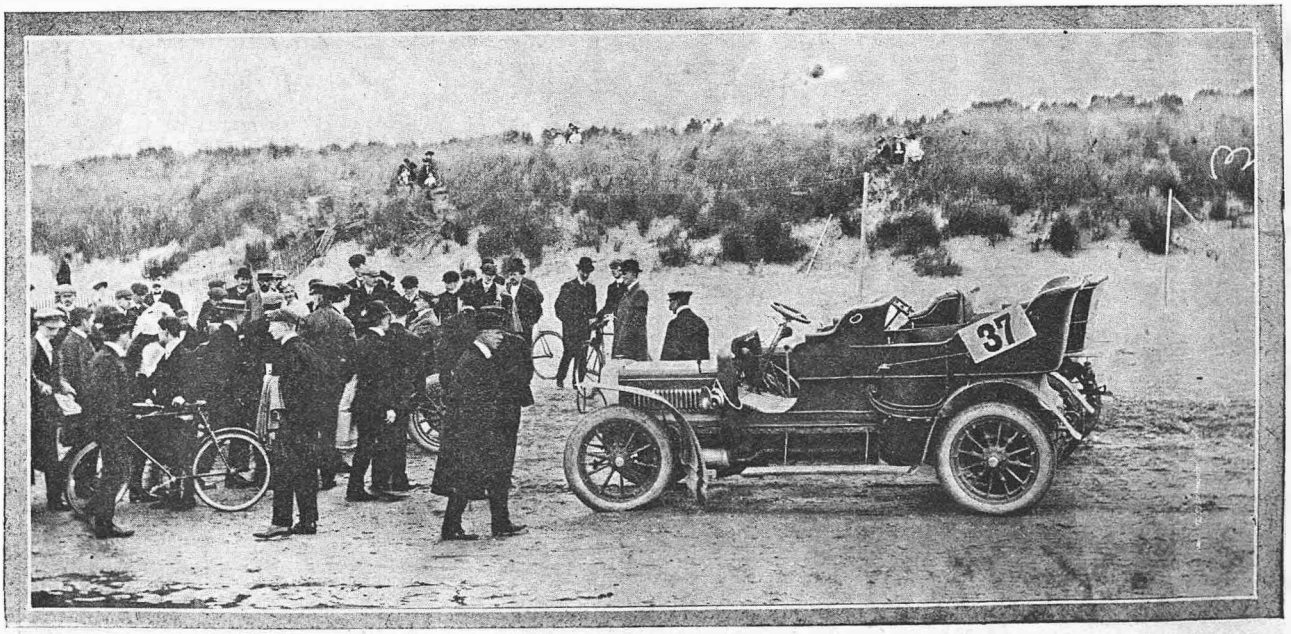
A BIT UNDULY NERVOUS

with regard to the safety of the competitors and spectators, and consequently they did not start more than four cars in any of the races. The fact that in the racing car class three vehicles, such as Edge's six-cylinder Napier, Rolls' 100 h.p. Mors, and Mr. A. Lee Guinness's 100 h.p. Gordon-Bennett Darracq car raced abreast is in itself a guarantee of its perfect safety.



The Meeting at Portmarnock: View of the enclosure during the racing.

The scene on the strand was a most animated one. At the winning post a large enclosure was railed in for the use of the members of the promoting club, the judges, and other officials. The strand, was, of course, quite free, and consequently the attendance of the general public was enormous. Right along the course



Motor racing at Portmarnock: Amongst the racing cars. J. W. Stocks about to start.

NEWS.

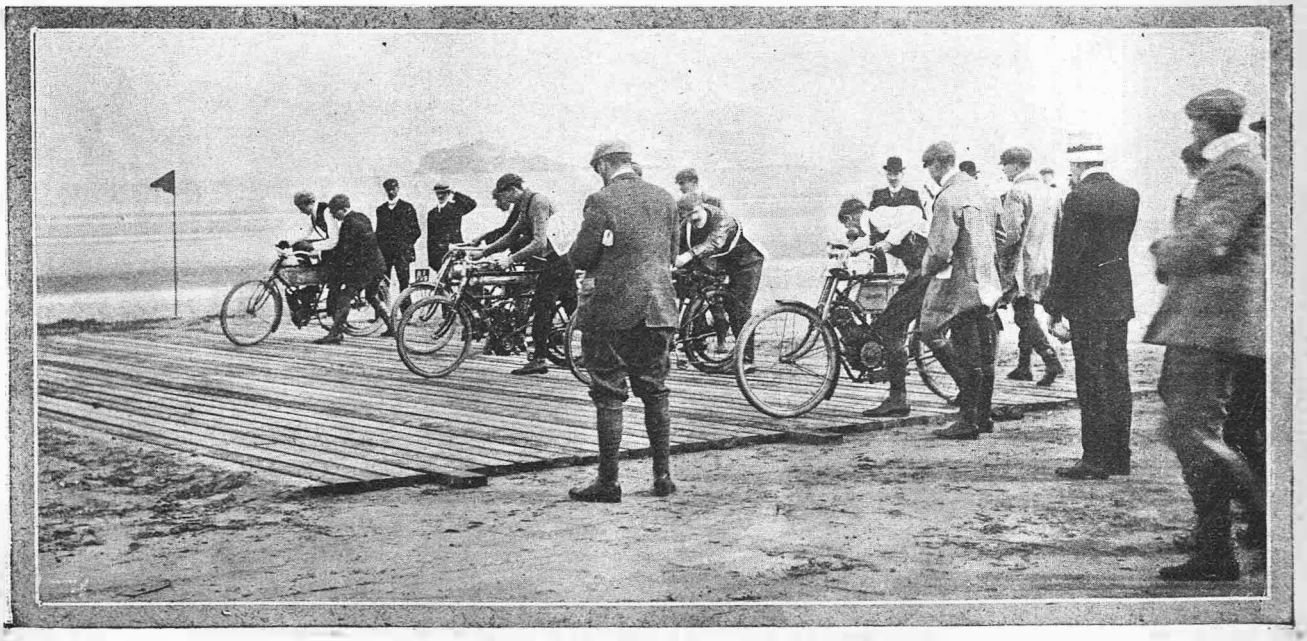
a high bank extended, from which an uninterrupted view of the races from start to finish could be obtained, and the various vantage points on it were largely patronised. The course was about 50 yards wide, and was roped in on both sides, the cars being compelled to return outside the course after competing in each event. At one or two points where there were little rivulets in the strand, tons of sand were thrown in previous to each day's racing, and consequently top speed could be indulged in even by the heaviest cars right from the starting point. A telephone laid along the strand brought the starters' numbers and the times of starting to the judges, and numerous willing workers kept the public informed as to the progress of the races.

On the first day the heats of the various classes were decided, and also two events for motor-bicycles. The second day was confined to the finals of the various classes and a couple of motorcycle events, while a handicap event for touring cars was also included in each day's programme

THE MOTORCYCLE RACES

resulted in a complete triumph for C. B. Franklin, a rider who, in the competitions of the Motorcycle Union at Portmarnock, has been wonderfully successful. He made a clean sweep of the events on Tuesday and Wednesday, winning both of the races each day. He had his 2¾ F.N. tuned to concert pitch on every occasion, and the fact that he was able to beat machines of considerably higher horse-power was due to the wonderfully quick manner in which he got away from the mark. In the race for the Wheatley challenge bowl he was followed home by W. R. Ireton, on a 3½ h.p. Riley, and in the lightweight class J. G. Drury, on a 2¼ h.p. Triumph, was second. On the second day his runner up in each event was E. T. Jones, a Welsh rider, but an objection to the latter, on

A. Lee Guinness and J. W. Stocks starting in the racing section.



Starting in the motorcycle race at Portmarnock.

NEWS.

the ground that his machine was over 150lb. weight, deprived him of the prize he won in one of the events. It may be mentioned that the Motorcycle Union of Ireland and the I.C.A. gave special permission for amateurs and professionals to meet in the race for the Wheatley challenge cup without the former losing their amateur standing, but all of the entrants were amateurs.

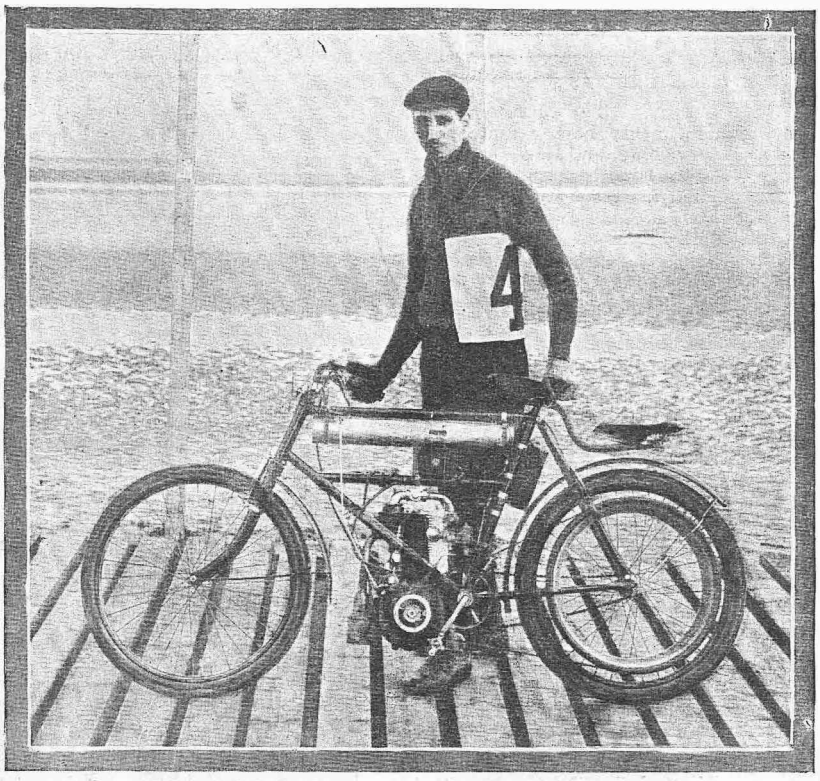
The fast time accomplished by Sturmey's 10 h.p. Duryea in the preliminary heats of the class for cars up to £200, pointed to its victory in the final, and it quite ran away from the little 6 h.p. De Dion driven by Mr. J. "Edwards." The 14 h.p. Hallamshire car, driven by Mr. Churchill, beat a 12 h.p. Duryea and a 15 h.p. Darracq in the under £400 class. In the under £600 class, the finalists were A. Huntley Walker and A. Rawlinson, both driving 15 h.p. Darracq cars. The former won by a small margin.

IN THE CLASS FOR TOURING CARS

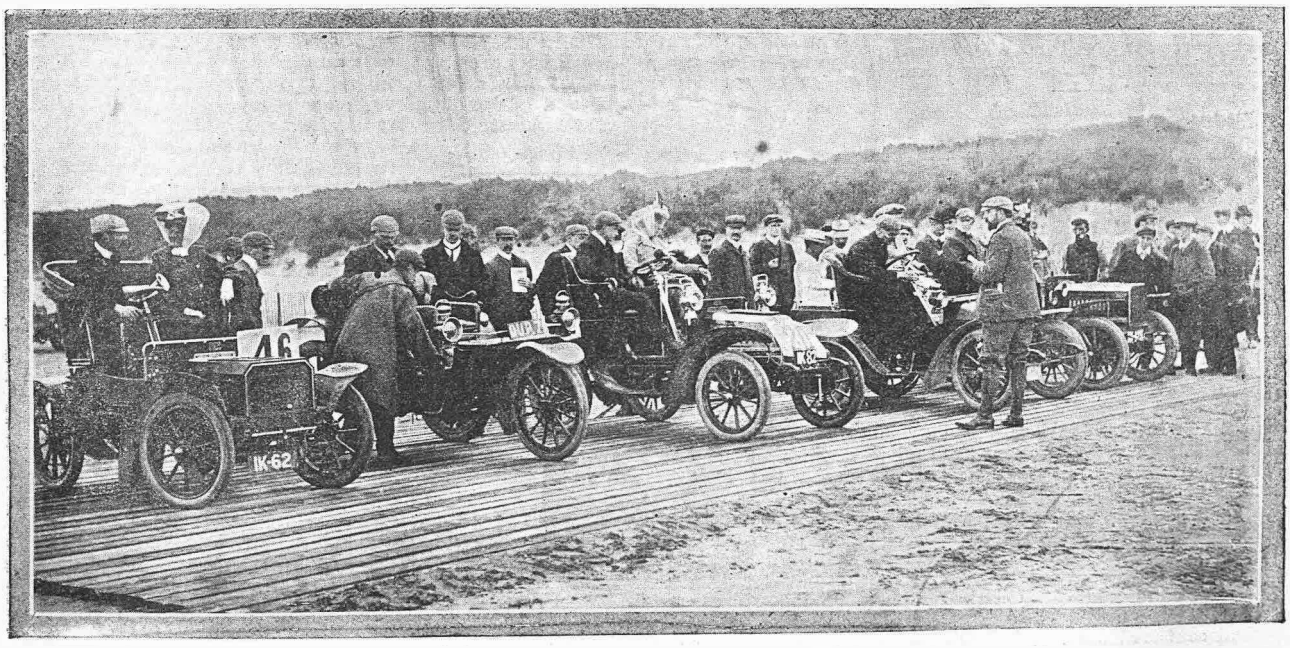
costing up to £1,000, two 28 h.p. Daimlers qualified for the final, and that driven by Mr. P. Martin was successful, he having in the semi-final beaten the 20 h.p. Napier which was so successful at Bexhill. The runner up was Mr. T. L. Plunkett, a local motorist. Mr. Plunkett, however, was very successful in the handicap events, and won the 10-guinea cup offered on the first day by 40 yards, and on the second day secured a share in the Goff cup from scratch.

In the class for touring cars irrespective of price, a 60 h.p. Mercedes, driven by Mr. A. Lee Guinness, beat A. Rawlinson, on the 40 h.p. Darracq used by the latter in the light racing class, the car, of course, having a tonneau added for the purpose of qualifying it as a touring vehicle. Of the two events for racing cars that confined to cars weighing under 1,000 kilos. was very much the better supported. In fact, for the lighter car class, weighing under 650 kilos, only two entries were received, namely, Mr. A. Rawlinson, the holder of the Irish Automobile Club 100-guinea challenge cup, and Mr. G. Wilton. Both were driving Darracq cars, which materially detracted from the interest in the event. It looked at one time as if the cup was going to Rawlinson's stable companion, the holder having got away very badly, but he came with a rare burst at the finish, and won by a couple of lengths.

The preliminary heats of the heavy car class were run off on the first day, and of the seven entries received Jarrott's De Dietrich was the only car which did not come to the post. The first heat was between Rolls, on a 100 h.p. Mors, and Rawlinson, on one of the Darracq cars which was built for the Gordon-Bennett



C. B. Franklin, winner of the Motor-bicycle Races at Portmarnock.



Starting in the Tourist Section at Portmarnock.

NEWS.

race of this year. The Mors travelled badly enough, never having more than three cylinders going, and Rawlinson won easily. In the second heat another of the Gordon-Bennett Darracqs was successful. Driven by Mr. Lee Guinness, of Dublin, it beat Mr. Mark Mayhew's 70 h.p. Napier, the latter being driven by J. W. Stocks. In the third heat the six-cylinder Napier beat Maurice Egerton's 60 h.p. Panhard very easily, and did 56 secs. from a standing start mile, which, by the way, is the fastest mile accomplished during the trials. After the racing

AN OBJECTION WAS RAISED BY ROLLS

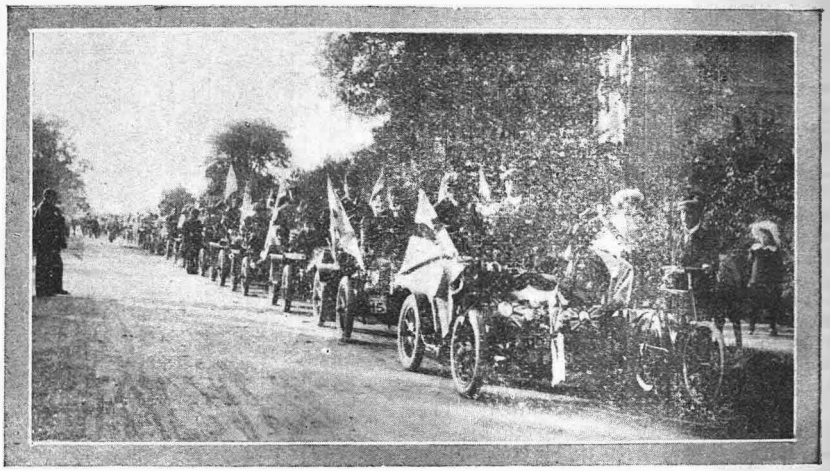
on the ground that the original programme stated that the class would be decided on the second day of the meeting. A considerable amount of time was spent on Wednesday in discussing the merits and demerits of this objection, and at one time it looked as if a deadlock would be arrived at. Ultimately the judges decided to allow Rolls to go in the semi-final, and to refer the objection to the Races Committee of the Automobile Club in London. It was, however, provided that in the event of Rolls winning his heat of the semi-final, the competitor whom he beat was also to go in the final, so that the latter would suffer no disadvantage in the result of Rolls being ultimately disqualified. This did not, however, quite settle the matter, for Rawlinson pointed out that if the luck of the draw should bring him against Rolls, to race against him would be an admission on his (Rawlinson's) part that there was something in Rolls' objection. Mr. Guinness came forward, however, in a most sportsmanlike fashion, and offered to race Rolls, and Rawlinson went against Edge's Napier. He was beaten in his heat, and as Rolls beat Guinness, there were three competitors for the final. As the three Leviathans thundered down the course the sight was a magnificent one, and at the end of the mile there was not more than 30 yards between the first and the last car. The six-cylinder Napier won, with Rolls second and Guinness third.

The Auto-Cycle Club Race Meeting.

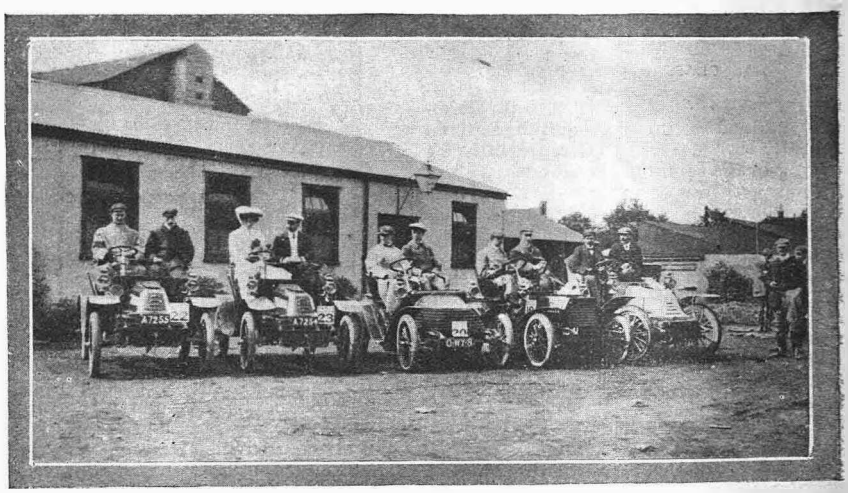
In another part of this issue will be found an advertisement of the Auto-Cycle Club Race Meeting to be held on the Crystal Palace track on Saturday, September 24th. This is the only Auto-Cycle race meeting of the year; the programme is always a most interesting one, and with the increased interest that is being taken in motoring events, the Club should have a large attendance.

The German Emperor and Automobilism.

Baron von Brandenstein, secretary-general of the German Motor Club, has just received a signal honour from the German Emperor. As the Baron was walking recently in the Tiergarten, he met the Imperial pair, accompanied by the Princess Victoria Louise. The monarch greeted Baron Brandenstein, and then engaged in a long conversation with him respecting motor matters. On parting the German Emperor told the secretary that he had conferred upon him the Order of the Red Eagle, fourth class.



The procession at the end of the Light Car [illegible]



Cars that performed well in the Trials:
6 h.p. De Dion, 6 h.p. De Dion, 6 h.p. Wolseley, 8 h.p. Siddeley, 10 h.p. Croxted.

The course on Long Island for the Vanderbilt Cup in October will be about 30 miles in length, and will be traversed nine or ten times. It will include two controls, one of half a mile at Hicksville, and another of 1½ miles at Hempstead.

The Evolution of the Racing Car.

"With at least four eight-cylinder cars on the track circuit, this is bound," says Chicago "Motor Age," "to be an eight-cylinder racing year in America. What will next year be, 16 or 32? Automobile racing began with one cylinder, progressed to two, and then to four. Now it has reached eight, and reports from the Pacific coast (where the atmosphere is conducive to great ideas) say that 16 cylinders is a possibility. Every year motor bonnets have become longer, and bodies shorter and smaller. What is the use of a body on an automobile any way? The motor is the essential thing; the body is simply a convenience for the driver. Let the driver hang on, or cut him out altogether, if a place cannot be found for him without wasting wheel base that might be devoted to four extra cylinders. There is a great possibility in the 32-cylinder car." Most of which is, we suspect, "writ sarcastic."

Michelin tyres scored in the Ventoux Hill Climb on August 30th; the first six cars in the heavy class, and the winning cars in each of the light car and voiturette class, being fitted with the tyres. The finish of this particular climb is more of the nature of a sea beach than the road surface one usually associates with ideas of Southern France

A Comprehensive Trip.

C. J. Glidden, the globe circler, had reached the vicinity of the great lakes at the end of last month in his ride across the American Continent. Up till then Mr. Glidden had covered, in round numbers, 18,000 miles, and had passed through Austria, Belgium, Bohemia, Denmark, England, France, Germany, Holland, Ireland, Italy, Scotland, Spain, Sweden, Switzerland, Wales, and part of the United States. "The trip," says Mr. Glidden, "has so far been a liberal and a cheap education." The war in the East has interfered with the original plans, the crossing of Siberia having been abandoned. The following countries remain to be traversed: New Zealand, Australia, Tasmania, Philippines, China, Japan, Malay, Borneo, Java, Sumatra, Ceylon, India, Egypt, Palestine, Greece, Turkey, Hungary, Algeria, and Portugal.

NEWS.

Mr. G. Brown, who was a successful competitor in the Manchester Motor Club's 100 miles non-stop reliability trial, states that he has a pair of Palmer motorcycle tyres which have done service for two seasons, 10,000 miles having been covered with them, while he has only been troubled with one puncture. He says that the corrugations have not yet worn off.

A Novel Event.

The Auto-Cycle Club is providing its members with a novel form of Mutual Reliability Trial on Thursday next (Sept. 15th). Starting from Staines Bridge at 10 a.m., the route will be Exeter, lunch being partaken of at Salisbury. Any competitor seen stationary by the roadside is to be fined 1s. for each stoppage; non-arrivals at a fixed hour will be fined 5s. each, as also will the last three arrivals. Any competitor arriving at destination at a speed exceeding 20 miles per hour, or less than 12 miles per hour, will not be allowed to take any awards. The whole of the funds, together with the entry fee of 2s. 6d. each rider, and a sum of £5 voted by the Club, will go in awards to those arriving within schedule time.

Suggested Improvements for the Gordon-Bennett "weighing-in."

Baron von Schrenk Notzing, the German Automobile Club's representative at the weighing in of the Gordon-Bennett cars at Homburg last June, has been criticising the methods adopted. In his opinion, the stamping of the cars is worthless: nothing can be seen but scratchings; in no case are the initials of the stamp discernible. Steel is too hard to receive impressions of this kind. He suggests letters and initials marked with a pointed steel on the car. Then again, the after-weighing on the day of the race cannot be carried out if ordered for all or a number of cars; and in the Gordon-Bennett race it is absurd to weigh any cars excepting the winner, since only one prize is given. They did not begin the second weighing until after 6 p.m. on June 17, and would have had to work all night (under the drawbacks of street lamps, benzine pools, danger of fire, impossibility of controlling weighbridge, etc) in order to finish. Besides, the cars are so full of oil, dirt, and lubricant that a considerable overweight comes out in many instances. Nor is there any reason for testing the weight over again. For one can at most wish to convince oneself that the winning car is the same in all parts as before. For this a control of the identification marks attached is better than weighing a second time under altered conditions. Further, let one consider that from 5 o'clock in the morning until 7 in the evening many of the drivers had eaten nothing, and came in dead tired to the weighbridge. To expect them in this state to bring back the cars to the prescribed weight—that is, work for hours together at it—is against humanity, and seems altogether unnecessary. As a remedy for all this, the Baron proposes that the after-weighing should be abandoned.

Motors at the German Manœuvres

Motorcars and cycles have figured largely in this year's German grand manœuvres. On September 5th a motor park, consisting of 22 cars and 34 cycles, left the barracks of the 2nd Railway Regiment, in Berlin, for the front. The Automobile Detachment of the Royal Railway Brigade, 40 strong, was compelled to train 28 infantrymen to assist it in controlling this new arm of the service. Fifteen of the cars and 28 of the cycles had been specially hired for the manœuvres, as the Detachment itself does not possess the requisite number. The military authorities have given the makers of the hired automobiles to understand that the firms whose material proved the best may reckon upon orders. It is interesting to add that the Automobile Detachment will henceforth have a home of its own.

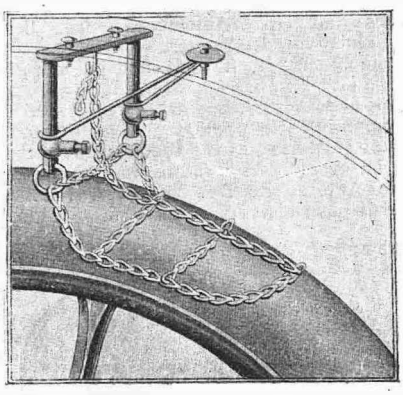
RETURNING FROM A ROCK CLIMB.
The view shows a couple of rock-climbers returning from Great Langdale, Westmoreland; part of the road is flooded, and the motor, a 3 h.p. Tricar, is passing through the water at 30 miles an hour.

INVENTIONS

THE LATEST IMPROVEMENTS IN MOTORS, MOTORCYCLES, MOTORCARS & ACCESSORIES.

The Nail Drawer: "Le Tigre."

Fleming and Co., Rue Vico d'Azir, Paris, have just introduced a novelty in the form of a nail-drawer, with unbreakable catchers, under the trade mark "Le Tigre." As seen from annexed illustration, the nail-drawer, or nail-catcher, is



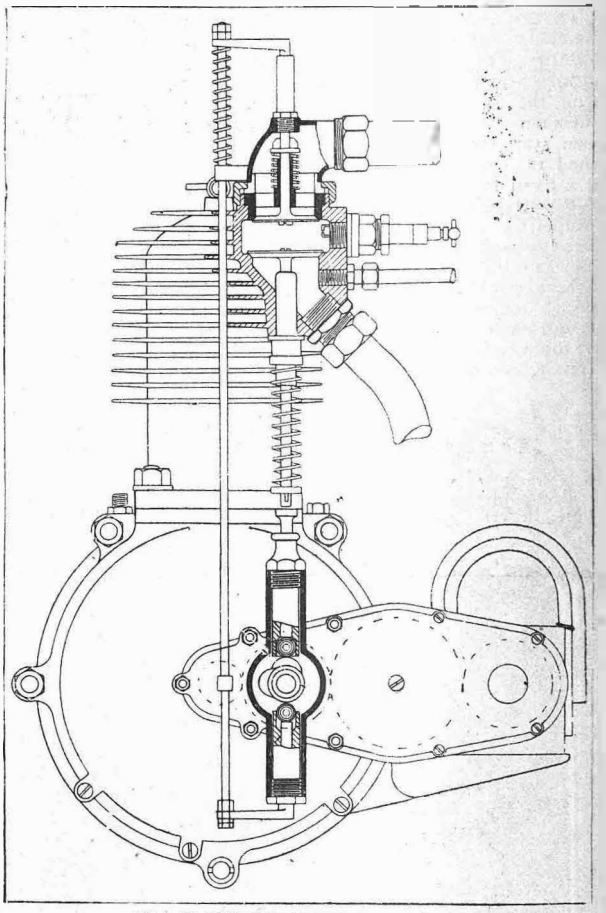
"Le Tigre" Nail Drawer.

fixed by means of screws to the guard-plate of the motorcar. The chain of the catcher hangs on steel bars, which can be shifted up and down. The middle chain, suspended from a hook, can also be raised or lowered.

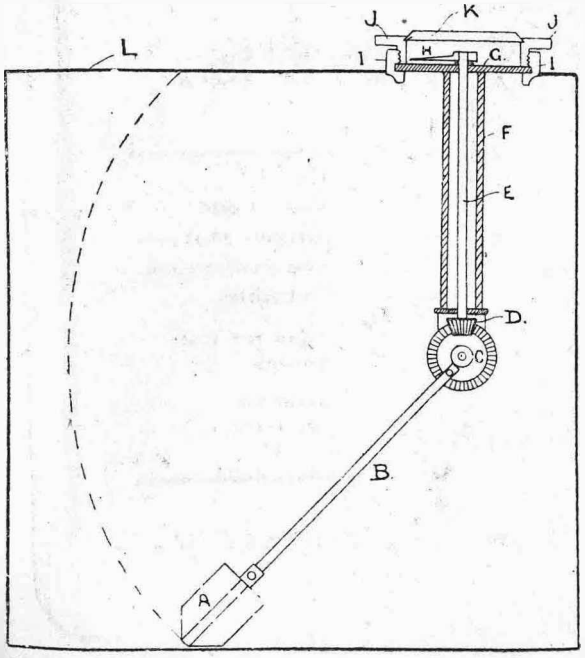
An Interesting Type of Engine.

The N.S.U. motorcycle engine depicted in the illustration has some very interesting features, chief amongst which is the valve operating mechanism. The inlet valve is mechanically operated from the top of the engine by means of a tappet rod, which extends to the underside of the two-to-one gear box. This rod is depressed by means of the cam striking the ball which rests in a seating just over the rod. A similar ball is placed between the exhaust valve cam and tappet rod. Thus the friction is greatly reduced. The inlet valve is, strictly speaking, a combination of the mechanical and automatically opened type, the chief purpose of the mechanically actuated tappet being to start the valve from its seating. The suction then draws it full open. Another feature about the engine is the magneto electric ignition. The dynamo generates a high tension current, and is driven by a train of small cog wheels from the two-to-one shaft. The sparking-plug is of the ordinary type. Just below the spark-plug is shown a nipple for connecting up the warming jacket of the carburetter to the exhaust.

There is no bend in the exhaust passage and thus the gases are got rid of quickly. The interior of the engine is on standard lines, but the pulley side bearing is unusually long and the flywheels are specially well balanced. The ignition can be retarded and advanced in the usual manner.



The N.S.U. Motorcycle Engine.



The G.P.S. Petrol Gauge.

The G.P.S. Petrol Gauge.

The diagram illustrates a simple form of petrol gauge introduced by G. P. Smith, 72a, South Island Place, Clapham, London, S.W. The action will be clear by a glance at the parts. There is a float A at the end of an arm B, which actuates the pointer H on dial by means of a piece of bevel gearing C and D. It is only necessary to secure the dial to the top of the tank, the two rings I and J effecting this. A bevelled glass cover is fitted to the ring J, thus protecting it from dust and wet. The arm carrying the float is a flexible strip of metal, so as to yield slightly to the side wash of the petrol, and at the same time it is quite rigid in a vertical direction.

Any late news received of new inventions will be found on our news pages.

Readers who desire information regarding Patents may obtain same on sending details addressed as follows:—"Patent," care of 'THE MOTOR,' Rosebery Avenue, London, E.C."

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 Cremorne Paraffin Carburetter.

Sir,—Can any reader who has used one of the above on his motor-bicycle give his experiences? I am sure they would interest many. What I specially want to know is, is there any chance of the valve getting stuck by dust, etc., or can leakage occur? Can it be easily controlled by an ordinary throttle without extra air inlet?—Yours faithfully, M.C.J.

Egham.

Side-cars.

Sir,—In reply to "AE99" re side carriages, I may say that I have used one of Montgomery's for three months, and have ridden it several hundreds of miles without a mishap, and find I can get 18 miles per hour with a 2¾ h.p. Humber machine easily. I have one or two friends who have tried the fixed carriage, but find it very unsatisfactory indeed, and prefer the compensating joints after having a trial with mine. I shall be pleased to show "AE99" mine at any time, if he is this way, or anyone interested. I am in no way interested in the firm whose carriage I recommend.—Yours faithfully, D. BURGESS.

10, Colliergate, York.

A Motor Paradox.

Sir,—In reply to "Minerva," who writes in "O.P.V." re "A Motor Paradox," I think if he will consider the matter for a few moments he will come to the conclusion that the mixture is rather heavy, owing to the combustion chamber getting hot through running at 20 miles per hour for 6 or 7 miles, with the result that the slight additional air admitted through the exhaust valve makes a more powerful mixture, and also slightly cools combustion and valve chambers. He would find, however, that this would not continue for long, for the reason that when the chambers mentioned had cooled the mixture would regain its normal strength. This also shows that on opening the exhaust valve too far the engine would slow down. Now, as to the engine beating regularly every fourth revolution, this is owing to the combustion chamber not emptying itself on the exhaust stroke and the gas admitted to the combustion chamber on the inlet stroke mixing with the exploded gas left from the previous exhaust stroke not being explosive; but on the second charge or fourth revolution of the engine the inlet of gas strengthens the previous charge and makes it explosive, hence only one impulse per four revolutions occurs. This, at least, is my explanation of the matter.—Yours faithfully,

W. CARDALL.

The Dangers of the Gudgeon Pin Screw.

Sir,—Can any reader inform me of a motor made without gudgeon screws; if so, name of maker? I bought a M.M.C. engine last September, and may tell you it has cost since (I have the bills to prove it) £10 for repairs to engine alone at different times, caused entirely through the gudgeon screws coming out. These came out in the first 100 miles. The engine has had two new pistons, and also has been re-bored, bushed, new connecting bolt to fly-wheel, etc. A friend, with a M.M.C., bought same time, has same trouble. It has cost to date £22 for repairs and replacements.—Yours faithfully,

Stratford, Essex. G. VARNEY.

Tyres for Military Motors.

Sir,—I was interested in Col. Bosworth's letter re tyres for military motors in a recent issue of "THE MOTOR." Having a small car of my own, which my pocket requires me to run as cheaply as possible, I have had fitted a tyre called the "Double Arch," which I find wears splendidly, and being neither a pneumatic nor yet a solid, I get all the spring and resiliency without puncture, and all the other evils associated with pneumatics. As regards the cost, which is moderate, I must refer your correspondent to the company, but I should like to add that, so far as my experience proves, one set of these tyres has outlasted two of the ordinary pneumatics, and the former are still in first-class condition. For rough roads, heavy vans, and hard wear, I am firmly convinced they are not to be beaten, and for military purposes I should say they are just the thing. I should be pleased to give Col. Bosworth my full experience of these tyres and also other devices I have tried for lessening the worry, cost, and up-keep of a car. I am in no way connected with the motor trade, my business being that of an insurance broker. I understand the United Motor Industries Co., Ltd., are now selling these tyres.—Yours faithfully, D. H. LANGHORNE.

Liability of Innkeepers.

Sir,—I wish to record an instance showing the unwillingness of certain hotel-keepers to serve travellers with suitable refreshments, and I ask for space in your columns for this purpose. On a recent Sunday I was returning from Harwich to Ilford, and called at an inn on my way through Brentwood at about 10.45 p.m., and asked for two cups of tea, which the proprietor refused to serve. I then asked him if it was too much trouble to warm some water to make it with, and he replied in the affirmative. Of course, he would have been only too pleased to serve me with a bottle of beer, because there is less trouble; but there is another reason also. The fact of the matter is that it is much more to his interest to sell bottled or draught beer, etc., in preference to tea. Surely an innkeeper who obliges customers in this manner should have some reward, and I should be glad to hear, when the revision of the licenses takes place, that he receives a just one. If any motorcyclists or others have had similar experiences I shall be glad if they will also endeavour to make the same public, as this will tend to lessen the number of such ill-disposed innkeepers.—Yours faithfully, G.F.

The Werner Free Engine Clutch.

Sir,—In a recent issue the question was asked by "Ailsa," in "O.P.V.," "whether the Werner free engine clutch was successful in practice. I should be glad if you would give space in your valuable paper for the following experience. After running machine 600 miles I found that the key fitted to outer half of pulley, by which the inner half of pulley is turned, was almost completely worn through, which allowed inner flange considerable play. This entailed loss of power by slipping of the belt, and a most unpleasant rattling, same as experienced with a loose pulley on any machine. After 50 miles more running the key wore through, allowing inner half of pulley to run free. I had a new key fitted with same result after 400 miles. I then had three keys fitted and three key-ways made, but even this I find shows signs of considerable wear after 100 miles. I enclose two keys for your inspection as they appear after 200 miles running. Having to renew the keys every 600 miles or so is a somewhat difficult task for an amateur. I am now fitting hardened steel keys, but as there is no way of hardening the key-ways on inner half of pulley I fear the wear will simply be transferred by this to the key-ways. I should be glad to hear how other riders of the 1904 Werners have fared in this respect.—Yours faithfully,

"AM377."

O.P.U.

The Weight Question.

Sir,—I have read with great interest the numerous correspondence appearing in your paper on the "Weight" question. The general idea appears to be that there is no maker manufacturing a machine light enough for them. Why, may I ask, not the Torpedo? This machine weighs but 82lb., and develops a good 2 h.p. Most of its fittings are made of aluminium. It has, it is true, an outside flywheel, but how can a light yet powerful machine be made without one? I think a return of the sale of this machine during the last three months would interest a great many of your readers. I, personally, am convinced that you must have power, and since at present power and weight are inseparably connected, I take them both. A light machine may, in fine weather, take its rider up most hills; but on heavy roads it won't, and, although excellent in good weather, is worse than useless as a bad weather mount. One wet day I watched the attempts of motors in general to climb a certain stiffish hill on the Portsmouth road, and, while 3 h.p.'s sailed more or less gaily up, several riders of light machines had to dismount on to the mud and shove, which they did with gloomy faces and much picturesque language. By the way, if any of your readers are troubled with unaccountable misfiring, let them look to the bridge of their accumulator. Mine cracked across once, and when I struck a piece of rough road the vibration turned the bridge into an efficient contact breaker. To a cursory inspection the bridge appears intact, as the crack is then not visible.—Yours faithfully, "PIPNO."

A Complaint.

Sir,—Attention has frequently been called in the past to the enormous share of the motorcar industry enjoyed by our Continental rivals, an industry in which this country at first took little share, because of the obstacles placed in the way of its progress by the antiquated law of the land as to mechanical progression on the highways. But was this the only reason for this country's backwardness? Those obstacles have now been swept away, and we enjoy a freedom equal, if not superior, to our neighbours. But the lack of enterprise, want of promptitude, and inattention to the reasonable demands of motor users on the part of British makers are subjects of constant complaint in motor circles, and the methods of French and German makers are compared with ours, to our marked disadvantage. I have just had a bitter experience in this direction. My car has now been laid up for over a month, owing to the teeth of a small gear pinion having worn. This was sent to the makers of the car—an eminent firm in the Midlands—to have a new one made. This was at first promised in eight or ten days. Week after week has passed without any sign of the new part. Postcards only have come, promising they are sending "next week" certain, but still nothing turns up. I know that I am voicing the complaint of many, and if we are to get our cars and parts in this country, makers must realise that promptness and faith in carrying out their promises, whether orders are large or small, are business attributes to be studied.—Yours faithfully, ERNEST B. HAYNES.

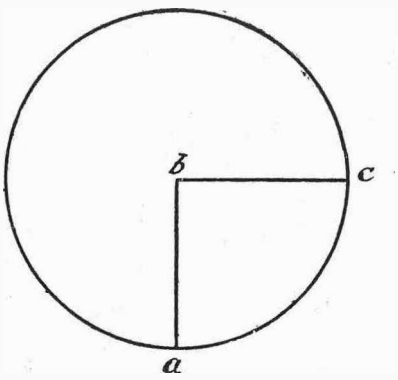
B24

Hill Climbing and the Gear Question.

Sir,—In a previous issue I noticed a letter from Mr. H. Spellman Marriot, in which he claims to have climbed a hill having a grade of 1 in 4¼ on a 2¾ h.p. Excelsior motor-bicycle.

I would be very much interested to know what the gear of his machine is and also the length of that grade and the approximate speed at which he went up the hill. I cannot understand how it is possible to climb a 1 in 4¼ grade, or anything like it, with an ordinary roadster motorcycle, because I contend that it is impossible to transmit the necessary power by a direct belt, such as is used on the Excelsior and the majority of other machines. Let us take the case of Mr. Marriot's machine, which we will suppose really develops 2¾ brake horse power, which corresponds to 2¼ h.p. × 33,000 = 90,750 foot-pounds generated per minute.

It is probable that 33 per cent. of this would be absorbed in transmission, but we will suppose that his belt is in first-rate condition, and only allow 25 per cent. for transmission losses, leaving, say, 68,000 foot-pounds available at the road wheel. We will also suppose that he pedalled and thus overcame all friction,



Illustrating letter from Q. Rios.

road, wind and other resistances, which, as he says the surface was very bad, will be quite enough for him to manage. His weight is given at 13 stone—182 lb.—and his machine is a heavy one, say 168 lb., making 350 lb. in all. Now 68,000 foot-pounds divided by 350 lb = 194 feet, which is the maximum vertical height it is possible to raise a weight of 350 lb. with the power available in one minute. A grade of 1 in 4¼ represented by diagram will show that the bicycle will travel 4·35 feet for each foot of vertical height. 194 feet by 4·35 = 843 feet per minute or 9½ miles per hour, which is the maximum speed at which a bicycle could travel up the hill under the above conditions. Supposing the road wheel is 28 in. diameter it will, at that pace, be revolving at 115 revolutions per minute. So far all is clear, and there is no difficulty. But now comes the question of gear. If, as is probable, the gear is about 5 to 1, the engine would be running at 115 × 5 = 575 revolutions per minute while developing its full power, which is, of course, absurd with an ordinary light petrol cycle motor. It would have to run at something like 1,500 revolutions per minute, and in that case the gear would have to be 115 to 1,500, say 1 to 13, which is also absurd for a direct belt transmission and a 2¾ h.p. engine.

I am therefore forced to one of the following conclusions:—Either (1) the hill is nothing like 1 in 4¼, or (2) a special transmission was employed, giving a gear of at least 13 to 1, or (3) the engine was developing about double its rated horse power.

I think that most of your readers who live in a hilly country are deeply interested in the gear question, and in considering that question it must be remembered that the power required to climb a hill increases enormously as the speed is increased, while the petrol motor only develops its full power when running at nearly its full speed. I hope some of your readers will give their views on this interesting subject.—Yours faithfully,

Natal. "ONE-IN-FIVE."

[It is most probable that the steepness of the gradient has been estimated incorrectly. There is generally, we find, a strong tendency amongst motorists to misjudge the actual gradient.—ED.]

Pedals or no Pedals?

Sir,—I regret that neither "Kl14" nor C. E. Squire explains the question as to where is the weight of the rider when pedalling, for the problem is both curious and complicated.

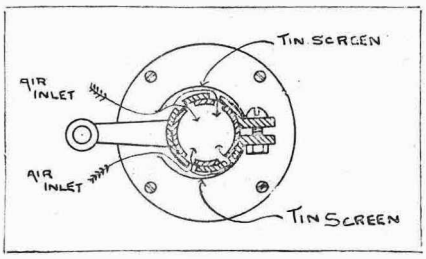
In the appended figure, supposing b to be the centre of a wheel; it is not the same thing if a weight be placed at b or at c. If placed at b it is not as "Kl14" points out a "potential power," but a dead weight which must be moved as the wheel revolves. If placed at c it is a potential power because it is free to fall, and in falling it will cause the wheel to revolve. C, b, a, is a lever whose fulcrum is at a, and the power placed at c moves the weight at b. The wheel does not leave the ground as C. E. Squire suggests it would, for the weight is on the rim of the wheel at the point where it touches the ground. To illustrate the point, let us suppose X, who is pulling a light cart in which Y is a passenger, encounters an obstacle which he has not power enough to overcome. Z, who is standing near, places his foot and all his weight upon one of the horizontal spokes and the obstacle is surmounted. Z does not become a passenger and add to the load by placing his weight upon the wheel, although he adds to the weight upon the rim at its point of contact with the ground. If, however, Y were to step out of the cart and place his weight upon one of the horizontal spokes, he would not only apply the same motive power as Z, but he would relieve the vehicle of its load, as he would cease to be a passenger. It is quite possible this problem has never arisen in mechanics, as there is no other machine but the cycle where the load carried can itself become the motive power by the displacement of its own weight. The argument applies to its fullest extent only at the moment the crank is in a horizontal position, and when the rider places all his weight on the pedal. With regard to heavy cycles it may not be worth consideration, but with respect to light bicycles, the question of the relief afforded to the engine by the transfer of the weight of the rider from the saddle to the pedal, is of great importance.—Yours faithfully,

Q. RIOS.

O.P.U.

Dust in Carburetter.

Sir,—I see in issue of August 16th that one of your correspondents is troubled with dust getting into the carburetter through the air inlet (writer of letter in question is Montague Perkins). I enclose a sketch showing the way in which I obviated this difficulty. It will be noticed that there is a slip of tin fixed on



Illustrating letter from S. H. Dean.

to the sleeve that regulates the air supply. I have a Longuemare "E," but I should fancy the idea could be adapted to any form of carburetter. As a protection for the bottom holes, I have made a sort of funnel which serves the purpose of a dust screen and duct for warm air.—Yours faithfully, S. H. DEAN.

The Zedel Engine.

Sir,—Referring to enquiry by "R.R.J." on page 106 ("Other People's Views") of August 8th issue, I have been running a 2¾ h.p. automatic inlet Zedel engine for about 13 months, and if your correspondent cares to write me, I will give him all the information I can.—Yours faithfully, B. WAGENRIEDER,

41, Harvard Road, Chiswick.

Manipulating the Humber Motor-bicycle Clutch.

Sir,—In answer to "P.1225" (Kingston), I had a slight difficulty at first with my Beeston-Humber Olympia tandem clutch, but after a little experience find it a splendid thing. The best way to start the engine again, after free-wheeling down hill, is, before reaching the bottom of the hill, when the machine is still running fast, to bring ignition lever to half compression, open the throttle wide, and push the clutch lever over almost to end of quadrant—do not put it over gradually, but put it over with one sweep; you can then throw the clutch out again when the engine starts and reduce gas, etc., and you are ready when you get to the bottom of the hill. To put the clutch in on the level, advance ignition to full compression, and gradually put the clutch lever over. It is very important to keep the clutch well oiled with a thick lubricant (I use the engine oil); the reason is that if allowed to get dry it does not slip, but bites too suddenly and stops the engine, as well as straining chains, etc. I can start my tandem with passenger up on a gradient of 1 in 14 with perfect ease, and feel quite sure that "P.1225" will be able to do the same, and better, with a motorcycle. I only started motoring last May, and take this opportunity of thanking you, Mr Editor, for the valuable information and hints I have found in "THE MOTOR."—Yours faithfully, G. A. EDMONDS.

Surface Carburetter Tip.

Sir,—I should like to offer a tip to those motorcyclists who use surface carburetters. There is often a trouble to get sufficient air to the petrol through the chimney at top of tank. Riding without the cap lets dirt into the carburetter. The best way is to ride with a gauze top cap, and to use the other cap for storage purposes only, so as to prevent evaporation of petrol. Motorists driving between Basingstoke and Winchester should be careful of speed at Worthy (two miles from Winchester), as there is an energetic constable stationed there. I myself was nearly caught.—Yours faithfully, H. HENRY.

Experiences with the White and Poppe Engine.

Sir,—In reply to your correspondent asking for experiences with the White and Poppe engine, I can assure him that he can invest in one with every confidence. Last March I had a machine built for me by a Portsmouth firm who strongly recommended the above engine, and after covering over 2,000 miles I can say it is the best engine I have owned or driven. It is 3½ h.p., air-cooled, and takes a side-car up all the hills round here with ten-stone passenger, climbing Hindhead without pedalling, either side. My machine is in almost daily use, and I have had no trouble with the engine whatever. It starts quickly and keeps beautifully cool, which, I consider, is due to the large diameter exhaust pipe and excellent silencer. The makers of my machine claimed great flexibility for the engine, and this is quite borne out in use of same. I can keep the engine running smoothly at five miles an hour, with throttle nearly shut, and without the side-car can touch over 40 miles an hour. I have ground in the exhaust valve only once, although I think this was hardly required, and the compression is still excellent. If your correspondent is in this neighbourhood I shall be pleased to show him the machine at any time. With best wishes for the continued success of your interesting paper.—Yours faithfully,

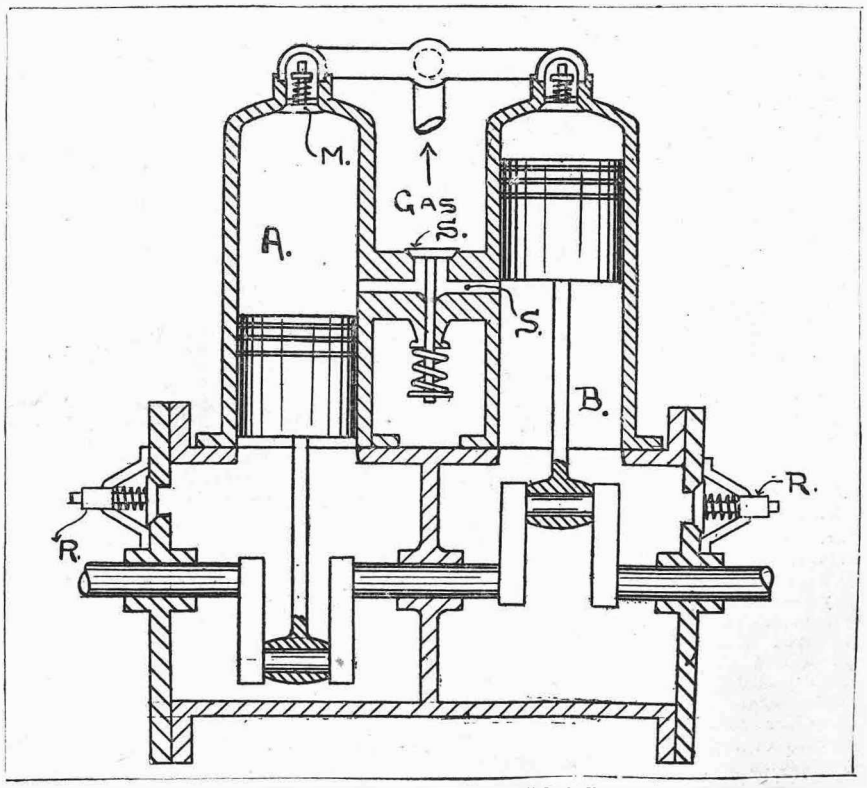
A. J. BARNETT.

Woodmans Green, Hollycombe,
Near Liphook.

A Two-stroke Engine.

Sir,—Perhaps you will be so kind as to insert a description and sketch of a new type of two-stroke motor which I have invented, and which I should like to have your readers' opinion on. Suppose an explosion takes place in the cylinder (A), which forces the piston down past the port and relief valve (S), most of the gas will pass in the usual way as in other two-stroke motors; the piston in cylinder (B) will now have uncovered the same port (S) and the remaining gas will be sucked into the crank chamber of cylinder (B), this being in a vacuous state, and at the same time a charge will be drawn through the inlet valve (M) from carburetter, and help to blow out all gas into crank chamber of cylinder (B). On the second stroke the same action takes in in cylinder (B), and on the down stroke the piston will force the spent gas through the non-return valve (R). To obtain all this the crank is divided, and each crank chamber acts as an exhauster, in the opposite to the usual system in the old type of two-stroke motors. This engine will work to a very high speed, and has no exhaust valve to have ground: only the inlet valves and two small non-return valves. The engine can be water or air cooled. When a single cylinder is used a condenser will be required, which means weight without the equivalent power.—Yours faithfully,

"CELT."



Illustrating letter from "Celt."

O.P.U.

Capacity of Accumulators.

Sir,—For some time I have been engaged in finding out the real capacity of the various makes of accumulators, and for this purpose I obtained a new 20 ampere-hour cell (i.e., the so-called 20 ampere-hour), of what I took to be the six best known makers in the market, viz., Peto and Radford (armoured), Pfluger, Castle, Dinan, Brown, Fuller; the cells were charged at a low rate equally, then discharged through a 4-volt lamp; then new acid, to bring liquid up to the proper spec. gravity added to the cells, except the Pfluger, which has a semi-solid filling. I then charged them equally at a very low rate, and on a discharge through a 4-volt lamp until voltmeter showed 3.7. The result in the order of merit is as follows:—(1) Pfluger; (2) Castle; (3) Fuller; (4) Dinan; (5) Armoured (P. and R.); (6) Brown. I might mention the Pfluger and Brown call their cell 18 amp.-hour, and the Castle No. 1 25 amp.-hour. I made no allowance for rating, but ran them on their merits. There was very little between the first and second, but the Castle fell faster from 4 to 3.7. The lamps were "Ediswan" 4-volt, mounted on a board taking one amp., and the voltmeter was a Kelvin tested one. I might add all the cells ran 18 hours; therefore, any of the makes I tried are a safe purchase. But I have found in a long experience that everything depends on the cell being properly made at first, and my own cells have always been charged and discharged at the least three times before using them. Some time back I wrote to your valuable paper stating a friend of mine had found a means of curing sulphated cells without removing the plates or top, providing the plates are in good condition, no holes caused by loss of paste the cells being celluloid; he has authorised me to say he would cure a few if they are large cells—i.e., 18 amp.-hour or over, for any of your readers in Co. Dublin, not in the trade, at a mere nominal charge, his out-of-pocket expenses (new acid and charging up when cured) if they send in the first instance, and before forwarding cell, a postcard to "Dublinite," care of Marchbanks, Cycle Agent, Blackrock, Co. Dublin, as he can only accept a few, his time being fully occupied.—Yours faithfully,

"DUBLINITE."

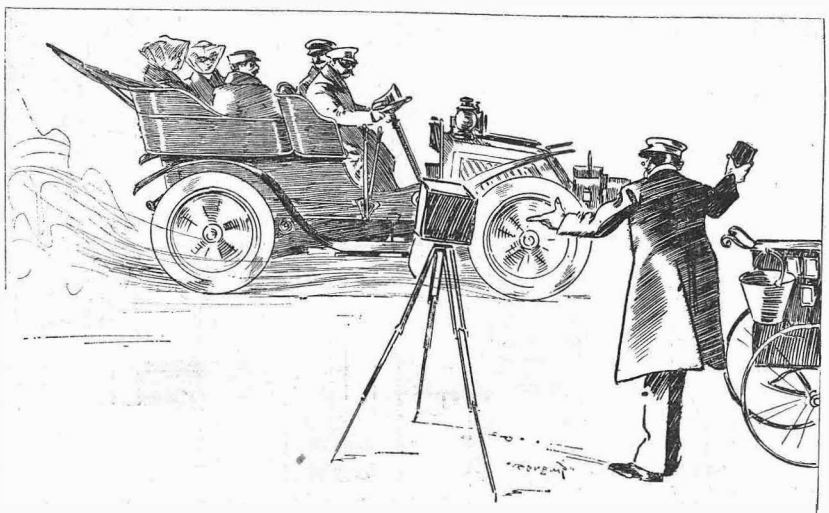
Olympia Tandem Experiences.

Sir,—It is for the benefit of the doubtful that I write this account of my Beeston Humber Olympia Tandem which has given me satisfaction, and to point out to probable purchasers points which I consider advisable to watch in ordering. My machine was approximately ready for me early in May, that is to say, all was in running order, excepting the fore-carriage, and as I wished to master driving without spoiling the varnish too much, I decided to have the fore-carriage sent on after, and I took the motor on a 60 mile run home, which was accomplished without a stop or hitch of any kind.

My pleasures commenced with this ride, for the machine proved itself to be an extremely powerful and sweet running machine. It is the 4¼ h.p. model, and on the brake test it generated 5 h.p.; this fact is what I consider one of the main points in an Olympia tandem, viz., to have plenty of spare power, and on no account to rely on pedals, which are useless with such a weighty machine; but the more the power available the more carefully must one drive, for, when riding through traffic, you pick up speed so quickly that unless you are thoroughly accustomed to your machine there is great danger of an accident.

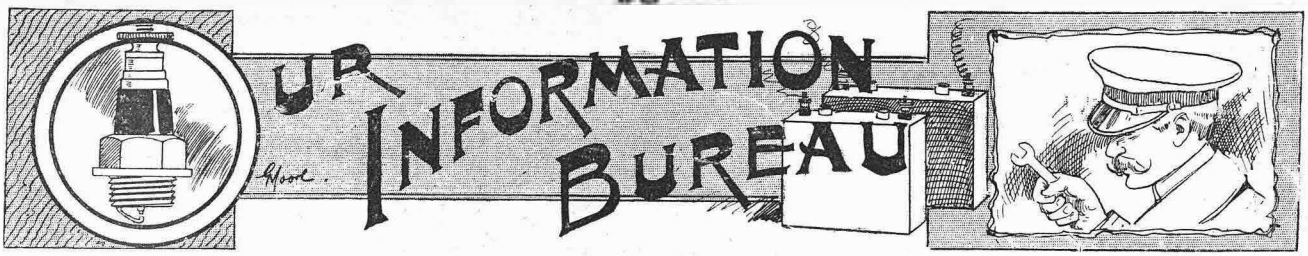
On my first day's ride with a passenger, who weighed 16 stone, I had given him a very nice run of some 15 or 20 miles, and he was delighted with the smooth gliding motion of the fore-carriage, so much so that his complimentary remarks elated me somewhat and I determined to let him see the full capabilities of my mount, and at the first hill we came to I set the sparking and throttle to their full extent. Unfortunately for me the hill was by no means straight and the motor exceeded my anticipations, so much so that the bad corner I thought could easily be negotiated suddenly appeared to become a place of obstruction, a most acute angle, and in spite of stopping the engine and applying brakes we both went into the hedge. My companion (an elderly gentleman) I found after picking myself up was deposited on the far side, luckily none the worse for my driving as far as his bones were concerned, but very much so in nerves and temper, and as for the machine, which had turned over, it was not so much damaged as to stop us continuing our ride home at a sedate speed regulated by my front companion. Since then I have performed many miles on my machine, including two rather long journeys of 120 and 90 miles respectively, and in neither case did anything happen to stop my progress. These journeys proved many things to me which were particularly gratifying, viz., that my motor used very little more petrol than my former 2¼ h.p. motor-bicycle, it was capable of great speed and hill-climbing power, and above all on the last 40 miles, covered on very greasy roads, we had not a single skid, and I found myself capable of taking tram lines with more confidence than on a car, owing to the weight being so well balanced, and the two wheels in front to the one behind. Taking all together, I was very pleased indeed with my first long distance run. On my second journey I had a most gratifying experience, for I overtook a 15 h.p. Model of one of this year's Gordon-Bennett racers, in which was a friend of mine, who hailed me and asked me to take him up in front as he was anxious to catch a train. He saw I was capable of more than the car, so after rearrangement of luggage I did so, and did my best for him to catch his train whilst he timed the mile stones, and it will suffice to say we caught the train without fail, and he was astonished at the result. I should like at the same time to point out to any interested reader the faults, of which the very best machines must have some. The most conspicuous in my machine is the weak new gearing stays which carry the lamp as well. The vibration of an ordinary Lucas' oil lamp is too much for these, and I have had to have mine considerably strengthened. The same fault is conspicuous in the rear mud guard; it soon rattles loose. The brakes although sufficient if carefully used for two 13 stoners to descend one in eight, are not strong enough in my opinion for really hilly countries such as the West Riding round Pateley Bridge, and were I again to be a purchaser I should insist on either stronger brakes or a third one in addition to the two supplied. Again I should in every instance insist on having the following particulars:—First, and most important, is to have the 4¼ h.p. engine (not the 3½ h.p., they are both the same price) and no pedals. Secondly, a larger petrol tank is desirable as one does not want to stop for refills. Then I advise the two speed gear; no tandem is of any use without it for hilly districts. As regards the chain drive, I have now had three machines with this method of transmission, and never had a broken chain excepting on one occasion owing to the fault of the boy who was put to repair a puncture on my back wheel in not tightening my hubs up, and the back wheel thereby jammed. I may say that no belt made will transmit the power required to climb some of our Yorkshire hills without considerable slip and great wear and tear with such a machine as I have here written about.—Yours faithfully,

"AK197."



"JUST AS YOU ARE FOR NINEPENCE!"

Our artist was much amused one recent fine Sunday by the wiles of a wayside photographer who was improving the occasion by soliciting patronage of passing fast and fashionable cars!



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.

"Novice" (London).—The Contour Road Book of England, published by Gall and Inglis, 25, Paternoster Square, London, would meet your requirements. It gives the actual gradients in a table at the end of each route

A.E.S. (Muswell Hill).—The rates of current you would be charging at would be as follows:—Three 16-c.p. lamps in circuit .75 ampere, two 16's or one 32 .5 ampere, one 50 .65 ampere, three 32's 1.5 amperes, two 32's and one 50 1.65 amperes. Of course, the reason for the relatively small currents compared with the candle-power of the lamps is due to the high voltage of the circuit.

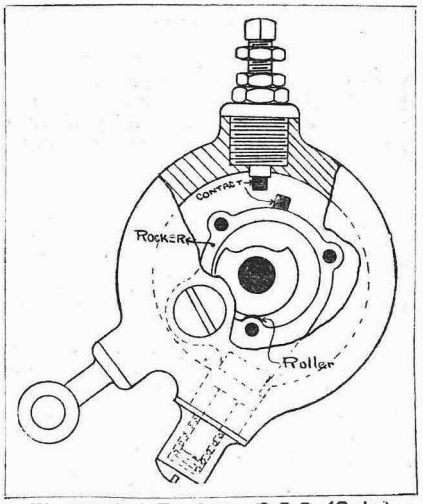
T. Gosnold (Folkestone).—(1) Beyond making use of the wheels of trailer for the tri-car, it is difficult to see what else you could do in the matter of conversion. If any reader has succeeded in converting a trailer into a fore-car in an economical manner, perhaps he would be good enough to send along the details, and we will publish them. (2) You cannot do anything at all with a cracked combustion chamber or cylinder. You will have to adapt a new one.

Silencer Query.

J. H. Whiteford (Plymouth) writes:—My 1904 Beeston Humber (2¾ h.p.) has a silencer composed of three concentric tubes, of diameters 1, 2 and 3 inches respectively, and about 10½ inches long. Each tube contains seven or eight holes of ¼ inch diameter. Could the silencer be made of similar tubes, but with holes of different size, to allow the gases to escape with little more than a swish, without increasing very much the back pressure? If possible, please let me know the number and size of the holes needed.—We should say it would be best to leave the same number and size of holes in the two inside tubes, but the outer one might have 60 holes 3-32nds diameter with advantage.

A.H.D. (Itchen).—You are safe in using the accumulators if they indicate 4 volts. Some cells will keep at 4·4 volts longer than others, depending on the quality of the plates and the correct strength of acid.

A.S.W. (Birmingham).—(1) The oil leak may be at the junction of the crank-case halves, due to them not being accurately screwed up, or you use too thin a grade of oil, or vacuum valve does not work well. (2) Although you cannot expect to go very slowly with the old pattern magneto ignition, as the spark is so weak, you should nevertheless be able to run steadily at 7 or 8 miles an hour by judicious use of the valve lifter.



Illustrating Reply to R.G.G. (Sale).

R. Ford (Sevenoaks).—There is a well-made little dynamo giving 10 volts made by Thompson, Deptford Bridge, Greenwich. This is specially constructed for charging small accumulators. To drive this successfully you would require a 1-6th h.p. turbine. One of these was illustrated in a recent issue. The maker is, we believe, P. Pitman, Bosbury, Ledbury, Hereford. We should not advise either of the low-priced dynamos you refer to. They are too cheap to be of any real service.

F.W. (Ashford).—A suitable gear for your 2½ h.p. De Dion front driver would be 1 to 6. You would get this by using a 3½-inch diameter pulley on the engine shaft, the pulley being measured across from edge to edge.

"Nomad" (Hull).—Should advise you to be very careful how you go about the transaction. From the details you give the car is very likely to be four years old. Your only safe course is to see the car and thoroughly examine and test it—especially on a long hill.

G.A. (London, W.).—On a long tour it certainly would be advisable to coat all the nickel work on your machine with vaseline. This will give good protection against damp, and at the end of the trip you can clean it off, and the plated parts will be as bright as ever.

G. Tolfree (London).—It is quite correct to say that the spark from a plain non-trembler coil only occurs at the instant the platinum contacts separate, but in the case of a trembler coil being used the sparks occur at the plug at the instant the contacts on engine touch, and the sparks cease when they break contact.

B. Walker (Kirkby Stephen).—(1) We do not see any special advantage in the device over a good accumulator. But where charging facilities do not exist, it would be useful. (2) Possibly Hewetson's, Ltd., Tottenham Court Road, London, could tell you something about the cars you specify. (3) The Fuller accumulators are made with a non-corrosive positive terminal. (4) Carburine is good spirit, and quite as reliable as the make you specify. (5) We are keeping the matter well in mind, and hope to publish something on the subject in the course of a few issues.

The F.N. Contact Breaker.

R.G.G. (Sale) writes:—I have noticed that the F.N. machines have a contact breaker which does not appear to work either on the trembler spring principle or the brush contact. Would you please explain the principle and special feature of this type of contact?—The main feature of the F.N. contact breaker is that it has no steel spring, and is self-adjusting for a considerable period of running. The illustration shows the principal parts. There is a contact ring on rocker, pivoted at the point where the screwhead is drawn. This ring is forced upwards by a spring acting on a plunger. This is supported in the tubular extension at the bottom of the case. The ring has a roller mounted inside; and the cam on the 2 to 1 shaft strikes against this and forces the ring downwards against the spring, and separates the platinum contacts. The notched part of the cam in passing over the roller allows the contacts to touch firmly. The wire from the coil joins up to the screw at the top by means of lock-nuts.

BUREAU.

"Alpha" (Coventry).—The fact that you find a large amount of charred deposit in the combustion chamber of your motor by no means implies that you are using an inferior grade of oil. It rather points to your using too much oil, or it may be the piston rings are a trifle slack, and thus an abnormal amount of oil gets past them. Of course, you are quite correct in assuming that an inferior oil would not stand as much heat as a first-rate quality oil would.

F.W.R. (London).—You will require a double coil to suit your two-cylinder engine. We should advise a trembler coil, even with the type of contact breaker you have. If these are screwed up so as to press fimly together, instead of vibrating they would work the coil all right; but, on the whole, it would be more satisfactory in the long run to change the contact and fit a double brush type. You will require two sets of accumulators connected to the coil by a two-way switch, so that you can use either set as desired.

Sulphating.

W.L. (Camden Town).—(1) Short of actually removing the plates from the celluloid cases and cleaning off the lead sulphate, your only plan is to adopt prolonged charging with alternate discharges. The addition of a few grains of sodium carbonate crystals (washing soda) to each cell facilitates the disappearance of the sulphate slightly. (2) You would not save anything in the way of electrical energy by using a wire resistance instead of lamps when charging on a 220-volt circuit. The lamps simply act as a resistance, and the same amount of energy is dissipated as would be in a wire resistance.

Side-car v. Fore-car.

H.A.J. (Sidcup) writes:—I have a 3 h.p. Quadrant machine, with M. and F. fore-carriage, but have overheating troubles on steep hills, and find the conversion into bicycle and vice versa troublesome. I am thinking of having a Phœnix two-speed gear fitted, and should like a side-carriage, its advantages appearing to me to be ease of attachment and freedom of engine cooling. Before making the change, I should like your opinion on these points: (1) Should I get overheating with fore-carriage and two-speed gear? (2) In what respect, if any, is the side-carriage inferior to the fore-carriage? (3) Would the combination proposed, that is, two-speed gear and side-carriage, take self (13 stone) and passenger (7 stone) up steep hills like River Hill? Engine very good 3 h.p.—The side-carriage is certainly easier to attach and detach than a fore-carriage, but, on the whole, the latter is, in our opinion, the better of the two types. The strains are distributed better throughout the frame, and the steering is easier—at least, this is our experience. There can be no doubt, however, that the side-car is a more sociable machine than the fore-car, and this is a feature distinctly in its favour. You would find the Phœnix two-speed gear, if thoroughly well fitted, do the work you specify with ease; but it would be imperative to have a fan for cooling. There are several good patterns of fans from which you could select.

J.P.E. (Bellingham).—It is quite possible that there is some deposit in the radiators. You could do something in the way of dissolving this by filling up the tank with a strong solution of soda, and running the engine for a few hours. The pump should be seen to also. (2) An amperemeter is no use for testing an accumulator, as it simply short circuits the cells and a great rush of current occurs. A good voltmeter or a test lamp are about the best means of testing the condition of the cells.

Charging.

C. Seelig (London) writes:—I should be glad if you would tell me how to charge a 20 a.h. 4-volt and an 8 a.h. 4-volt accumulator. The public supply here is 200 volts, and I want to charge the accumulators separately. I want to know how many 16 c.p. lamps to use when charging each accumulator.—You can reckon that the 20 ampere hour accumulator will require 2 amperes charging current, and the 8 ampere hour size, approximately, 1 ampere. To get this you would require four 32 c.p. lamps in parallel, and another circuit having two 32 c.p. lamps for the 8 ampere hour size. Or you could use the four-lamp circuit for both sizes, removing two of the lamps for the small accumulator. The accumulator must be joined across the terminals of the switch controlling the lamps, care being taken to have positive of accumulator to positive of switch, and, most important, the switch must be "off" all the time cells are charging. They will gas strongly when charged.

Two-cylinder Ignition.

C.D. (Heaton Mersey) writes:—I have a two-cylinder Darracq car with wipe contact and trembler coil ignition. Wishing to test whether plugs were working, I took both out and coupled one up, laying it on its side on frame of car (the other plug was not connected with high-tension wire from coil). I then found on turning starting handle that the plug sparked on both contacts, viz., on its own and the contact for other plug. When both plugs were coupled up, they fired alternately correctly. I feel sure there is a short circuit somewhere, but seller of car says that the second spark is very weak, and is due to induction in the coil. Do you think this is so or not? What makes me feel sure there is a short is that my accumulators seem to run down quickly. I have two accumulators with two-way switch. Engine also misfires occasionally. The coil is a high-speed trembler coil. Perhaps the fault is in the coil. How can I make sure if all is in order?—We gave a detailed explanation of a precisely similar experience in a former issue. As a matter of fact, there is a slightly induced current circulating in the coil that is not actually working. The two coils are mounted side by side and in a favourable position for inductive effects. The induced sparking current in the non-working coil is very feeble, compared with that in the working coil. It is not likely to have anything to do with the running down of the accumulators. You could make a test by placing an amperemeter in the primary circuit of each coil, and note if the current that passes in each was approximately the same. This would show that neither circuit was short-circuited. In fact, if this was so the engine would not run at all. The fault probably lies in the accumulators.

Gauzes in the Supply Pipe.

A.H.R. (Huyton).—(1) You would only get a very slight increase of power by removing the set of gauze washers in the supply pipe. They cause a slight throttling, increased, however, if dust or water collects on them. It would be a risk to remove them, as they stop the flame reaching the gas chamber of carburetter in the event of a fire-back through the inlet valve. (2) The idea of fixing a piece of wick in carburetter is to increase the evaporating surface. (3) If one of the lugs of negative plates in an accumulator be broken, it would not necessarily mean that the cell would not work, but the capacity or mileage would be reduced.

ANSWERS BY POST.

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

Thursday, September 1st.—H. G. Gold (London), "A.G." (Portland), A. D. Betham (Sedbergh), H. Holbeche (Tamworth), A. F. Blake (Canterbury), L. E. Parkhurst (Brackley), W. S. Ward (Ware), L. A. Dekkers (Hampstead), H. Mitchell (Overton).

Friday, September 2nd.—H. Brooke (Ascot), C. E. Sotham (Leicester), T. Ashley (Chiswick), W. G. Moore (Colwyn Bay), F. H. Stubbs (Welshpool), D. Duguid (Port William), A. E. Coleman (Carlow), R. H. Owen (Stroud), W. Allingham (Salisbury), E. Taylor (Birkenhead), W. T. Marler (Dudley).

Saturday, September 3rd.—M. Beevor (St. Lawrence), C. Hollingsworth (Wood Green), S. Taft (Long Eaton), W. Fowler (Brighton), C. A. Cleghorn (Plymouth), R. Dykes (Shepton Mallet), D. MacDonald (Balnagown).

Monday, September 5th.—W. Scott (Ulverston), T. S. Dudding (Doncaster), A. Kennedy (Plaistow), R. Goddard (Buxton), E. Barnett (Swansea), T. Pattle (Hollingbourne), J. Oliver (Stoke Newington), H. Burgess (Longton), A. Rainbird (Penge), A. Keating (New Brighton), G. McKenzie (Rangoon), T. Maybury (Liverpool), H. Howarth (Padiham).

Tuesday, September 6th.—W. Hunter (Cumnock), M. Farrer (Teddington), C. V. Boult (Coventry), F. Pearse (Exeter), A. Whitby (Swansea), A. Kitchen (Nottingham), W. Hill (Maristow), H. E. Colville (Bagshot), F. Williams (Ambleside), N. H. Wightwick (Canterbury), G. D. Newton (St. Neots), C. Lapage (Nantwich), A. Fitzsimmons (London, N.), W. B. Armstrong (Dublin), J. Steel (Prestwick), J. Barnard (London).

Wednesday, September 7th.—J. J. Henigan (London), H. Beaumont (Longwood), W. R. Coates (York), H. T. Reid (Blackpool), P. Murray (Merthyr Tydfil), A. Thompson (Wishew), T. C. Trott (Sydenham), G. Roberts (Lincoln), A. A. Hope (Byfield), J. W. England (Forest Gate).