

SOME PRACTICAL DRIVING HINTS.

Many readers complain about the way the oil is thrown out of the engine, crank-shaft bearings, etc., on to their belts, which makes the latter slip and the crank-case and rider's clothes in a messy state. This can be entirely cured in the following manner: First of all dismantle the engine and take the halves of crank-case apart. On examining the crank-shaft bushes it will be found that there is generally an oil gutter or groove extending almost the entire length of the bushes, and fed with oil through a small hole bored from the inside of the crank-case to meet it. When the bushes are worn somewhat the pressure of air in the crank-case, while the engine is running, causes the oil to be forced down this hole, along the oil gutter, and out on to the pulley and belt. This hole should be stopped up by driving into it a small piece of brass rod perfectly tight, but yet not far enough through to project into the bush in the way of the shaft. The joints between the two halves of the crank-case, and cylinder and crank-case are best made with rather thin cardboard, as brown paper is too thin for this purpose generally. If the bushes have not worn too much it will be found that the foregoing treatment will have effectually cured any tendency for the oil to come out. Should, however, the trouble still continue, then the best plan will be to bore a small hole, say, $\frac{1}{8}$ in. diameter, right through the shaft at the pulley side. This will

PROVIDE A FREE VENT FOR THE COMPRESSED AIR

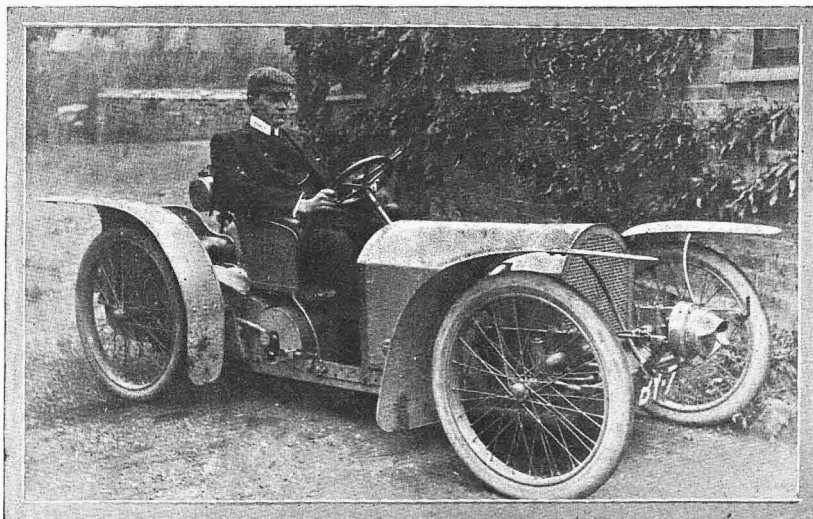
in the crank-case, and prevent any pressure rising therein. This method is far preferable in my opinion to any air-release valve; and if one is fitted this can now be blocked up, as it will no longer be required. No oil can be blown out of this hole, as it is all thrown by centrifugal force to the outside of the fly-wheels when the engine is running, and none collects in the centre. I have treated several motors in this way, and these are giving great satisfaction, and the crank cases of same are now quite clean at the end of a ride, instead of being covered with oil as formerly. When a V belt has driven a machine 1,000 miles or so it will occa-

sionally be found that the inside strip of leather has begun to crack in several places due to the bending and unbending it has to undergo in passing over the pulleys. There is no need to throw the belt away when in this condition, as, by doing as I suggest, many hundreds of miles' use can still be got out of it. Obtain a strip of raw-hide, about $\frac{1}{2}$ in. wide; this can be cut up as required, and costs about 5d. a foot. The leather, on each side of where a crack occurs, should be cut away for the space of about two inches, and the ends tapered off, and the old rivets pulled out of this portion. A piece of the raw-hide strip is now cut off the necessary width, and fitted into the vacant place, and secured by passing small wood screws through the leather where the rivets originally were. This method

WILL MAKE AN EFFECTUAL REPAIR,

and will last a considerable time. A belt I treated in this manner lasted for 600 miles afterwards, and it was only discarded then because the leather was too weak to hold the fastener. If it should happen that an accumulator case is required to be opened for repair, it can readily be accomplished in the following manner: Obtain a sharp and rather thin-bladed knife, and with this open up the joint in the lid. This can be done by energy, patience, and proceeding slowly. The lead bridge piece between the cells will have to come off usually, and this can best be done with the aid of a soldering-iron or spirit blow-lamp. (Use resin or tallow as a flux for lead.) The plates can now be taken out of the cells, and if sulphating has taken place,

with a consequent loss of capacity, they should be scraped all over, and then replaced in the case and the lid put on. The lid can then be cemented down, and the bridge piece soldered on again. The best cement to use is the County Chemical Co.'s celluloid cement, which costs 6d. in collapsible tubes. Care should be taken that the parts to be joined are perfectly dry, and at least twelve hours should be allowed for drying. If a hole should exist in the case it can be repaired with a small piece of sheet celluloid and cement. As



Mr. Hilton Lamotte on a 10 h.p. Lamotte light car. This car, which is fitted with a Buchet two-cylinder engine, was the winner of Class B in the recent Croydon Motor Club hill climb.

Some Practical Driving Hints—Contd.

the next procedure, cells should be filled with dilute sulphuric acid, one part pure acid to four and a half parts of water, and charged up immediately. It will often happen that

A LOSS OF COMPRESSION WILL OCCUR

in an engine through the copper and asbestos washers, used for sparking-plug, etc., leaking. These are seldom gas-tight, and I advise all motorcyclists to discard them entirely and use a strand of asbestos cord instead, wound several times round the plug joint. This will be found perfectly tight, and can be used several times over without baking and requiring replacement. The cord can be obtained at most engineers' stores.

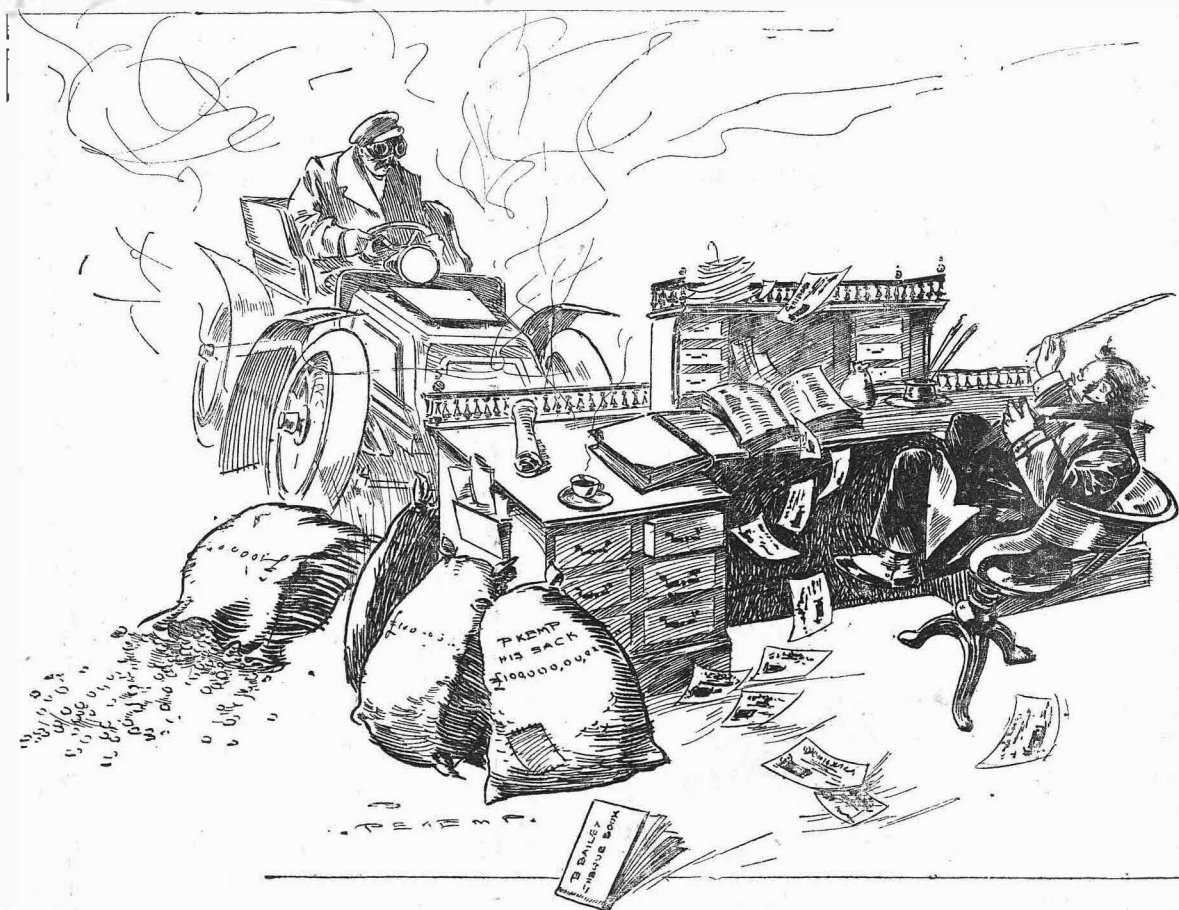
I noticed in a recent "MOTOR" that "Magneto" discourses on the timing of engines. Might I be allowed to point out that the method he advocates of having the cylinder off and watching whether the valve tappet commences to rise tends to cause inaccuracies. As he points out, there should be 1-32nd inch clearance between the end of the tappet and the foot of the exhaust valve stem. Consequently, if the engine is timed by the position of the piston when the tappet commences to rise, the exhaust valve will not do so until the piston has advanced a little further in the down stroke and the cam has lifted the tappet up the required 1-32nd inch. The same thing might be said of the closing of the valve. The best way, in my opinion, to do this, is to have the cylinder on and watch where the piston is when the tappet just commences to lift

the valve off its seat. This should occur about $\frac{1}{4}$ ths down on the firing stroke, and should just shut dead when the piston arrives at the top of its stroke. If there is no hole in the cylinder head through which a spoke can be inserted

TO GAUGE THE POSITION OF THE PISTON,

it will generally be found that, on removing the inlet valve, a piece of wire can be passed through the port into the cylinder, and so serve the same purpose.

There seems to be still a lot of controversy regarding the respective merits of the spray and surface types of carbureters. In my opinion, the spray seems to be by far and away the better. The pros and cons of the matter are briefly thus:—*Advantages of spray*: Can carry more petrol; distinctly greater power; will consume all grades of spirit; less manipulation of air lever required. *Advantages of surface*: Is more economical in petrol; less liable to derangement; feeds the engine with a dustless mixture; fool proof; is not affected by sand and grit. *Disadvantages of spray*: Jet liable to get choked up, float to puncture, etc.; allows dust to enter the engine cylinder in spite of gauze over the air inlets. *Disadvantages of surface*: In the event of the needle valve leaking, it means taking the whole tank to pieces; wastes petrol, as petrol left in carburetter a week or so has generally to be thrown away; diminishes the power of the engine. To take each item as it appears: First, power—there can be no doubt about this, as I know of several riders who have had their machines converted from surface to spray, and the increase was most noticeable; the petrol capacity was also increased to twice the amount. Some time ago I converted a 1½-h.p. machine from surface to F.N. spray, and I found the result to be most surprising; in fact, it made a new machine of it. Thinking that pos-



CURBING MOTORCARS.

"Unless some restrictions are placed on the speed of motors, some day a car will be dashing into the Bank of England parlor." This remark was made by Sir Homewood Crawford recently when discussing the speed limit question. Our artist has endeavoured to realise the scene.

**Some Practical Driving
Hints—Concl'd.**

sibly I might get still more power by adopting a Longuemare carburetter, I did so, but there was no difference. I have since changed back to the F.N. type, for this is the best in my opinion, as the small grooves in the sprayer of the Longuemare become choked with the least sediment, necessitating dismantling the whole carburetter and inlet pipe. With the F.N. it simply means pushing a fine wire up the jet tube. As for starting, with both types of carburetter, this was always accomplished on the first turn of the pedals, and if anyone has a difficulty in not doing likewise, the carburetter is most certainly at fault. With the single jet type, the size of the choke tube and the hole in the sprayer has everything to do with this, and it is only by experimenting with different sizes on the particular engine the carburetter is intended for that good results can be

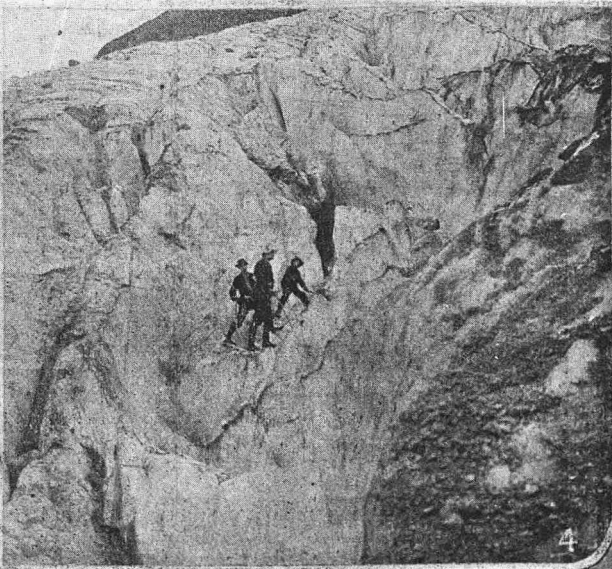
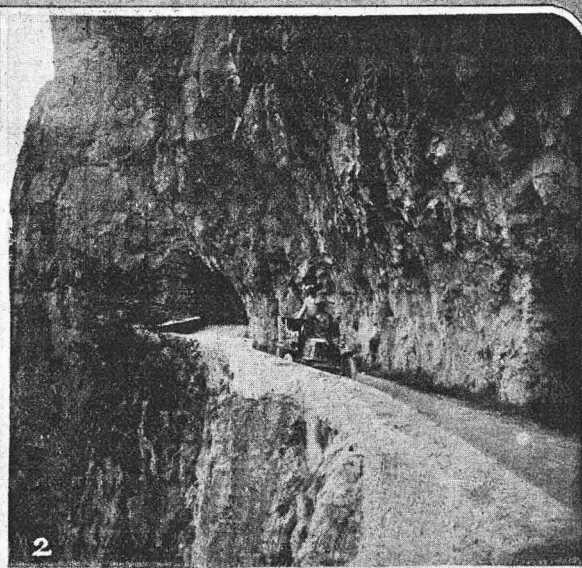
obtained. In a surface carburetter I have often observed a distinct difference in the power of the engine on removing the chimney cap, as this allows a freer entry of air.

It is also well to see that the pieces of gauze in the inlet pipe are quite clean and in position. A friend of mine, who neglected the latter precaution, had his tank blown open through a back-fire. There appears to be a lot of trouble with contacts, though your advice given in the "Bureau" of insulating a piece of resistance wire in the primary circuit is a good one to follow. The main fault is, however, the condenser of the coil, which is

NOT PROPERLY ADJUSTED

to the amount of secondary wire. I have found that just as good results can be got with pure silver contacts as platinum ones. Care should be taken, however, to ensure the best results, that the contacts are hammered lightly with a smooth-faced hammer. This hardens the metal and also spreads it somewhat, and so presents a larger surface for contact.

L. WALLACE.



AUTOMOBILE MOUNTAINEERS.

(1) Summit of the Lantaret Road—the highest road in Europe. (2) One of the picturesque tunnels which are met with in the Alpine districts. (3) The "Grand Portrait" Pass, leading to the Chartreuse Monastery. (4) Crossing a glacier.



PALMER CORD TYRES. SOME INSTRUCTIVE EXPERIMENTS.



Some interesting results have recently been obtained by The Palmer Tyre Ltd. in their experimental department.

One back tyre on a car fitted with $3\frac{1}{2}$ inch Palmer cord tyres, carrying a load of 800 lb. per wheel, was inflated to a normal pressure of 85 lb. per square inch, and the other tyre to only half this pressure, viz., 42½ lb. per square inch. Very little difference was apparent in the amount of "side bulging" which took place in the two tyres, or in the area of ground contact, although it was known that one tyre did not contain sufficient pressure to prevent the rolling when going round corners, which is so destructive to all kinds of tyres. On repeating the experiment with canvas-lined tyres, the one which only contained 42½ lb.

PRESSURE, BULGED AT THE SIDES IN THE USUAL MANNER, clearly indicating that it was not sufficiently inflated.

To confirm these experiments and to obtain accurate figures, testing apparatus was arranged, in which two wheels were pressed together with a board between them as shown in Figure 1.

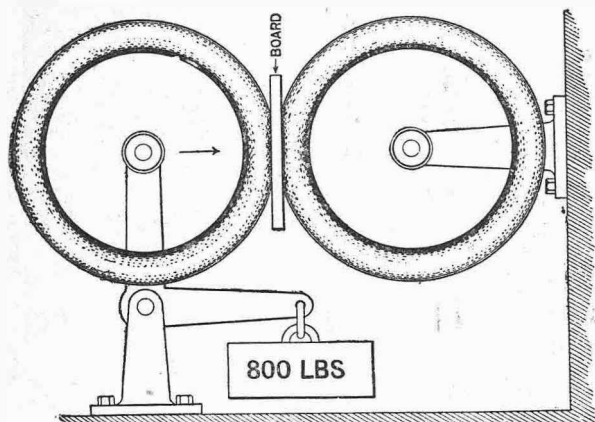


Fig. 1. Arrangement of the testing apparatus.

To ensure that the air pressure was exactly the same in both tyres, they were connected by a flexible tube to the same pressure gauge, as shown in Figure 2.

The circumference round the tread of the Palmer cord tyre was 113½ in., that of the canvas-lined tyre was 113 in., and the rims were exactly the same size as each other. The force pressing the two wheels together was 800 lb. in each case. This experiment showed clearly that a Palmer cord tyre makes a smaller contact with the road than a canvas-lined tyre under the same load, and inflated to the same pressure. The reason for this is rather difficult to explain, but, as is shown by other experiments, it is

EVIDENTLY DUE TO A CONTRACTILE OR "LASY-TONGS" EFFECT which takes place in the cord fabric when its shape is altered.

This contractile effect is not confined only to the portion of the tyre between the wheel and the road, but it extends more or less along the tyre before and behind the point of contact, or, in other words, the tyre begins to take its "weight-carrying" form before it comes into actual contact with the road. This also explains why the Palmer cord tyres do not bulge at the sides like canvas-lined tyres.

It is supposed by many that the area of contact between a pneumatic tyre and the road is directly in proportion to the air pressure and the load, irrespective of the construction of the tyre. These experiments prove, however, that

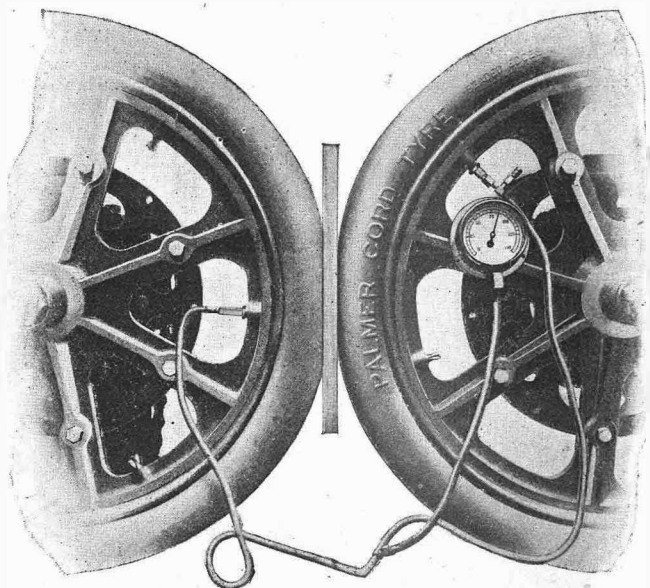


Fig. 2. Canvas-lined tyre on the left, and Palmer cord tyre on the right. Showing difference in area of road contact. Both tyres were inflated to equal pressure, viz.: 85 lb.

such is not the case, and that Palmer cord tyres make a much smaller contact with the road than canvas-lined tyres under the same conditions.

It will be understood that the less the area of contact the less the friction against the road, particularly when going round corners. A small area of contact is also an advantage from the "side-slip" point of view. Many motorists have remarked upon the great difference in the steering qualities

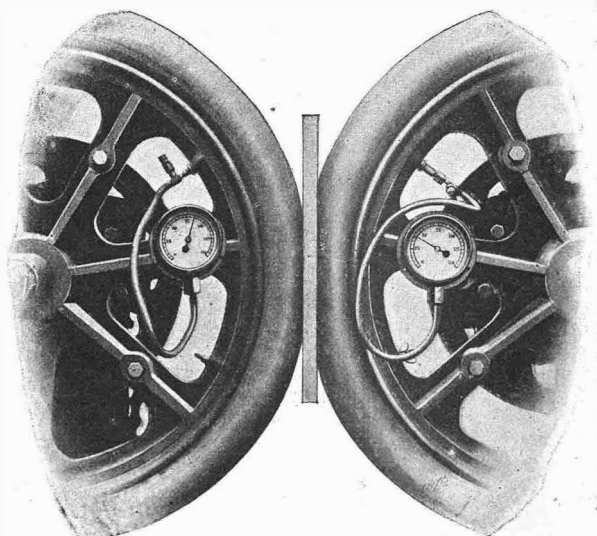


Fig. 3. In this experiment a canvas-lined tyre had a pressure of 85 lb., and another canvas-lined tyre a 42½ lb. pressure. The slackness of the fabric causes considerable bulging at the sides when the air pressure is reduced.

Palmer Cord Tyres.— Contd.

of Palmer cord tyres as compared with the canvas-lined variety. There is a

FIRMNESS AND STABILITY

about them which is a most commendable feature, and this is no doubt due to the fact that the cords throughout the tyres remain taut, as shown by these experiments.

When a canvas-lined tyre is flattened by contact with the road, there is a certain amount of stiff canvas which has to be stowed somewhere, and this is caused to bulge out at the sides, in front, and behind the points of road contact, because it has nowhere else to go, and if the tyre becomes partly deflated the bulging increases to an extent sufficient to clearly indicate that more air is required.

In Palmer cord tyres this side bulging is very much less, and is so gradual that it is scarcely apparent.

It is a great disadvantage, however, in one respect that Palmer cord tyres do not bulge out at the sides like canvas-lined tyres, namely, that it is not possible to tell at a glance whether they are properly inflated or not. Many instances have occurred where motorists used to canvas-lined tyres, and judging by appearances, have thought they had fully 85 to 95 lb. air pressure in their Palmer tyres, but when tested they have been found to contain less than half this pressure.

It is advisable to test Palmer tyres with a pump provided with a reliable pressure gauge every few days, and when-

ever there is any doubt about their containing sufficient air. If they are run improperly inflated the tyres may be seriously damaged.

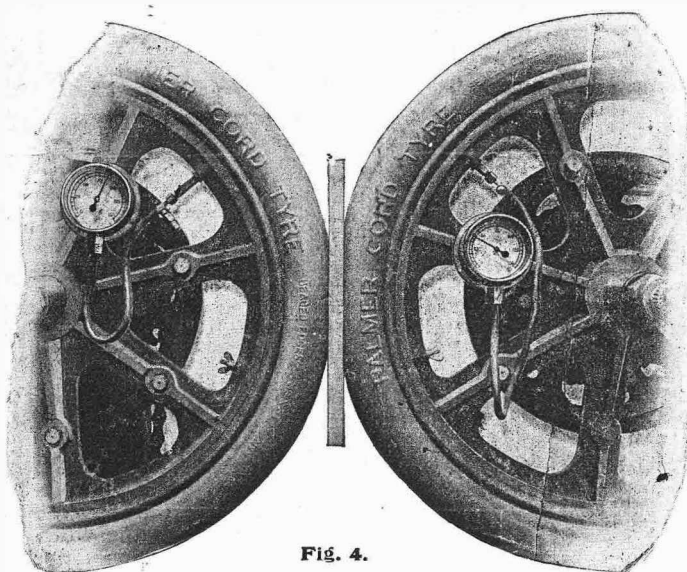


Fig. 4.

Palmer Cord Tyre,
85 lbs. pressure.

Palmer Cord Tyre,
42 1/2 lbs. pressure.

It will be seen that the shape of the tyre is scarcely altered by the difference in pressure.

THE TRIUMPH OF THE CAR. THE MOTORIST'S POINT OF VIEW.

The controversy that has raged about the automobile has been largely a question of town versus country; and since, in the matter of human progress, town stands for thought as surely as country does for stagnation, the town has won—not without a struggle that has made the victory all the sweeter. The provincial anti-motorist has been forced to realise what he would fain have ignored—the existence in the towns of large numbers of his fellow men who recognise no Divine right to the country on the part of those who live there. The town man, forced by his occupation to reside in streets and squares, has recognised the practical uses of the mechanically-propelled road vehicle. And so, regarding the motor vehicle primarily as a means of escaping for a while from sordid and ugly surroundings, he has made it a part of his life, and heedless of the indignation of the country squire—mostly founded on nothing more substantial than prejudice—has invaded what the anti-motorist has come to regard as the domain of himself and his kind.

No doubt it is true that some motorists have behaved without consideration for other users of the road. This may be readily admitted. It was inevitable. Until a law is passed which will ensure for the term of their natural lives the detention of ail cad's, it is obviously impossible to prevent certain specimens of the breed possessing and driving motorcars. A cad's nature will find its expression in some way or another, and all that can be done is to restrain it when it becomes dangerous. This is now being accomplished by the new Act, which every right-minded motorist will continue to observe faithfully while its administration is reasonable. It is, none the less, remarkable that motorists themselves

HAVE NOT YET RECEIVED PROTECTION

from the negligence of those who drive horses. At the present time a motor tour not only demands from the motorist a restricted pace, but he is obliged out of humanity to protect foolish drivers as well as pedestrians from their own stupidity. Every user of the road should be able to rely upon the observance by other users of the road of its elementary rules. But what happens? The motorist will find in

one day's journey a score of flagrant sinners, not only against the rule of the road, but against common courtesy and consideration for others. These errors are those not of the chauffeur-cad, but are committed by the drivers of horse-drawn vehicles, and by pedestrians.

It has been said that "pins have saved thousands of lives through not being swallowed," and it may certainly be added that motorists have saved the lives of thousands of stupid people through not running them down—and this in cases when the blame for the occurrence would properly have rested on the person injured. Fortunately the great majority of motorists are considerate and skilful users of the road. They possess a machine of wonderful pace and precision; and in the large majority of cases they keep the pace down to the legal limit and use the precision to save the lives of people who are apparently asleep all day long.

This question of alertness, or the lack of it, is really at the root of the whole matter. The sleeper does not like to be awakened. Often he bitterly resents it. He would rather not be called at all, or if he must be aroused, he would wish it postponed as long as possible. The motorist is the caller; he is the awakener, and he has not, therefore, been loved by the sleepy brigade. These men who

DRIFT ALONG THE COUNTRY ROADS

in charge of heavy animals approximate the condition of the brutes they are employed to control. The pace of the cart-horse has set the pace for the minds of the country people. They are slow; they hear a motor horn when the car is perhaps 600 yards distant. They do not appreciate its speed, and they do not give way. At 300 yards from the car they commence to think. It is an involved process; and in the result the motorist who has been jogging along at 15 miles per hour has to take his clutch out, and once more wait on bucolic stupidity.

But matters are improving. The reform is progressing. The motorist, herald of a new order, is stirring up the people to their benefit as much as to his own. In time, he will no doubt receive the thanks of an awakened and grateful community.

FRANK F. BRIDGEWATER.



Some Car Repairs.

To me it seems months since I penned anything under the head of "Causerie," so quickly does time slip away when the wheels of business are well-oiled and running truly. That this has been no idle year for me may be gathered from the fact that I have just returned to foggy London from the first respite that has been possible. So, although "Causerie" has perhaps not been so regular in its appearance of late, it is only because the remainder of the paper has made so many calls upon the pen that should have written it. There is no need to attempt any elaboration of my apology, so I will "cut the cackle and get to the 'osses"—in other words, commence to deal with the dozen and one subjects that for some while have been in mind for this column.

I believe that I did not clear up the mystery of the only serious stoppage with the car that it was my misfortune to encounter two or three months ago. Pressed by business matters and compelled to be absent from home for weeks at a time, quite an otherwise unnecessary delay occurred over the repairs, although much of this could have been avoided had I not been consumed with a desire to do, or have a hand in, the job myself. As I related at the time, the car towards the end of a delightful morning's run refused to properly take the drive at the bottom of a hill which had been taken with the clutch out. With much coaxing the car travelled nine and a half miles of very troubled running, and then, half a mile from home, gave up the ghost with a final noise of stripping teeth. It had behaved almost humanly in its struggle to get home, despite the agony it was in, so it received an affectionate pat on the bonnet as I went in to a belated and greatly needed lunch!

When the mechanism from the clutch to the differential countershaft (from which the power is taken by side chains to the road wheels) had been dismantled, it was found that the bevel pinion, which should be keyed or firmly attached to one half of the countershaft, had evidently been loose for some time (this accounted for a mysterious rhythmic burring which, all the time the car had been in my possession, had emanated from the gear, and which by experiment I had found to synchronise with the revolutions of the second motion shaft of the gear box). Evidently, while travelling fast down the hill on the day of the mishap the pinion had finally got adrift to such an extent as to increase what had been a chronic complaint and, at last, had got right out of mesh, with the result that, being the harder metal, it had ripped the teeth off the bevel pinion on the driving shaft, which issued from the gear box. The consequence was the need for the renewal of the piece, which consisted of a sleeve with the bevel pinion at one end and the large reverse pinion at the other, the sleeve being channelled through the centre to take the sliding second motion shaft of the gear. And the bevel on the countershaft would also need to be firmly refixed. Whilst the parts were all adrift I was able to discover why my reverse had always been somewhat noisy, for I found that some of the teeth of the first of the train of reverse pinions—the one on the first motion shaft—had been damaged by the previous owner or his chauffeur, and I also found that some of the ball bearings of the gear case and countershaft were worn. So the parts were sent to the makers for everything to be made good, and this work occupied them over a fortnight.

Whilst waiting for the parts, I filled in some of the hours

that are usually intended for sleep by a wholesale cleaning operation—making a mental resolve that I would prevent any such accumulation of caked-up greasy mud in future! When the parts turned up, two of us—a clever young engineer and myself—re-erected the machinery in the course of an afternoon and evening, and had the satisfaction of getting it all running before knocking off. With the side chains off we could run each gear and the reverse, and see that every part was in order—one of the advantages of the chain drive, although with a light axle we could, of course, have jacked up the road wheels and then run the machinery. The parts all went together splendidly, and as I have occasionally seen something of the awful difficulties that have arisen in the dismantling and reassembling of cheap mechanism that had been built up with no idea of its ever coming apart, I felt a sort of patriotic pride in the thoroughness of English engineering. Each detail fitted perfectly, and this made the work a pleasure instead of a disheartening toil.

Satisfactory Work.

The car now runs better than ever it did. That is to say, there is an entire absence of sound from the gearing; all the burring noise has disappeared, and the reverse action is perfectly sweet. The only defect is a little hardness in the new pinions, the glaze or bloom on which has yet to be worn off before they will freely mesh with the old pinions. So, at present the car is not quite so fast as it was, although with every ride I notice an improvement. Moreover, I am convinced that a little power is being consumed in the brake or the countershaft, which I have relined with Gandy belting (a tip for which I have to thank Mr. E. H. Arnott). This is considerably thicker than was the leather lining, and as I am practically at the limit of my adjustment, it must become compressed a trifle before it will spring quite clear of the drum.

Two of the advantages, apart from the general improvement obtained from the renewal of worn parts, of pulling the mechanism of the car to pieces and reassembling it, have been firstly a most complete familiarity with every detail, and secondly a great increase of confidence in the car. The general arrangement of the driving gear and the function of each part were of course well-known before, but the manner of securing the various details and the duty of a number of them which were concealed, or partly concealed, became perfectly clear when they had to be twice handled—once in the course of an absolute construction entailing thought and careful consideration. And when one has pieced together and secured a somewhat complicated mass of mechanism, has studied the methods of providing for every strain and untoward circumstance, and has generally approved of those methods, there is engendered a feeling of the most perfect confidence—the confidence born of knowledge and familiarity. To secure this is well worth all the work and worry of taking mechanism to pieces, but when one has left one's youth behind, one is not so enthusiastic for the work, but would rather take much of the excellence of workmanship for granted, and spend the time in putting the mechanism into use. It is hardly necessary for me to say that a good knowledge of car mechanism is essential before the dismantling or assembling of one is undertaken. Unless the owner of a crippled car possesses this he will find it greatly to his advantage to return it to the makers for expert attention.

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OPINION.

Steam Cars and Competitions.

Since the holding of the Blackpool meeting, we have received two or three very strong letters from members of the trade with regard to the attitude of the executive in respect to steam cars. The Speedwell Motor and Engineering Co., Ltd., particularly seem to have a genuine grievance. They point out that two steam cars were entered by them under their respective prices for the speed contests. They received acknowledgments of the entry and fees, but four days prior to the date fixed for the meeting they were the recipients of a telephonic communication to the effect that the steamers would not be allowed to compete with the petrol vehicles, owing, as it was stated, to their greater speed qualities. The Speedwell Company thereupon pointed out that the classification was by price, and that no restrictions had been laid down in favour of the petrol car, and to the exclusion of the steam one. Moreover, as one of the objects of the race was to acquaint the public with the fastest car at a given selling price, the Speedwell people, naturally enough, could see no reason why their cars should be debarred. However, the executive remained obdurate, and the cars did not compete. Now there are, we think, two morals to be drawn from this incident. Firstly, if steam cars are to be excluded from competing with internal combustion vehicles, a rule to this effect should be specifically laid down in the regulations governing any particular event. Secondly, it is very doubtful if the Blackpool committee were within their rights in placing the Speedwell Company's cars under a ban in the circumstance we have stated. The reason they give for their decision is hardly tenable. There is, in reality, no valid reason why steam cars should not compete with petrol cars (as they frequently have done in the past), for although they have never seriously vied with the petrol types in the matter of popularity in this country, their achievements in the Automobile Club's Reliability Trials and also in foreign competitions (take, for instance, their recent triumphs in the Chateau Thierry hill climb, where they won four out of six classes) proves that they are factors to be reckoned with. Further than this, there is always a section of the public which is interested in all classes of automobiles, and a comparison of two different types of vehicles such as a competition affords is particularly instructive to them. Again, on the broader lines, there should be a fair field for all classes of cars, and we do not think that such an arbitrary rule as that laid down at Blackpool tends for the good of the trade or the public.

An Important Event.

The entry list for the Delhi-Bombay Motor Trials closes on December 1st: has every energetic member of the British trade ensured that he will be represented in this most important event? Because, if not, there is yet time to dispatch a letter entering one or two vehicles. We do not say that all India has its eye upon these trials, because that would be an exaggeration. Few people, in fact, in this country have the least conception of the size of India and of its vast population; few appreciate the wonderful opportunities for trade that it offers to the English manufacturer. But we can give an idea of the immensity of India when we say that there are towns and villages where the existence of England and the position it occupies are matters entirely unknown to the populace. The trial is important because it will proceed through a prosperous district, in and around which some hundreds—perhaps thousands—of cars can be disposed of, and considerable business will be the immediate result of the trials. Were we in the trade, we should at once dispatch a dozen cars to Bombay and enter two of them in the trial. Not a single one of them would hang on hand more than a few days. But we should make a few alterations to the cars in the direction of simplification. A very curious fact is that a preference is shown in India for the car without a clutch pedal. The double operation of taking the clutch out with the foot and changing gear by hand is disliked, and so the type with the whole operation performed by the movement of a single lever is in general vogue. However, any big change such as this in the design of a car need only be made when it is found that the demand is large enough to warrant it, and, provided a car can be simplified sufficiently, considerable business can be looked forward to as the outcome of participation in the Trials. The last mail that will be in time leaves London on Friday, the 11th inst.

The Value of Membership of the Auto-Cycle Club.

Accompanying this issue will be found an inset which sets out the aims and objects of the Auto-Cycle Club, and to which is attached an application form for membership. The Club is a strong one, with a membership of about 170, and, because it is taking a national view of motorcycling matters and is dealing in a strong way with them, it needs the accession of strong men. In a liberal way, the Club is somewhat exclusive; that is to say, if a candidate is unknown to any of the members he must provide satisfactory references, and obviously this is a right and proper course to be taken. Socially, the Club enjoys many privileges, not the least being the use of certain rooms at the Automobile Club's clubhouse in Piccadilly. The winter programme is always a good one, and the coming session opens with a house dinner and a lecture, illustrated by lantern slides, upon the recent reliability trials. This takes place on Friday next, 4th inst., and intending members may obtain admission to the lecture upon application to the secretary. A very great advantage of membership of the Club is the inclusion of full membership of the Motor Union, with all the benefit of legal defence, etc. The Auto-Cycle Club (much to its credit, be it said) has always taken in hand such matters of vital importance as should have been tackled by the whole of the motorcycling community. But in the absence of any general representative body the Club has stepped into the breach and has taken action in order to protect the general interests, usually laying the facts and suggestions, if possible, before the other motorcycling clubs for criticism. In this way the Club has accomplished some exceedingly valuable work, some of the items being set out on the second page of the inset. It is this work that calls for experience, energy, and determination, and as the committee is elected from the membership, there is ample scope for work on the part of those who have the ability and can spare a few evening hours. The Club is not only deserving of the strongest support from motorcyclists, but it is almost the duty of every individual owner of any form of motorcycle to apply to membership.

BRAKE FAILURES ON CARS.

The Importance of Efficient Brakes.

In the early days of the car industry manufacturers recognised the importance of the adequate provision of brakes, and our Parliament, when the 1896 Act was passed, very properly enjoined the fitting of two separate brakes to every motor vehicle. But although six or seven years ago the possibility of quickly arresting progress was pressed into prominence as one of the primary advantages of the horseless carriage, the necessity of perfect and quick adjustment was considered by very few firms, and brakes as then fitted on the majority of cars were crude in the extreme. Reliance was placed principally upon tyre brakes (of the spoon pattern) drawn into contact with the solid tyres on the driving-wheels by means of a side lever; there was practically no intermediate position between "right on" and "right off," for the notched brake lever quadrant, as we know it to-day, was a later introduction. The effect on the tyres was

NOT CONDUCTIVE TO ECONOMY,

and running down-hill with the spoons jammed on tightly generated sufficient friction to notify one's nasal organs of the waste of rubber that was occurring. When Mr. Michelin proved that pneumatic tyres were capable of supporting the heavy weights of cars, it was quickly apparent that the outer covers would not stand the strain of the ancient "spoons" on the treads, and the general adoption of hub band brakes to the driving-wheels was forced upon manufacturers: so long as the brakes went on somehow little attention was given to balancing the action, and it depended entirely upon the driver's good judgment whether the sudden application of the side brakes did not slew the car right round with all the resultant consequences in the midst of traffic.

CAR-DRIVING WAS REALLY A FINE ART IN THOSE HISTORIC TIMES,

as the brakes could never be depended upon to act twice in exactly the same manner: sometimes, as a matter of pure luck, the two brakes would come on equally, and then all was peace; but more often than not one brake would come on earlier than the other, and the car would quite naturally swing round with the locked wheel acting as a pivot, and with the short wheel bases then prevailing this pivoting action was greatly intensified. Some unknown genius had the brilliant thought to balance the action of one brake against the other. It is a pity his name is not recorded, for all good automobilists would willingly subscribe to a substantial testimonial in recognition of his ability. That it should be possible to hold a car backwards was scouted as impossible of realisation; so when the reverse was put in, allowance had always to be made for the brakes failing to act properly on such occasions, and action taken accordingly. In such circumstances a sprag was a necessity upon every car, as in the event of a car starting to run backwards downhill, no brake (as then constructed) was expected to hold the weight, and dropping the sprag upon every hill was of the utmost importance. Nowadays, thanks to the yearly tests of the Automobile Club in the reliability trials, attention is given by makers to

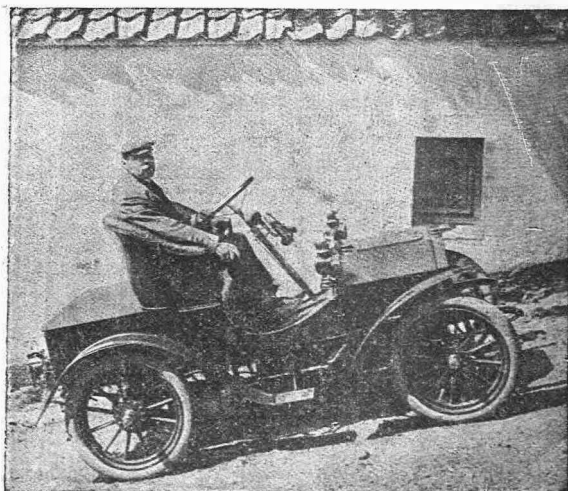
THE MINUTEST DETAIL OF BRAKE MECHANISM,

and on the majority of cars an emergency will not find them wanting in efficiency, always provided the owner keeps them properly adjusted. With everything depending upon the quick action of the brakes, either pedal or side lever, it is astonishing what a small amount of attention they receive from the majority of users; and just because of this want of a few minutes' care, spent twice or thrice a week, does the driver take entirely needless risks. Very rarely both brakes may entirely fail on a steep hill, and the driver is faced with the alternative of charging the bank by the roadside or turning over entirely when rounding a bend at

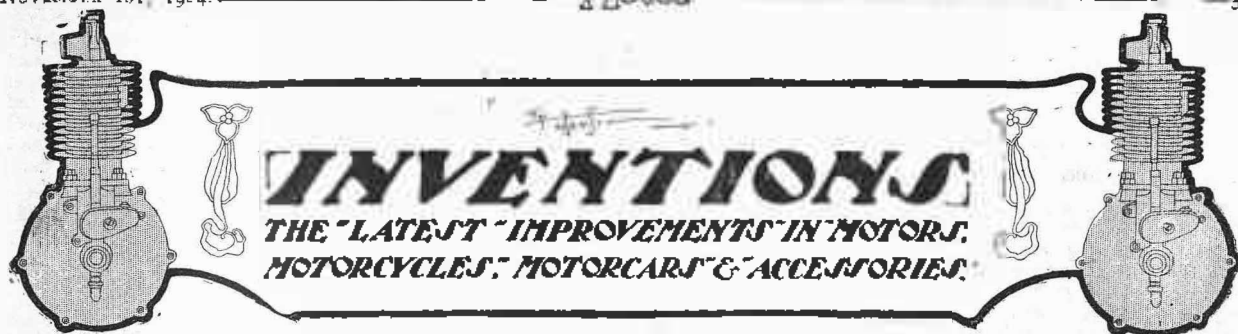
very high speed. On such an occasion there is a third course which can safely be followed. This plan is insufficiently known to those who have not had a large experience with cars. Perhaps an actual occurrence will better illustrate what is meant to be done. The writer was taking a car down River Hill (just the other side of Sevenoaks, going from London) with four friends aboard; the ordinary pedal and side-lever brakes were fitted, these being of the band type, lined with leather: they had been carefully adjusted on the preceding evening, and down all the slopes from town were working well. There are three very sharp turns on the hill mentioned, and if a car got out of hand prior to reaching the first one, it would almost certainly be turned over before reaching the third. Approaching the first bend, just beyond the danger-board, the engine (a 16 h.p.) was freed and the foot brake applied; it acted, at the normal foot pressure, for a few seconds, and, finding the car attaining greater momentum, more and more pressure was applied, and then the side breaks were brought into use. These promptly fired, and the car was brakeless, with

THE PLEASING PROSPECT OF A SMASH UP

occurring if prompt measures were not taken; so the brakes were released, and the top gear was put in; the ignition lever was at the same moment about half advanced. The car was for a few yards gaining on the engine; but as the ignition was gradually retarded, so did the car respond, and it was presently possible to get into the second gear, and from that to the lowest without placing too much strain upon the chains or the gear wheels; the lowest gear was put in just before rounding the last bend, and the finishing slope down the straight was negotiated at a very slow pace. None of the other occupants of the car were aware that anything unusual had occurred, and as two of them had to catch a train at Tonbridge the car was driven safely into the town, and the brakes adjusted outside the station. Shortly, then, if the brakes fail to act get into the lowest gear, downwards step by step from the highest gear, where it is a question of a smash or risking teeth breakages by putting in the bottom gear at once, by all means take the risk, but only as a last resource. If a car, in surmounting a hill, stops the engine by reason of the steepness of the grade and should over-run the sprag, do not hesitate, but immediately get the reverse in, and back the car as soon as possible against the softest available place.



A 6 h.p. Siddeley car on a steep hill (gradient 1 in 5) which has to be ascended every time its owner leaves his residence. This speaks well for the hill climbing abilities of the car.



A Combined Carburetter and Inlet Valve for Kerosene Oil.

We reproduce on this page two sectional illustrations of a combined sprayer and inlet valve, accelerator and throttle, invented by an Anglo-Indian engineer, and adapted for burning kerosene oil. AA is the external shell or box containing the parts. B is the inlet valve, the inside of head being concave; the spindle of this carries in a hollow a needle valve (C) resting on the spring (D), which is keyed

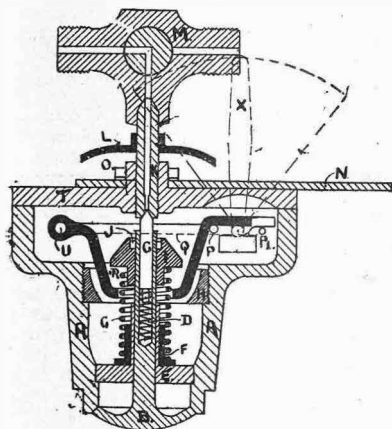


FIG. 1.—Sectional elevation of the carburetter showing general arrangement.

through an elongated slot (J), making a combined fixing for the nut (I), and allowing the needle valve (C) to move vertically about one-sixteenth of an inch. G is a spiral spring to close the valve (B); this rests upon a ferrule (F) which moves up and down the valve guide (E). This movement of the ferrule is controlled by levers (QQ), which in turn are operated by cranks (P, P1) and the lever (X). Another crank (P) operates a lever (R) which encircles the valve spring (G) and lies immediately under the nut (I).

The cone (HH) is screwed in after the valve guide (E) is fitted. The base of the valve guide (E) is cut in about six slots at an angle of 45 degrees.

T is the cover of the valve chamber, having six holes and a corresponding movable cover (N) for regulating the admission of air. The cover (T) also carries a needle valve sleeve screwed into it, which in turn is regulated by a wheel (L). M is a three-way cock into which the needle valve sleeve is ground.

The principle of the device is as follows:—The three-way cock is opened to spirits of wine, petrol, ether or any other light and inflammable fluid. The engine is then started; and after the valve opens, spirit falls on to the nut (I), is then deflected on to the cone (H), and hence

through (E), where it is given a twirling motion: it then strikes the valve head (B), becoming atomised into a fine mist before entering the cylinder. Due proportion of air is admitted by regulating the cover (T) through the holes (WWW), etc. As soon as the engine is in full swing the three-way cock (M) is opened to kerosene.

The inventor claims the advantage of being able to atomise the oil in close proximity to the cylinder, and thus secure sufficient heat to cause thorough vaporisation. The fact of this being downward and not upward, as in float-feed carburetters, and direct into the cylinder, effectually prevents re-aggregation of the oil, as when conveyed from the ordinary carburetters by means of pipes to the cylinder. Ordinary kerosene can thus be atomised and passed into the cylinder direct, collecting in its passage sufficient heat from the metallic parts of the valve to render it inflammable by the electric spark.

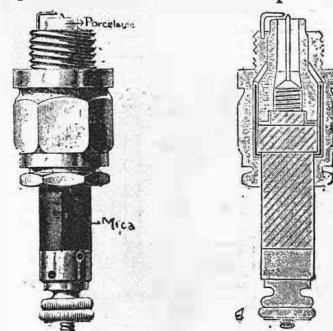
It is also claimed as a novelty that the throttling arrangements and means of accelerating the speed of the engine are all contained in the same device.

For a high speed engine, such as the De Dion and others, where speed is regulated on the exhaust valve or by advance sparking arrangements, the levers (Q and R) can be done away with, and the valve simplified. For engines with mechanically-operated inlet valves this device is

added in such a way as not to interfere with the M.O.V. arrangements, but to act as an auxiliary valve as close as possible to the cylinder.

In all other attempts to use kerosene successfully the oil is first heated either in a retort or jacketed vaporiser, and the products then passed to the cylinder by means of pipes, as is invariably done with petrol. This has been found to cause deposition of recondensed oil in the cylinder, sooting the plug and fouling the cylinder, besides causing an irregular explosion.

The inventor claims that in the new device all these difficulties are overcome, and perfect combustion takes place.



(1) Eisemann plug. (2) Sectional view of plug.

Kerosene of any grade can be used, and the higher the quality the cleaner and sweeter the exhaust, owing to a smaller proportion of vaseline-like substances contained in the higher grades. It is the heavier fractions in kerosene that are the most difficult to atomise fine enough to completely burn up in the cylinder.

The invention is being taken up by, Thomas Hamilton and Co., 90, Cannon Street, London, E.C.

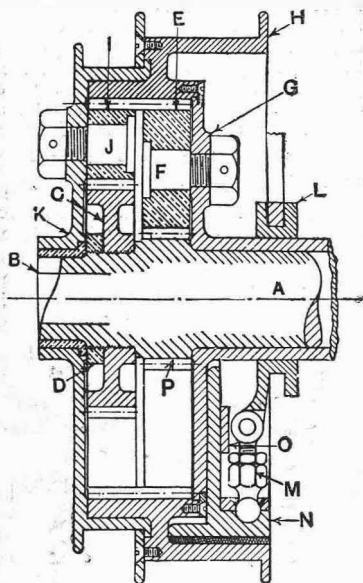
The Eisemann Composition Plug.

We illustrate the new composition plug which has been put on the market by the Stuttgart firm of Eisemann and Co., who, in employing porcelain and mica for insulating the inner and outer parts respectively, claim to have placed each material in a position to secure maximum durability. In itself very brittle, porcelain becomes still more liable to crack under the influence of great heat (through the working of the engine) and chance drops of cold water, whereas mica resists. On the other hand, however, heat plus oil adversely affect mica. Hence Eisemann and Co. hit upon the plan of using mica for insulating the outside, which is less likely to come in contact with oil; and porcelain for insulating that part projecting into the engine, where the insulator is safe from the influence of water.

INVENTIONS —contd.

Two-speed Gear and Reverse.

The Micrometer Engineering Co., Ltd., Coventry, have placed an interesting two-speed gear and a reverse for motorcycles and cars upon the market. We give a sectional drawing of it. The driving shaft (A) and the driving pinion (P) are attached in any suitable manner to the engine shaft. A is recessed at B to take the starting handle, and is the driver of the slow-speed train, which gives one-fourth the speed of the direct drive or top speed. The gear wheel (C) is screwed to A, and locked thereon by the nut (D), and drives the reverse train. E is one of a set

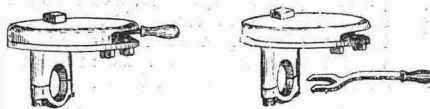


The Micrometer Two-speed Gear and Reverse.

A. Driving shaft connected to the engine.
B. Starting notch in A. C. Reverse pinion.
D. Lock nut for C. E. Slow speed forward pinions. F. Slow speed pinion spindles. G. Carrier for spindles F and for pulley to drive vehicle.
H. Slow speed drum. I. Reverse pinion.
J. Reverse gear wheel spindles. K. Reverse pinion.
L. Toggle carrier. M. Adjustable toggle joint. N. Clutch shoes. O. Guide for N.
P. Driving pinion secured to or solid with A.

of three pinions running on similar spindles (F), which are attached to the belt pulley (or chain wheel) carrier (G). H is a drum carrying an internal toothed wheel, which meshes with the slow-speed pinion (E) and reverse pinion (I). There are three pinions (I) which revolve on similar spindles (J), and these in turn are fixed to a carrier (K). The drums (H and K) are each designed to take a brake band (H), being the slow-speed drum, and K the reverse drum. Engaging with H is an expanding clutch, which makes the whole gear solid, thus giving a direct drive on the top speed. The parts of the clutch are: Toggle carrier (L), which has a groove to receive one lever, which will give respectively a free engine, a slow speed forward, a top speed, or a reverse at will; toggles (M), which have simple and efficient adjustment, bring the three clutch shoes (N) into contact with the slow-speed drum (H). N slides in the guide (O), and is leather faced. The movements of the gear are as follow:

When the control lever is in the neutral notch on the control quadrant A revolves forward; the pinions (E) are thus revolved by P backwards on the spindles (F), and drive backwards the slow-speed drum (H), which carries in the same direction the reverse pinion (I), and this travels slowly on the wheel (C). If the brake band is tightened on the drum (H), P drives E, which revolves, and at the same time travels round the slow-speed internal wheel on H, thus carrying along at a reduced rate the belt pulley carrier (G). To give the top speed, the toggle carrier (L) is moved laterally, and by fixing the clutch shoes (N) into the drum (H) the whole gear rotates solidly at the same rate as the engine. To give the reverse, the band is tightened on the reverse drum (K); thus the pinions (I) are driven backwards by the wheel (C) on the stationary spindles (J), driving H in the same direction, at a quicker rate than it travels when the gear is neutral. This additional movement is taken up by H



The new Meredith Switch.

driving backwards pinions (E), which travel on the driving pinion (P). The movement also carries backward the belt pulley carrier (G), and so gives the reverse. Although the description is necessarily somewhat involved, the gear works very simply. The wheels are always in mesh, and run in a bath of grease, thus ensuring long life to the working parts.

The makers claim that the great advantage of the gear is the simple manner in which it may be fitted; there is no alteration of the frame in any way. It can be attached to most of the engines on the market without alteration to the engine shaft. Unlike most of the gears on the market, when running on top speed it forms an extra fly-wheel for the motor, which is a great help to single-cylinder engines, giving steady running and also increasing to a certain extent the power. It is particularly adaptable for a chain drive, as the gears are always in mesh, and are brought into play by tightening

the reverse lined band attached to the lever, thus giving a free easy start without any jar or jerk. All the operations are controlled by one lever, and it is started on the outside by a bracket extending from the crank case of the engine, and being then part of the engine no torsional strains can be set up.

A New Meredith Switch.

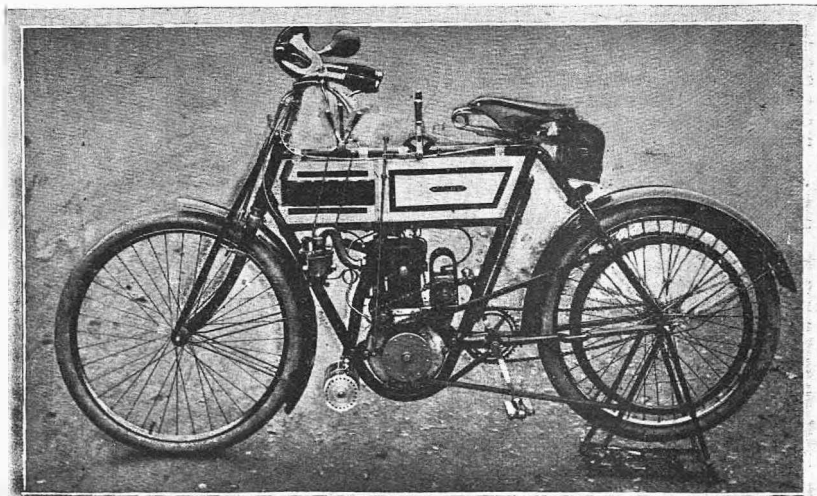
John Child Meredith, Ltd., Birmingham, are marketing a new pattern switch for attachment to motorcycle handlebars and the top tubes of frames. Its design is made clear by the illustration which we give of it. The switch is constructed entirely of metal, so that the risk of breakage is reduced to a minimum. The plug or handle is easily removable, thus preventing the possibility of anyone tampering with the switch when the driver has left his machine. The switches are made in two sizes, viz., 1in. and 1½in.

The New Clyde Motor-bicycle.

We give an illustration of a new motor-bicycle model which the Clyde Cycle and Motor Car Co., Ltd., Leicester, are building for the 1905 season. This is fitted with free 3½ h.p. water-cooled engine, two-speed gear, and the reader will observe the special way in which the radiator and tanks are fitted to the frame. The length of radiating pipes exposed to cooling surface is 7ft. Circulation is effected on the thermo syphon system. It would be difficult to design a neater form of water-cooled motor-bicycle than this, and its introduction certainly adds to the firm's reputation as makers of high-class automobiles.

Another Puncture-proof Band.

One of the most recent of these to make its appearance is the Wilton-Cox puncture-proof band, a double band of specially-cured fabric, treated with electricity until it has become very tough and durable, while still retaining the qualities of softness and lightness. The band consists of two pieces—one narrow strip solutioned and pressed into the broader strip by hydraulic pressure. It is attached inside the outer cover, and, being a non-conductor of heat, it is claimed that the inner tube is kept cool. Users of the device speak very highly of its efficiency. The London agents are Messrs. Talbot, 1, Long Acre, W.C.



The new water-cooled 3½ h.p. Clyde Motor-bicycle.



"THE MOTOR" suggestion

As to the necessity for the introduction of light-weight motor-bicycles is being widely adopted.

Some interesting details regarding this important movement will be found on another page. It is only the beginning, however.

The London Road Car Co.'s smart motor 'buses, which are now running between Hammersmith and Oxford Circus, are speedy and comfortable conveyances, and are nearly always well patronised.

Mr. J. Scott Montagu's paper on "The Dust Problem," to be read at the Automobile Club (date not yet announced), will be awaited with more than usual eagerness, in view of the experiments which Mr. Montagu's committee have recently carried out.

The international motor exhibition organised by the Automobile Club of Austria will open on March 14th at Vienna, a week after the closing of the Berlin Exhibition. The Gartenbau-Gesellschaft premises will, as in 1903, be the venue of the exhibition.

At a meeting of the Daimler Company held on Monday, October 24th, it was agreed to sell the undertaking to a new company, with the object of providing increased capital. The net profit during the past year was £13,036. The Chairman stated that in the future the company intended to turn out a light car.

Coming Events.

- Nov. 5. Auto-Cycle Club's 100 miles non-stop run for fore-cars.
18 to 26. Stanley Cycle and Motor Show (Agricultural Hall, London).
" 20. 100 Kilometres Trial (A.C. Algeria).
" 20. Motor Cycling Club meets at Slough, "Royal Hotel," 1.30. Provincial motorists to the Stanley Show will be invited.
" 30 Auto-Cycle Club's Annual Dinner.
Dec. 5 to Jan. 15. Exhibition of Engines for Motor Boats and Airships, and Heavy Automobiles; also special prominence to devices for alcohol consumption (Cours de la Reine Conservatoires).
" 9 to 26. French Automobile Salon (Grand Palais, Paris).
" 10. Annual dinner of the Motor Cycling Club at Frascati's. Mr. S. F. Ledge in the chair.
" 26. to Jan. 2. Motor Union of Western India Reliability Trial.
" 31. Entries close for 1905 Gordon-Bennett Contest.

A movement is on foot amongst the members of the Lincolnshire A.C. to present Dr. Cragg with a testimonial to mark their appreciation of his successful services as hon. secretary. The idea is to ask his acceptance of a new car. The project has already received a substantial measure of support. Mr. W. A. Tomlinson, of Steaford, is acting as secretary to the testimonial committee.

"THE MOTOR" Show Specials!

Full particulars as to their contents appear elsewhere.

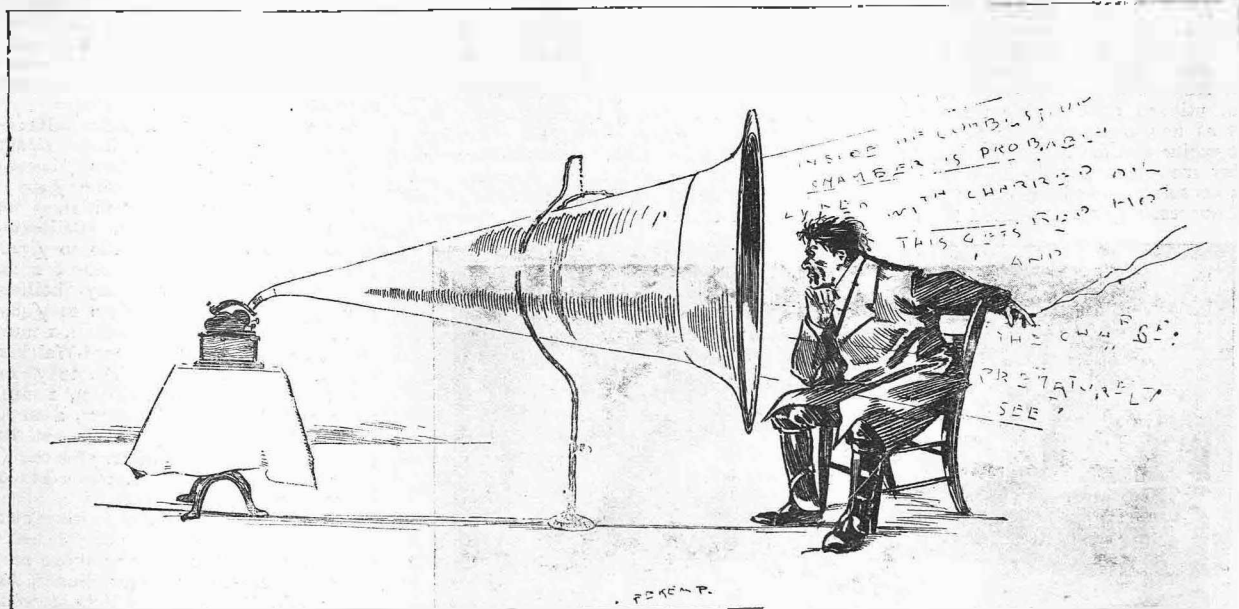
Mr. H. H. Griffin has rejoined his old paper, "The Bazaar, Exchange and Mart," as editor of the cycle and motor section.

A Penrith motorist has been fined 10s. and costs for driving without a license. Being only 14 years of age he was legally unable to obtain a license; hence the omission.

The Tri-car Trials.

The following entries have been received for the Auto-Cycle Club's Tri-car Trials, to be held on Saturday. Full details of the route, together with the conditions and regulations of the competition, were published in last week's issue of "THE MOTOR":—

Wallace Batchelor (Wallace), 4 h.p. White and Poppe; T. Sopwith (Pearson), 6½ h.p. Aster, three-speed gear; Caston Rivierre, 4 h.p. Aster, Vaux engine; J. Browning (Riley), 4½ h.p. Riley, two-speed gear; C. G. Garrard (Garrard), 4½ h.p. Garrard, three-speed gear; W. Kerry (Kerry), 4½ h.p. Kerry, Crypto two-speed gear; Watson and Oliver (Humber), 3½ h.p. Humber, two-speed gear; E. Gray (Humber), 3½ h.p. Humber, two-speed gear; M. W. Randall, 4½ h.p. h.p. Garrard, three-speed gear; Milligan (Bradbury), 4½ h.p. Bradbury, two-speed gear; Jackson and Kinnings (Riley), 4½ h.p. Riley, two-speed gear.



BY PHONO.

Instruction is now given in languages, elocution, music, etc., by phono. our artist pertinently enquires.

"Why not a course in 'Motor'?" "With the expenditure of a few shillings," he said, "one could jump on his car almost absolutely proficient!"

NEWS.

The Gaillon Hill-climb.

The annual hill-climbing competition on Gaillon Hill for racing cars and motor-cycles, organised by the Paris Sporting Club, "L'Auto," was held on Sunday. This event is open to all classes of motor vehicles. At the time of going to press our detailed report had not reached us, but a wire announces the result as:—Rigolly (last year's winner), on a Gobron-Brillie, tied with Baras (Darracq) for first place. In the motorcycle class a Peugeot machine took first place.

Trials at Portsmouth.

The results in the recent trials at Portsmouth showed the remarkable efficiency of the light car as a fuel economiser, as well as its hill-climbing capacity. The test was a run from the Granada Garage at Southsea to South Harting, via Petersfield (total 22 miles), times being taken up Portsmouth Hill. Prot. Dykes' 6½ h.p. Humberette won with an estimated consumption of one gallon per 70 miles; a 5 h.p. Oldsmobile belonging to Lieut. Lane, R.N., was bracketed second with F. T. Jones' 10 h.p. M.M.C. (one gallon per 45 miles); and the next two were a 4½ h.p. Oldsmobile and a 5 h.p. Humberette, which gave much better results than the 16 h.p., 20 h.p., and 40 h.p. cars which followed them. The best time up the hill was done by J. D. Siddeley's 40 h.p. Mercedes (2 mins. 19 secs.). In a subsequent hill-climb at Up Park, this car again won.

A New Light Two-speed Motor-bicycle.

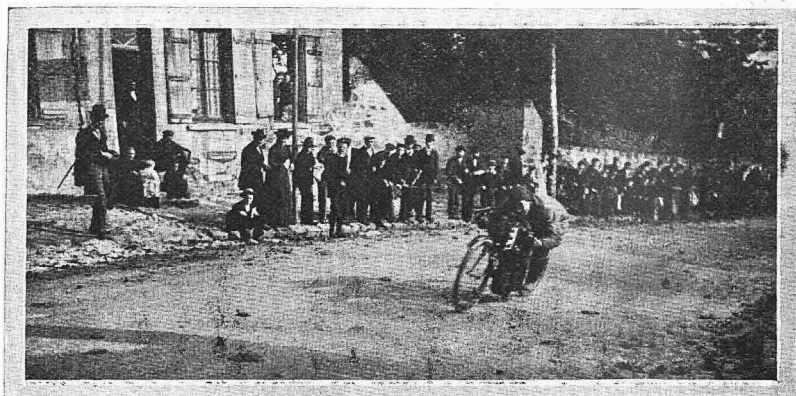
Phoenix Motors Ltd. have shown their usual enterprise in entering the domain of light motor-bicycles. Mr. A. F. Hsley, the well-known representative of the firm, has lately been testing a light two-speed machine which the company will shortly place on the market. The Phoenix two-speed gear combined with a free engine (2 h.p.) is fitted, and the machine has emerged successfully from a severe test, which included the North Hill and West Hill, Highgate, and two ascents of Muswell Hill. The pedals were not, we are told, utilised once during these climbs, and as an instance of the value of the free engine and the change-speed gear Mr. Hsley mentions that the bicycle was on one occasion started half-way up the hill and successfully accomplished the ascent.

THE CHATEAU-THIERRY HILL-CLIMB.

The third annual hill climb at Château-Thierry (a brief report of which we gave last week) was this year favoured with splendid weather, and passed off most successfully. The competition is confined to touring vehicles (motorcycles as well as cars), and in addition to prizes given for the best performances over the one mile climb, there are prizes awarded for general excellence in the design, arrangement, and all-round appearance of the vehicle from a touring point of view. Château-Thierry is situated some 40 miles east of

Richard-Brasier, Boyer, Tony Huber, De Dietrich, Bolide, Aries, Peugeot, Chenard-Walcker, Renault, Radia, Mercedes, and C.G.V.

One of the outstanding features of the day was the excellent performance of the motor-bicycles, the two first machines in this class doing practically equal time with the heavy Mercedes cars. After their fine show in the recent "Tiers de Litre" trials, the Magali machines were expected to do well, and this anticipation was fully realised, as first and second places were



The Château-Thierry: Bac going at full speed on his Magali.

Paris, and the hill on which the trials took place is a long ascent as steep as 1 in 10 in places, and allowing of a splendid course of one mile in length.

More stringent regulations had been put into force this year, and the competing cars and cycles were, generally speaking,

STRICTLY TOURING IN CHARACTER,

and not, as in many cases in previous years, racing machines with a temporarily upholstered body. Competitors were divided into seven classes, one of which comprised motor-bicycles, the other six including cars rated according to selling price from £160 and under to £1,000 and over.

An excellent entry was obtained, the motor-bicycles being represented by the following makes:—Magali, Griffon, Alcyon, Neckarsulm, Stimula-Vandelet, La Fauvette, Carreau, La Foudre, and Ideal; while among the best known of the cars were the Gardner-Serpollet steamers,

taken by Collomb and Bac, mounted on Magali motor-bicycles weighing 111 kilos. and 114 kilos. respectively. It must be noted that all the competing machines in this class were restricted to a cylinder capacity of one-third of a litre, and for so small a motor an average speed of over 30 miles an hour up a steep rise of one mile shows

UNUSUALLY GOOD CLIMBING QUALITIES.

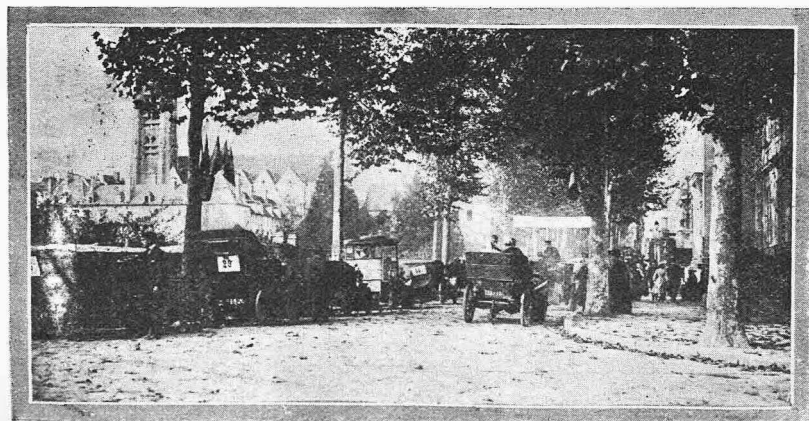
Among the light and medium cars the fastest proved to be the Gardner-Serpollet steamers; and the heavy car sections were won respectively by the Gardner-Serpollet and the Mercedes—the latter doing the actually fastest time of the day, 1 min. 42½ secs.—only 1½ secs. faster, be it noted, than the Magali motor-bicycle.

We append the principal results:—

Motor-bicycles.—1st, Collomb (Magali), 1 min. 43½ secs.; 2nd, Bac (Magali), 1 min. 47½ secs. Cars (value £160 and under).—1st, Barreaux (Bolide), 3 mins. 11½ secs.; 2nd, Bailleau (Bailleau), 3 mins. 49½ secs. Cars (£160 to £320).—1st, Vendel (Gardner-Serpollet), 2 mins. 38 secs.; 2nd, Meyer (Passy-Thellier), 2 mins. 50½ secs. Cars (£320 to £480).—1st, Amand (Gardner-Serpollet), 1 min. 52 secs.; 2nd, Walcker (Chenard-Walcker), 2 mins. 39½ secs. Cars (£480 to £720).—1st, Pélser (Gardner-Serpollet), 2 mins. 1 sec.; 2nd, Cuchelet (Peugeot), 2 mins. 13 secs. Cars (£720 to £1,000).—1st, Rulot (Gardner-Serpollet), 2 mins. 5½ secs. Cars (over £1,000).—1st, De Larentie-Tholosan (Mercedes), 1 min. 42½ secs.

The first prizes in the touring awards went as follow:—Motor-bicycle.—Neckarsulm. Cars six classes as above according to price.—Tony Huber, Boyer, Aries, Radia IV., Gardner-Serpollet, Mercedes.

The Radia IV. also took a special prize—the "Grand Prix de la Ville"—and a Medal for the Touring Club de France for the most comfortable car.



The assembling of cars at Château-Thierry.

NEWS.

The 3,000 Miles Motor Drive.

Although we entirely disapproved of the thirty days' trial to which Messrs. Jarrott and Letts subjected two Oldsmobiles—a 7 h.p. two-seater and a 9 h.p. four-seater—on the ground that the promoters desired to compare their unofficial trial with the Automobile Club's Reliability

Meet of Motor-tricyclists.

That the De Dion type of motor tricycle is not yet a thing of the past was proved at Market Rasen a day or two ago, when a few enthusiasts gathered at Mr. A. A. Padley's place, Hill House, for a meet of motor-tricyclists. It happened that important engagements prevented several attending, and the weather was wretched, but there was a very fair turn out. It was unanimously decided to repeat the meet next season, and Mr. Padley kindly offered to entertain them all.

A new and revised edition of "The Book of the Bowden Brake" is now in the press, and the Bowden Brake Co., Ltd., will be glad to supply copies to motor and cycle agents on receipt of a post-card at their offices at 151, Farringdon Road, London, E.C.

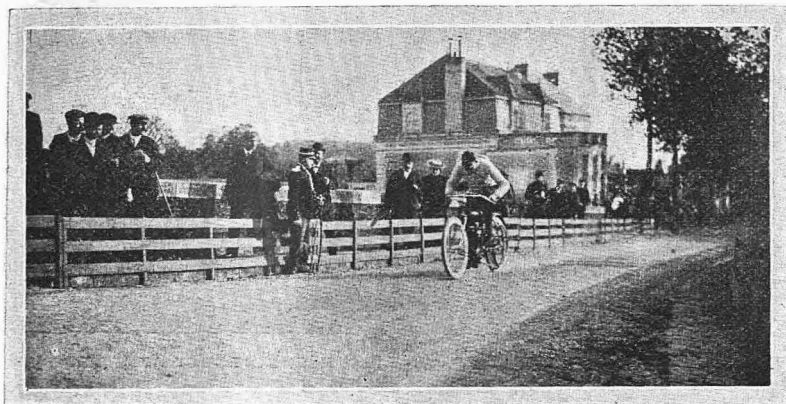
Motor-bicycle Track Records.

This is the time of year when the cycle tracks are besieged by motorcycle record breakers, and G. A. Barnes and H. Martin have set the ball rolling by sharing between them the new record figures from 33 to 100 miles. The performances were accomplished at Canning Town on Friday, October 28th, Martin, as usual, riding an Excelsior, and Barnes a machine of his own make. It should be mentioned, however, that Martin's mount was of an old type, with surface carburetter, and fitted with mudguards and brake. Barnes was the first to go, and he got inside record at 33 miles. From that point onwards, he established new figures up to 50 miles, and beat his own one hour record en route. The previous best for 50 miles was made by T. E. Newman (Chase), at Canning Town, on November 18th, 1903. The principal times in Barnes's ride were as follows:—One mile, 1 min. 19½ secs.; five miles, 5 mins. 55 secs.; 10 miles, 11 mins. 50½ secs.; 15 miles, 17 mins. 48½ secs.; 20 miles, 23 mins. 14½ secs.; 25 miles, 29 mins. 53 secs.; 30 miles, 35 mins. 58½ secs.; 35 miles, 39 mins. 55 secs.; 40 miles, 48 mins. 10½ secs.; 50 miles, 60 mins. 42½ secs. Barnes' new hour record is now 49 miles 800 yards.

Delayed somewhat by Barnes's ride, it looked as though Martin would not finish his task in daylight, and indeed it was almost dark when he completed the 100 miles. So much so, in fact, that Mr. A. V. Ebbelwhite, A.C.G.B. and J., who timed on both occasions, had to strain his eyes to see the rider cross the line. Martin's times, all records, were:—51 miles, 1 hr. 8 mins. 39 secs.; 55 miles, 1 hr. 13 mins. 54 secs.; 60 miles, 1 hr. 20 mins. 31½ secs.; 65 miles, 1 hr. 27 mins. 8½ secs.; 70 miles, 1 hr. 38 mins. 37½ secs.; 75 miles, 1 hr. 45 mins. 13½ secs.; 80 miles, 1 hr. 51 mins. 45½ secs.; 85 miles, 1 hr. 58 mins. 38½ secs.; 90 miles, 2 hrs. 5 mins. 58½ secs.; 95 miles, 2 hrs. 13 mins. 58½ secs.; 100 miles, 2 hrs. 21 mins. 45 secs.

Martin's distance for two hours was 85 miles 1,680 yards.

[New Records from 33 miles to 50.



The Chateau-Thierry: Canale getting away on his Alcyon.

Trials of September last, yet it is but common justice to record the fact that the two cars driven by Messrs. Bell and Batchelor have passed through the ordeal with conspicuous success. They were driven a hundred miles a day over all sorts and conditions of roads in England and Ireland, and such additional feats as the climbing of St. Patrick's Hill in Cork were essayed without hesitation. By the way, we note that in later references to the trials the term "non-stop" has been dropped.

The Daimler Motor Company.

An extra-ordinary meeting of the above company was held on Monday of last week to discuss matters of great importance to the future of the company. The chairman explained that it was proposed to re-organise the company with a view of obtaining additional capital for the working of the rapidly increasing business. Orders amounting to more than double those of last year were in hand, and the outlook was very promising. It was proposed to write down the £1 shares to 12s. 6d., thus reducing the capital from £100,000 to £62,260; and on the other side to write off a considerable proportion of the £40,000 put down for patents, etc., which did not now represent assets. It was important to extend the business and not to rely as heretofore on one type of vehicle; extensions and an increased output were vital to a growing business. The chairman laid stress upon the fact that they wished to manufacture a light car, but were unable to do so in their present works. With an increased capital of £70,000 or £75,000 the company would make sufficient profit, he thought, to pay dividends on all classes of shares. The estimated profit for the past year was over £13,000. It was proposed to issue £75,000 of preference shares to receive 6 per cent. dividend and a further dividend of 6 per cent. The resolution was carried.



Martin record-breaking at Canning Town.



The Chateau-Thierry: Having a spin over the course.

NEWS.

Another Motor Meet at Blackpool.

We understand that the Blackpool Corporation have given full consent for another motor meet to be held on the Promenade on the 12th inst., with the special object of beating the international record for the flying kilometre. The six-cylinder Napier racer, two 100 h.p. Darracs, and other cars are expected to compete, while attempts are being made to bring over some of the continental experts. A class for motorcycles may also be arranged.

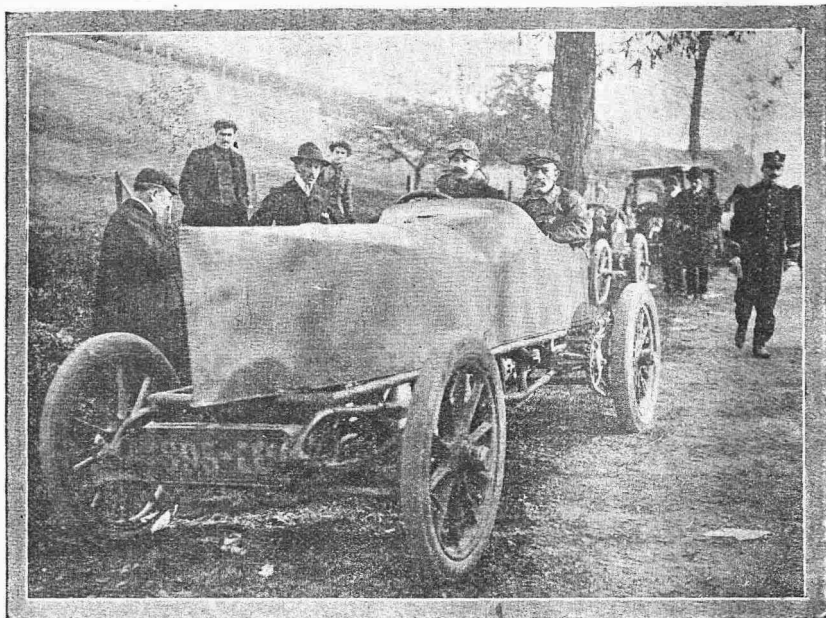
THE PRODUCTION AND USES OF ALCOHOL.

In the course of a very able lecture given on Friday at Lincoln, by Dr. W. R. Ormandy, under the auspices of the Lincolnshire A.C., some very useful information was given on this subject. After dealing with the rather unsympathetic attitude of the permanent officials of the Govern-



Bac who performed well at the Chateau-Thierry Hill-climb.

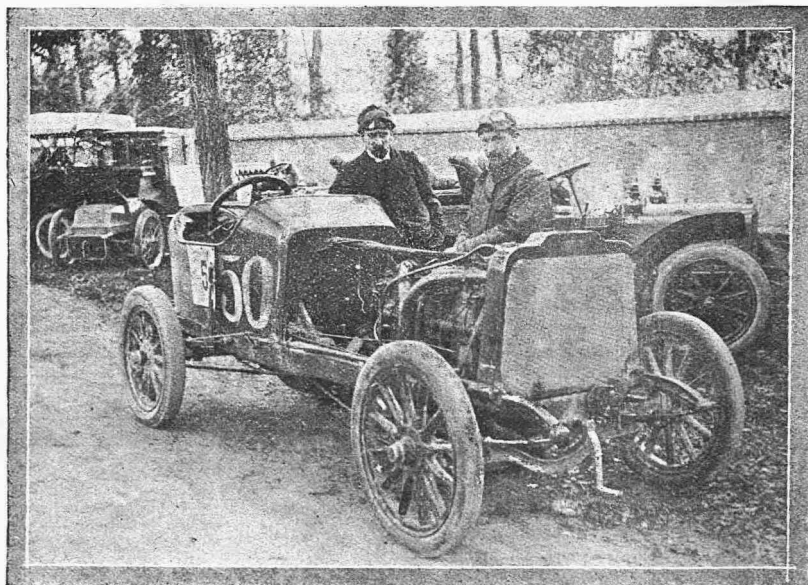
ment, who had a great deal to do with the action of the Government, and the restrictions as to the denaturing agent, which prevented its being used for many purposes, and giving a short history of the movement, the lecturer showed that there were no less than 65,000 distilleries in Germany, producing 300,000,000 litres of alcohol each year from potatoes grown specially for the purpose, factory potatoes as they were called, and grown not for quality, or disease resisting, or for keeping qualities, but for quantity. The alcohol was used for potable and commercial purposes, one-third of the total production being used for light, heat, and power production. The alcohol cost a shilling a gallon, with potatoes at a pound a ton. That was a less price for the roots than here, but the potatoes were grown by rough culture, and the schlempe, the residue from the distilleries, worth from 3s. to 6s. per ton of potatoes used. Lamps had been introduced in Germany that burned alcohol in incandescent burners, and gave off a pure, powerful, and odourless light of 60 candle power; these were used in villages, and on farms, and in public buildings, and at a far cheaper cost than in the case of paraffin. Heating and



The Caillon Hill-climb: Rigolly, who tied with Baras for first place, on his Cobron-Brillie.

cooking stoves were made there to use alcohol, and they, too, proved thoroughly satisfactory. For power, alcohol had proved itself quite suitable, and this year 2,700 alcohol motors had been made. Some had been working in a temperature of 20 degrees below zero, and it was simply the making of a suitable engine with a proper carburetter. Using petrol, excess of heat had to be eliminated; in alcohol used as a motive power we had far less heat, and matters wanted adjusting accordingly. A heating jacket was employed for alcohol motors, while a cooling jacket was used for petrol engines. It had been said that petrol would mix with alcohol. Such was not really the case. Petrol was not soluble

in alcohol, and it would be very expensive to satisfactorily mix the two. If the spirit was mixed with benzine, the exhaust would be very offensive, and the mixture would not do at all for stoves or lamps. He pointed out that we pay America £4,000,000 per annum for paraffin, and alcohol from potatoes could replace that. He also referred to the efforts of the Belsize Co. in alcohol motors, and said that a one-cylinder motor running experimentally had proved successful, and that in the spring the company would have a three-cylinder motor on the market. Much information was given, and hearty votes of thanks accorded to Dr. Ormandy for his most interesting and very instructive lecture.



The Caillon Hill-climb: Baras and his Darracq.

NEWS.

THE LIGHT-WEIGHT MOTOR-BICYCLE.

The Trade on the Move.

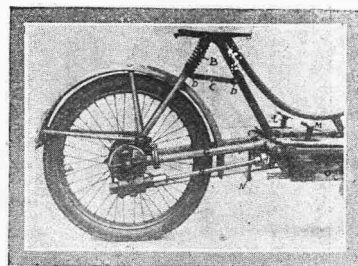
Our persistent advocacy for the introduction of a really light but efficient motor-bicycle as an auxiliary to the heavy machine is meeting with its reward—as we knew it would. Despite many denials, we have consistently given it out that there was a wide field for a light machine, and that there were thousands who do not cross the border line of automobilism simply because of the excessive weight of the majority of the present types of motor-bicycles. We are glad to announce that the beginning of a general realisation as to what a large section of the public want is now apparent on the part of the trade, and that the immediate future will witness the wide introduction of substantially lighter models. We have already announced the arrival of the Triumph, Leader, and Eland productions, and we now learn that Phoenix Motor Ltd., Riley, and Chase Co.'s are busy with the designs of light machines, and that they hope to have them ready in time for exhibition at the Stanley Show. The Garrard Manufacturing Co., too, are engaged in the construction of a 3 h.p. motor-bicycle weighing 90 lb., and we have not the least doubt but that the Stanley Show will witness a substantial addition to the list of up-to-date firms we have quoted.

An Interesting Letter.

A correspondent, who signs himself "The Pilot," has sent the following interesting and practical letter in regard to the light-weight question:—

Your efforts to encourage the production of a light-weight motor-bicycle deserve the widest possible recognition. Makers are probably more intimately concerned in the matter than the majority of present-day motor-bicyclists, because it is tolerably certain that the success of your crusade would multiply many times the number of motor-bicycles, while not a few of the existing drivers of heavy machines would turn with pleasure to a reliable light one.

My experience and observation of sundry machines lead me to put forward the following suggestion for improvements towards lightness, simplicity, durability, or reduction in cost. First, a non-trembler coil, with notched cam and trembling blade contact-breaker is preferable to the trembler coil and wipe contact. Second, a spring frame is desirable, to reduce the shocks from rough roads, but it need not be so extremely flexible as to compare favourably with a strap-hung carriage body. Third, the saddle must be low, so that the average rider may touch the ground firmly with both feet while seated in the saddle; this can usually be done on Continental racing machines, and it is a striking fact that it is rarely possible on the English roadster—the rider would enjoy a sense of security such as is obtainable in no other way. Fourth, a two-speed gear is needed, combined probably with a spring drive and chain. My view is emphatically that 20 miles an hour is sufficient for the average rider, and a two-speed gear might substitute the fitting of pedalling gear. Fifth, automatic valves



Rear Portion of Garrard Tri-car.

B Spiral spring (compression). C Cross connecting stay. D Coned joints. F Oil tight casing to water drive. G Compression stay. H Propeller shaft. J Universal joint. L Pedal. M Clutch pedal. N Starting handle. O Gear box.

are better than mechanical inlet valves on single cylinder engines.

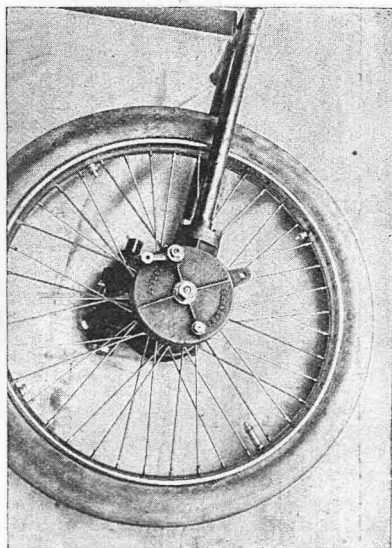
Until now makers appear to have catered for cyclists who desire the single pleasure of speed;

THIS APPEALS VERY AGREEABLY TO THE YOUTH AT THE UNIVERSITY, AND IN THE CYCLE SHOP,

the former of whom is attracted by the transient novelty, while the latter fancies he is on the high road to become a motor engineer—and terrible "engineers" some of them become! But, sir, neither of these classes will raise the motor-bicycle trade to a vigorous and profitable industry. Given a motor-bicycle of the rational type you propose, with the details suggested above, at a reasonable cost, and there would be as many motor-bicyclists as pedal bicyclists.

I venture to submit further that mudguards of compressed paper (or papier-mâché) are preferable to those of metal, that a crank case of iron or phosphor-bronze cast thin is better than one of aluminium, notwithstanding the extra weight, that the escape ball-valve on the crank case might well be substituted with a 1 in. open-mouthed pipe discharging against the exhaust-valve casing to assist the cooling, and that petrol storage for 100 miles is sufficient for the ordinary man.

My remarks are the outcome of practical experience gained with a conomi-



The internal expanding-brake on the Garrard Tri-car.

tant expenditure of a large sum of money during the last few years, and you may safely infer, therefore, that I am not peculiarly interested in any particular make or maker.

[We entirely endorse our correspondent's views.—Ed.]

"An Official Request."

As a London motorist was driving his car along High Street, Notting Hill Gate, the other day, he ran over a collie, inflicting fatal injuries. While conversing on the matter with the owner of the dog, he was accosted by a constable, who asked him to produce his license. Declining to produce the license, on the plea that the affair was a matter between himself and the dog owner, and had nothing to do with the policeman, he was summoned before Mr. Plowden. The magistrate severely questioned the constable as to his motive for demanding to see the license, and expressed surprise that so trivial an occurrence as the death of a dog, which was being amicably settled by the interested parties, should occupy the attention of the police. "But that the Act gives the police the right to demand to see a license," said Mr. Plowden, "at any time and for any reason, I should have considered it an officious request on the constable's part." For the defence it was stated that the constable only asked for defendant's name and address, and not to see the license. This evidence was corroborated by the dog owner. The case was dismissed.

The Garrard Tri-car.

Lack of space prevented us giving details of the suspension of the rear portion of the Garrard frame in our last issue. The illustration will now make this quite clear. Where the bottom bracket would normally be is placed a joint with cones at either end, held up to their work by small spiral springs: above the rear wheel the seat stays cease and a strong compression spring B takes their place. Below the spring a cross stay C runs from the top of the seat stays to the seat tube: at D are coned joints. As the back wheel passes over any obstacle it rises against the compression spring, upon the joints D and D, and hinges the whole of the rear frame upon the bottom bracket. With the rear seat also supported upon spiral springs, the driver is as comfortable as the passenger, and this patented system of suspension removes objections drivers have had to the usual pattern of tri-car frame. The other illustration shows the internal expanding brake in position: the brake surface forms an integral portion of the rear hub, and removal of the three nuts shown enables the shoes and cover to be detached. As showing what the Garrard tri-car is capable of doing, we timed it for the ascent of Mucklow's Hill, Halesowen (seven miles from Birmingham) on October 21st. We came out of the city, and at the foot of the hill turned and started the climb almost from a standing start. The hill is over three-quarters of a mile in length, and has an average gradient of 1 in 12, with two severe stretches of 1 in 8 and 1 in 9. The watch was started opposite the Midland Railway Company's office and stopped at the N.C.U. danger board: time recorded, 3 min. 37½ sec.—excellent, indeed, considering the greasy surface under the trees on the two sharp bends.

NEWS.

THE POSSIBILITIES OF THE DOUBLE-SEATED TRICYCLE.

An Interesting C.T.C. Lecture.

The first meeting of the Metropolitan District Association (C.T.C.) was held on Wednesday evening last, at the Society of Arts Lecture Theatre, John Street, Adelphi, W.C., Mr. Rees Jeffreys in the chair. The meeting was scantily patronised, and when the chairman called upon Mr. Basil Crump, M.A., to read his paper, the author rose to address a very small audience, though the subject, "The Possibilities of the Double-Seated Motor-Tricycle, with Notes on Continental Touring," is a very much-discussed and interesting one. Prefacing his paper with a brief review of motorcycle power, the author, who has a very good and pleasant delivery, proved to his own satisfaction that the high-powered, heavy bicycle was

THE MOTORCYCLE OF THE FUTURE.

A trailer attached to his motorcycle he soon found to be too dangerous for taking corners at anything but a very low speed, and the disadvantage of a side-carriage is that when not loaded it is an awkward addition for taking corners on the left. The reason for this is that it increases the momentum of the whole, and since in rounding corners the direction of the momentum has to be changed, this form of tri-car becomes very unstable on the outer wheels, owing to the weight pushing outwards. Afterwards he acquired a well-known tri-car fitted with a $3\frac{1}{2}$ h.p. engine, and a two-speed gear, the latter being essential for hill climbing. Overheating, he continued, is due not to defective air-cooling, but to overloading the engine and allowing the exhaust pipe to become choked, owing to excessive muffling. A remedy for this choking up is to drill several small holes in the exhaust pipe between the engine and silencer; this does not create more noise and it keeps the exhaust pipe quite clean. The necessity for providing ample leg space in the car is emphasised by cramp in the legs, of which a passenger generally complains after a long run. A brake on the rear wheel is not nearly as effective as a couple of brakes on the fore-car, one on each wheel.

HANDLEBAR CONTROL IS THE ACME OF QUICK CONTROL.

No fumbling after levers on the top frame tube allows one to have better control over the steering. For all touring tri-cars, chain guards, side flaps to mud-guards, and ample springs are necessary for comfort. On the question of springs, Mr. Basil Crump seemed to hold the view that every part of the machine should be hung or mounted on springs, owing to the vibration caused by bad roads. If the author had mentioned that the vibration was largely due to the placing of the seats over the wheels, where the vibration is at a maximum, and that in the light car the seats are placed between the fore and aft wheels, where the vibration is at a minimum, he would have cleared up this point for the audience.

With reference to the materials of which

some of the tri-cars are made, Mr. Crump made some

VERY SCATHING REMARKS, and with reason. Cast-iron lugs, used for building up the frame, and ball-bearing steering pillars labyrinthed with set screws, cannot be expected to withstand the vibration to which they are subjected, and yet some makers persist in using them. A friend of his sustained a fractured skull from the failure of one of these ball-bearing steering pillars. The lugs of the fore-carriage, which fastened to the rear axle, are apt to break, and it is a very good plan to strengthen them by stays between the middle of the back fork and the carriage tube. With regard to tyres, Mr. Crump considers that Palmers are about the best, but that they

have one disadvantage—viz., the walls are not strong enough, though the tread is very stout and durable.

The paper concluded with an account of a tour through Holland and Germany to Munich. The author's remarks about the bad roads in Holland were somewhat sweeping; for surface, straightness, and flatness some of the Dutch roads equal the very best French highways. Good roads in Germany also are not so general. The paper was illustrated with lantern slides, many being very good. A vote of thanks to Mr. Crump for his interesting paper was moved by the chairman and seconded by another member of the M.D.A., and unanimously carried. It is to be hoped future meetings will be better attended.



R. Murkett, who recently established a record for motor-bicycles in the Johannesburg to Pretoria and back race. (See page 344.)

NEWS.

**MOTOR RACING AND SPORTS
AT BAHRENFELD (Hamburg).**

Despite a lowering sky in the afternoon and an aqueous visitation in the forenoon, the North German Motor Club's programme drew a crowd of respectable dimensions to the Bahrenfeld trotting course on the 23rd ult. The Norddeutscher Automobilklub, whose headquarters are at Hamburg, is a young but vigorous institution. Three years ago it was not in existence, and its influence has already waxed sufficiently for the organisation of an almost cosmopolitan meet—the first meet, indeed, of any sporting importance in the history of the club, whose success at Bahrenfeld will doubtless encourage the leading spirits to make arrangements for further races on other occasions. Several members of the German Motor Club gave countenance and practical assistance to the club officials, amongst them Baron von Brandenstein, who assisted Herr H. Hasperg, junr., the president, in the business of judging; Baron Molitor von Mühlfeld, officiating as starter, and Count von Sierstorpf—three gentlemen whose personalities came into great prominence in connection with the Gordon-Bennett race last summer. Punctually at 2 o'clock

**THE LIGHT CARS UNDER 400 KILOS.
JUMPED FORWARD.**

The course lay over 4,000 metres, or three times round the track. Fritz Opel, on his 16 h.p. Opel, set the pace, but was hotly pressed by Otto Hieronimus, the Vienna motorist, who yields not a jot in skill and daring to the representative of the Russelsheim firm. Hieronimus steered a 24 h.p. Spitz, and eventually, after a hard and uncertain fight, bore off the palm in 3 mins. 15 secs. The motorcycle event, which came next on the programme, proved an easy win for the Austrian crack Nicodem, who drove his 3½ h.p. Puch

over the 2,800 metre course in 2 mins. 26½ secs., Müller and Reichstein, on a Brennabor and Göricke respectively, providing excitement by making

A DEAD HEAT

for the second place. In a deciding race, however, Müller beat his rival. These races paved the way for the gymkhana—a "glass of water" event, in which each driver had to take a lady passenger holding a glass of water in her hand once round the course, the prize going to the pair who succeeded in spilling the least fluid during the lap. Competition here was so strong that preliminary heats had to be run off. Herr Carl Fritsch (18-24 h.p. Mercedes) and his companion managed to win the prize. Competitors were confronted with a ticklish problem: if they drove too slowly they ran a risk of saving water at the expense of the first prize;

on the other hand, to drive too fast meant probably getting home in front, but with an empty glass. This interesting "sandwich" having been disposed of, sterner sport followed, in the form of a 4,000 metre race for cars between 400 and 650 kilos., the so-called "Luruper Fahren" Hemery, the French chauffeur, on his 40 h.p. Darracq, being completely master of the situation, only Fritz Opel offering any serious resistance. Time, 3 mins. 13 secs. Then another branch of gymkhana, to wit,

A SERPENTINE RACE.

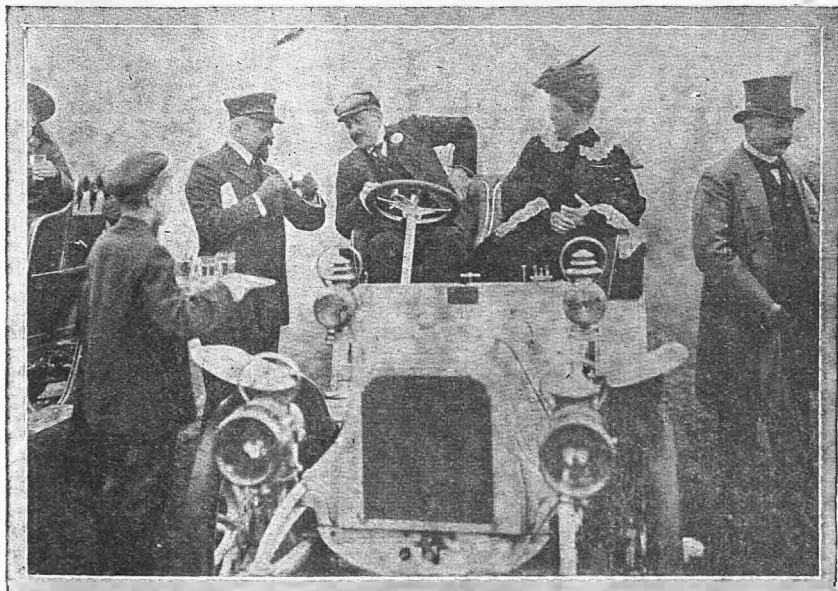
competitors having to drive *en spirale* between half-a-dozen posts, backwards and forwards. Herr E. Achenbach and his steam Lokomobile emerged triumphant from the serpentine ordeal, which ushered in the "Bahrenfelder Fahren," open to tourist cars up to 30 h.p., and carrying four adult passengers. Once again the heavy list of entries rendered preliminary heats necessary. In consequence of the lateness of the hour the officials shortened the course in the final from 4,000 metres to 1,500. Carl Westphal rattled over this distance in a minute with a 30 h.p. De Dietrich-Bugatti, Fritz Opel scoring his third second. Then sank the Baron's red flag for the international race—a 6,500 metre event open to all cars and drivers. Willy Pöge shot off with a 38 h.p. Mercedes, followed by Hemery, who drove the same car as before. For three laps Pöge led; but his great speed threw him too far outwards on issuing from the bend, and the Frenchman seized his chance and slipped inside, finishing up six seconds ahead of the famous amateur. Time, 5 mins. 12 secs.

A Vacancy.

There is an opening in a leading London motor firm. The position is one of trust, and could be filled only by someone having a knowledge of motors, well acquainted with the commercial sides of the business, and a good salesman. Only a man of the highest integrity, and with first-class testimonials, will be considered. Applications may be addressed in the first place to "Motorius," care of "THE MOTOR," Rosebery Avenue, E.C.



Hemery, winner of the International Lurup Races, on his 40 h.p. racing Darracq. He is at the wheel.



Baron Brandenstein (Sec. of German Motor Club) greatly interested in the liquid intended for one of the lady competitors in the "glass of water" race.

NEWS.

Cavaliere Florio, the wealthy Italian racing man, is credited with the intention of organising a "Circuit Latin," comprising the following meets:—(1) Mont-Ventoux hill-climb; (2) Mont-Cenis hill-climb; (3) Brescia circular race; (4) Padua kilometre race; (5) Consuma (Florence) hill-climb; and (6) Palermo circular race.

Birmingham Motor Cycle Club.

The finals of the trials for motorcycles carrying lady passengers, organised by the Birmingham Motor Cycle Club, were held on Saturday week last. The preliminary event consisted of a 50 miles non-stop run (25 miles out and home on the Chester road, starting from the Royal Oak, Streetly). Seven entries were received:—S. Downing (3½ h.p. Allday's tri-car); C. G. Garrard (7 h.p. twin-cylinder Garrard tri-car); C. Thompson (4 h.p. Smith's of Saltley motor-bicycle and trailer); F. R. Gould (3½ h.p. W. A. Lloyds' bicycle and trailer); C. R. Townsend (4 h.p. New Revolution tri-car); and E. W. Winckle (3½ h.p. Hamilton tri-car). Of these three dropped out, viz. Garrard (short of petrol), Gould (tyre troubles), and Walker (broken sparking-plug). The four left in competed in a "starting and stopping" trial over a measured distance (about a third of a mile), with the following result:—Downing, 1 min. 15½ secs., first; Townsend, 1 min. 35½ secs., second; Winckle, 2 mins., third; and Thompson, 2 mins. 30 secs., fourth.

A strong winter programme has been arranged. Mr. C. G. Garrard's paper on "Motorcycles" will be read on November 12th, and on November 19th a saloon party will visit the Stanley Show. The annual dinner is fixed for January 14th.



The Humber depot at Durban, Natal. The two cars in the picture make an interesting comparison to the ancient rickshaw which is being brought upon the scene by a native.

The Reliability of the Light Car.

Apocryph of the recent correspondence in the "Westminster Gazette" on light cars, Mr. J. C. Madeley, of Ashford, Kent, has some interesting details in our contemporary about a light convertible (two or four-seated) car of American manufacture. The car cost £196, and weighs three-fifths of a ton. The owner bought it on April 13th of this year, and has driven it between 3,000 and 4,000 miles. It will take four passengers up any hill over the chalk downs of Kent—in fact, up any hill met with on a main road. The cost of running it is three farthings a mile, made up of a shade over a halfpenny for petrol and a shade less than a farthing for lubricating.

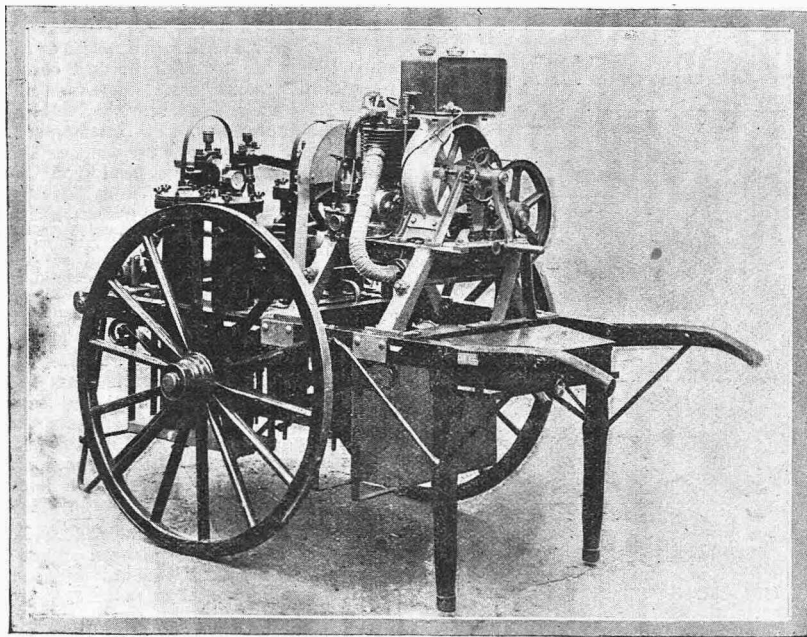
It has been driven in one day 101 miles, from Hereford through Gloucester, Cheltenham, and Oxford to High Wycombe; and the next day from High Wycombe through Beaconsfield, Windsor, Croydon, and on to Ashford, a little farther than the previous day's drive.

From Hereford to High Wycombe, 101 miles, took six hours' driving. The car is "simple" and "fool-proof," and runs with a total absence of noise. In the owner's estimation it is a source of far greater pleasure than, and just as reliable as, a large car.

In last week's issue we gave the revolutions of the Noble motor as 800 per minute. This was a slip; it should be 1800.

Motorcycling in South Africa.

A Johannesburg correspondent sends us a few interesting details about the annual motor-bicycle race from Johannesburg to Pretoria and back for the "Gordon Stuart Cup," which was run off last September. The cup has to be won three times before it becomes the property of the winner, and the winner of each year receives a gold medal. This year's race was won by R. Murkett, who beat the record by eight minutes on a 2½ h.p. Royal Shimwell Bros. motor. His full time was 3 hrs. 10 mins. 45 secs. The second man in (Chater) rode a similar machine; and the third man (Halscomb) was on a 3 h.p. Rover. Considering the terrible roads, and the fact that two small rivers had to be crossed each way, the race was a fine test of reliability both of machine and man. Mr. Murkett is well known in cycling circles at home, and was employed a few years back at the Rover Company's repairing depot in Holborn. He is a novice at motor racing. The English reader can form no idea of South African roads unless he has been out. In some parts there is sand a foot deep and stones galore. A couple of the competitors were thrown off their machines. At one part of the journey there is a steep hill, and at the bottom is a small river. One of the riders got stuck in this and took five minutes to get out of it.



A portable air pump which the Simms Manufacturing Co., Ltd., recently fitted with a 3½ h.p. Simms motor, to the order of the G.P.O. The combined plant is now in use in the streets, for the purpose of pumping dry air along the tubes containing the Post Office telephone wires. The engine drives the pump at approximately twice the speed attained by manual labour, when two men were employed.

NEWS.

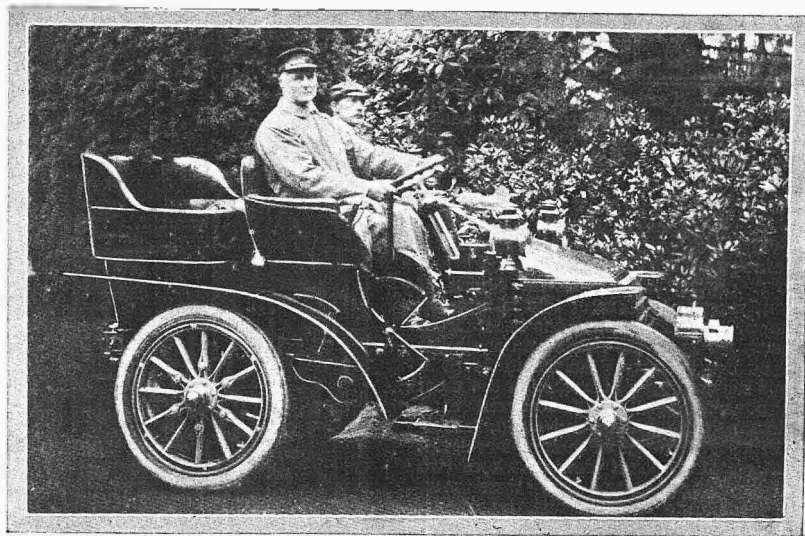
The Neckarsulmer Fahrradwerke, better known in this country as the maker of the N.S.U. motorcycles and motors, have now acquired premises at Nos. 4 and 6, Hation Wall, which are being fitted as show-rooms and repairs depot. A full supply of spare replacements will always be stocked, and a staff of capable mechanics will be engaged.

Repair Shop near Barnsley.

A Barnsley motorist wishes to bring to the notice of other motorists in the district the repair shop of Mr. B. S. Ledger, of Staincross, two miles out of Barnsley. He is a most capable man, extremely obliging, and his charges are moderate. Mr. Ledger will doubtless be remembered as an old-time amateur cycle champion; and he has been a keen automobilist since the commencement.

The Coventry Motor Cycle Club.

At a recent committee meeting of the above club it was unanimously decided to continue the Saturday afternoon runs for the next three months by arranging a country headquarters at the Duncow Hotel, Dunchurch. It is thought that by fixing on a spot within easy reach of home those who feel disposed to go further afield will be able to do so before dark, returning to Dunchurch for tea at 5 p.m., where they may always be sure of finding other club members. An attendance book will be kept at the hotel, and members are requested to insert their names when possible on the outward journey, stating which route they have taken and the time they expect to return. By this means those who do not wish to extend the journey may know that they will have company at teatime, and on the return journey. It is expected that the winter fixtures will be largely supported.



Mr. William Carfit, M.P., on his 10 h.p. Wolseley. Mr. Carfit is a very enthusiastic automobilist.

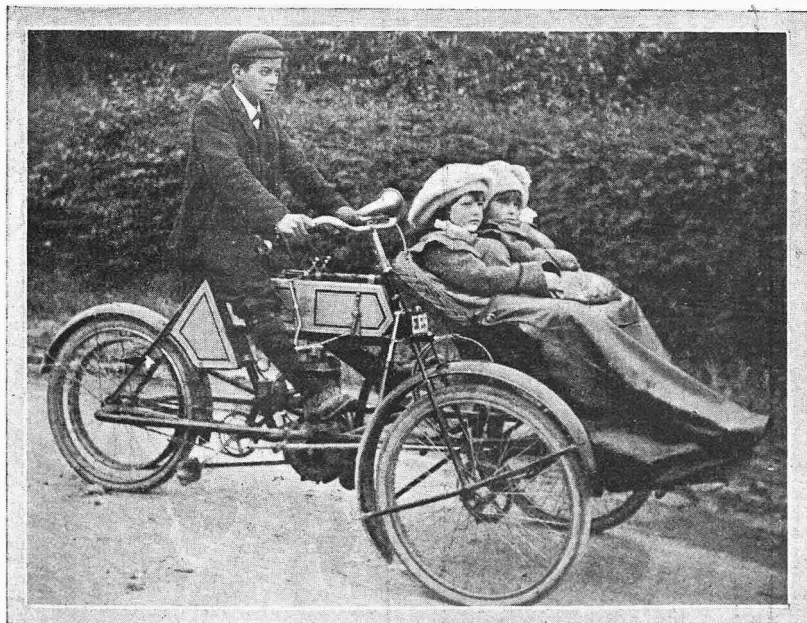
The Warninglid Motor Accident.

Mr. Chas. F. Hill, of Winnals, Hayward's Heath, Sussex, whose wife was seriously injured recently in a motor accident at Warninglid Cross Roads, writes to say that unfortunately, in his anxiety, he quite forgot to thank a gentleman on a motor-bicycle who, at much inconvenience, came some distance to inform him of the accident; also a party of ladies (on a Dennis car), who very kindly started with the same intention; and the gentleman who so promptly and effectively sent his motor and driver for the doctor. Mr. Hill would very much like to have an opportunity of thanking the above "good Samaritans" in person, if they will send him their address.

Road Tarring at Cobham.

C. A. Smith, proprietor of the White Lion Hotel, Cobham, kindly sends us the following report on the tarring experiments at Street Cobham:—"In the middle of April last the surveyor of the Epsom Rural District Council treated half a mile of the main road with ordinary tar obtained from the local gas-works, the tar being strewn on piping hot and then well brushed in. This dressing has protected the road from all wear, and even now—six months after—there is not a loose stone to be seen. What dust there is on the surface has been blown on to it from the footpaths, etc. In addition to binding the road and saving the wear and tear, it has been found that there was no need to use a water cart at all this season on this stretch of the great Portsmouth road. After rain the water rapidly drains away, and the road dries much sooner than when not tarred. The surface is so much better to walk on than the rough paths which obtain, that the villagers invariably walk in the road in preference to the tracks built for their meanderings. Finally, the noise from any heavy-wheeled traffic is very much lessened. It is estimated that the Street Cobham tarring cost £39, the area being about 7,500 yards, which would work out at about 14d. per square yard. This, for a road 21 ft. wide, would come to about £64 per mile. The cost of watering roads for the summer season is generally estimated at £50 per mile; but as it is now universally acknowledged that this system of laying the dust is destructive to road surfaces, it would seem that tarring roads is not so expensive as to prohibit its use more widely. Indeed, as local flints (costing 4s. 6d. per cartload) could then be used in repairing highways instead of imported granite (costing 16s. 6d. per cartload), the money saved in the material and watercart might be spent in tarring, making the road a boon to the villages situated on it, and comfortable, clean, and safe for the travellers who use it." These experiments are yet further proofs of the advantages of tarred road surfaces over the ordinary macadam.

B 19



Master Arden, the fourteen year son of Mr. George Arden (a well-known motor engineer of Grimsby), an enthusiastic young motorist who has driven a motorcycle continually for the last three years. He has driven his sisters all over Lincolnshire without a single mishap.

NEWS.

The Swain Tyre and Rubber Co., 58, Town Hall Square, Bolton, have made arrangements by which motorists can obtain petrol at their depot day or night, including Sundays.

Traffic Dangers a Hundred Years Ago.

A valued correspondent forwards us the subjoined cutting from an issue of "The Globe," dated 1807:—"In the South of Devon, where carts are of late become so common, much inconvenience is felt from the narrowness of the roads and the hilliness of the country. An accident of a serious nature, which threatened the most fatal consequence, lately occurred to a gentleman, with a lady and child, travelling in a gig. In one of the cross-roads in the neighbourhood of Totnes, where two carriages cannot pass, they were met, while ascending a steep hill, by a cart with two horses coming down at full trot, the driver riding in the cart without reins. Alarmed by the lady's shrieks the man leaped down in order to get at his horses' heads, but failed, and in the attempt broke a limb and dislocated his shoulder. The party in the gig, with the horse and the gig too, must now most probably have been all destroyed, had not the gentleman had the happy presence of mind to turn the carriage so as to obstruct the road entirely, which luckily stopped the horses. This practice of riding in carts without, or even with reins, cannot be too severely reprobated, and it is the duty of every master to caution his servants against it, as well as to apprise them that by Act of Parliament they are in every instance liable to a penalty of 10 shillings. Much to his honour, a public-spirited magistrate in South Hants has, we learn, enforced in frequent instances this salutary law, and means to persevere in repressing the evil."



This illustration, which is reproduced from a photograph which we have just received from the Vacuum Oil Co., Ltd., conveys some idea of the arrangements this company made in conjunction with Mr. A. W. Marriott, of Hereford, for the supply of lubrication for the competing cars in the recent Light Car Trials.

An Extension.

The old-established firm of trade auctioneers, Messrs. Sydney Lee and Co., Ltd., whose premises at Funnival Street, Holborn, have been recently acquired by H.M. Government for the Patent Office, announce that they have opened new offices at 31, Brooke Street, Holborn, and are about to erect large motor, cycle, and engineering sale rooms in the vicinity of Gray's Inn Road, W.C.

The Le Roy Vulcaniser.

This apparatus, which was recently described in "THE MOTOR," can be obtained from the sole British agents, Messrs. Fowler and Cashmore, motor engineers, Soho Hill, Birmingham.

Blackpool Motor Races: A Complaint.

The Duryea Co. write to complain of the treatment which was meted out to them at Blackpool. They state that an entirely new rule was introduced stipulating that all cars should have four wheels, and at the same time the price limit of the class was advanced to £250. They therefore removed the single steering wheel and replaced it by a standard axle and pair of steering wheels, converting the phaetonette into a phaeton. As the result of a protest, the committee awarded the cup to the Speedwell Co., whose 10 h.p. car finished second to the Duryea. The complaint was that the car did not legitimately come into the £250 class. The Duryea Co., therefore, wish to make the following explanation public:—(1) The car as a three-wheeler has been catalogued and sold at £200 all this season, and has competed at two race meetings in the £200 classes. (2) The interchange of double for single steering wheels has been made when desired for the past two years at a charge of £25. (3) This brought the actual figure for the particular car run to £225, but as adding two wheels converted it to a phaeton, it was entered at phaeton price for a car fitted as this was, viz., £245. (4) The standard phaeton is listed at £295; but these vehicles are fitted complete with best quality Halliday top, storm apron, and ornamental leather dashboard in front, as well as with two systems of circulation—natural and forced. (5) At the time of the races the price for phaetons with double circulation system, but without top, etc., was £245.



The French Government now employ electrically-driven mail vans for their postal deliveries.



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 Quadrant Tri-car.

Sir,—Would any of your readers give me their experiences with the latest Quadrant tri-car?—Yours faithfully, F.Fio.

The Two-stroke Engine.

Sir,—In reference to the two-stroke motor, of which design and details were given by Mr. Celt in "THE MOTOR" (page 165), September 13th: I consider there would be a tendency for this engine to waste fuel, as there are no means provided to prevent a portion of the inlet gases being drawn through the exhaust port into the crank chamber. This fault could, I think, be corrected by working the inlet valves mechanically, either by an overhead shaft or by rocking levers (preferably the former). They should then be timed to be opened immediately the exhaust port is closed by the piston on its upstroke, or even a moment sooner. It would be interesting to compare the performances of this engine as regards fuel consumption, proportion of power to cylinder capacity, etc., with those of engines of the standard four-stroke type. Perhaps Mr. Celt would be good enough to publish details when his experiments are complete?—Yours faithfully,

E. JORDAN.

Handlebar Control.

Sir,—The advantages of having the main controlling factors of a motorcycle arranged on the handlebars seems to be very great, especially when riding in traffic, and the arrangement of the various levers set forth recently in "THE MOTOR" would seem hard to improve upon. But surely it is not a bad practice to have a reliable switch mounted on the bar? In my humble opinion it is as much a necessity there as the exhaust lifter. The switch I have used for a year or more is the Mason and Brown, and it has never needed any attention. It should be mounted on the bar other than the one to which the exhaust lift is attached, and as close up to the "grip" as possible, so that it can be worked by the thumb or forefinger without releasing one's hold of the bar. The use of a switch of this type and the exhaust lifter gives a very perfect control in traffic; whereas, if the exhaust lifter should be completely raised at any time, and there is no means of simultaneously cutting the current, untimely exhaust box explosions may be the result. Should not the lubricating oil pump be included amongst the necessities that have to be arranged for? This might be worked by a Bowden wire from the handlebars.—Yours faithfully,

T.103.

The Garrard Tri-car.

Sir,—As an owner of a Garrard tri-car I should much like to know what seat Mr. G. H. Peake has fitted to his machine. Also, I am very curious as to the one or two other defects, and the other little details which troubled him. I returned quite recently from Devonshire with the tri-car, and I am astonished at what it has done, and the awful roads and hills it has gone over. One broken exhaust valve, and spring to saddle also gone, is the total of the repair bill, and the Garrard Co. not being the makers of the saddle that is hardly a defect in the machine. My trouble all along has been the batteries and the way they shake about, and they won't be wedged in. I have complained to the makers, and they inform me that in the future they intend altering all this, and place batteries and coil elsewhere than in the tank. I have had a copper band, in place of the leather, fitted to the back brake, and what I should have done without it in Devonshire I don't know. It is my intention to alter the front brakes, and hope to make as great a success of these. But, take it all in all, it is a very satisfactory little machine, and the water cooling works well. I was away a fortnight, and never added a drop of water to the tank, and never had the water boiling, in spite of being on my bottom speed sometimes two miles at a stretch, climbing steadily all the time, with a passenger and as much luggage as we could carry; at the most the level of the water is down half an inch. There are not many cars which would behave as well and show as cool an engine after such a test.—Yours faithfully,

B.W.89

Magneto Ignition Experiences Wanted.

Sir,—I should like to hear from any reader having a Clyde motor-bicycle how he finds the magneto ignition for durability, efficient working, and ease of starting.—Yours faithfully, M.J.

Water Boiling Away.

Sir,—I read in a recent issue in "O.P.V." a letter from "AK197" on "Olympia Tandem Experiences," and as a rider of a 1904 Humber Olympia tandem I would like to ask a question or two regarding the water boiling away so quickly in tank. Mine is a 3½ h.p. water-cooled engine, and tank holds 11 gallons of water, but at the end of 20 miles it has all boiled away, except a little at bottom of tank, and what little is left in pipes and radiators. Perhaps Mr. Bert Yates or Mr. Johnson could kindly give me a tip respecting same.—Yours faithfully, D.O.114.

Star Cars on Fromes Hill.

Sir,—I notice in last week's issue of "THE MOTOR" a letter signed by Mr. H. Morgan, referring to the fact that he has several times climbed Fromes Hill with his Little Star on his tandem gear. This hill was, apparently, very troublesome to some drivers in the recent Light Car Reliability Trial. As the driver of one of the Little Star cars in this trial, perhaps I may be permitted to say exactly what happened on that occasion. The Star Engineering Co. had, just before the trials, introduced a new form of gear-box with a different ratio in the bevel drive, necessitating a decrease in the chain sprocket of 20 per cent. Mr. J. Lisle and myself, however, in actual experiment, and with the hope that some special speed trial might possibly be made a feature of the week's run, decided to leave the sprockets at the 20 per cent. increase, going by the report of the Automobile Club that no gradient on the course would exceed a rise of one in seven. Finding, however, that the top, unofficial part, of Fromes Hill was one in six, and in view of the fact that I carried three persons, we decided to return to our standard gearing as usually supplied to the public. The result is, of course, well known, and I may say that both the cars ascended the hill without a fault, as indeed one would expect them to do. The astonishing feature of the trials, in my opinion, was the failure of so many cars to climb this very ordinary hill with facility, as it presented no difficulty whatever to ourselves on a standard gear, which gives up to 26 miles per hour on the level.—Yours faithfully,

F. R. GOODWIN.

B23



O.P.V.

The Watawata Belt.

Sir,—With reference to the letter by "Argia" in a recent issue (O.P.V.), who had some difficulty with a Watawata belt, if he will communicate with us at Railway Leather Works, Rochdale, we will do our best to assist him to solve the difficulty, which, we may say, cannot possibly be due directly to the belt itself.—Yours faithfully,
O. and W. ORMEROD, LTD.

The Rexette.

Sir,—Re letter by "Civis" on Rexette, I am similarly perplexed as to how to remove the clutch without removing engine, gear, and rocking shaft of clutch pedal. As this would be a big and awkward job, perhaps the makers would kindly describe the simplest method for the benefit of the users of this satisfactory little car. I had already altered my circulation pipes, as suggested by "Civis," and the improvement in running and economy of water is remarkable. Whilst I have found the Rexette quite capable of climbing, and descending on one brake only, any hill in Cornwall and Devonshire, yet I strongly advise purchasers in hilly districts to specify extra stout spokes for driving wheel, which the makers willingly fit. I have found the Rexette much to be preferred to any car I know of costing less than £150.—Yours faithfully,
TEUF-TEUF.

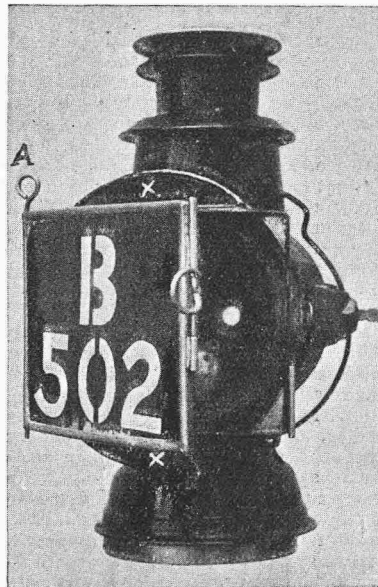
An Efficient Rear Lamp.

Sir,—Now that lighting-up time is so soon upon us, many of your readers are, no doubt, finding that the light of paraffin lamps is not sufficiently powerful, and are changing to acetylene. It is often difficult to dispose of the old lamp. I enclose a photo of a rear lamp that can easily be made out of any paraffin lamp. I have had it on my machines, both quad and tri-car, and it has never failed me, ever since the Act came in. The photo shows the lamp with the number panel half open. It consists of a Dietz lamp, having a hinged panel mounted on the frame carrying the usual circular glass front, which otherwise remains unaltered. This panel consists of a stencil in black paper sandwiched between a piece of white opal glass and a piece of ordinary glass, the whole being bound together like a lantern slide. A is the pin of the hinge, and by pulling this out, the panel can be removed, allowing the lamp to be used as an ordinary one, or permitting the insertion of another number. At the two white crosses are two slips of red glass, thus complying with the county by-laws as to showing red rear light at night. The small, round spot in centre is a small disc of clear glass, which, looking forward, sends a ray of light on to one of the front mudguards. This prevents any possibility of the lamp going out without the driver being aware of it. I must say I have never known it to jolt out. The lamp is clamped on each side to a forked forging, the handle of the fork being securely bolted to the frame of my Rexette. The job has been done in a most workmanlike manner by Mr. Geo. Alexander, of Moor Lane, Preston, a local lamp maker, the whole affair costing about 7s. 6.—Yours faithfully,
J. G. B.
Preston.

B 24

Particulars of Driving Belt Wanted.

Sir,—Until May last I was among the numerous sufferers from belt troubles. While touring in France my belt gave out, and I purchased for 20 francs a German article which has stamped on it: "Superior Motor Riemen, D.R.G.M. No. 208,996." The belt inside has much the appearance of the ordinary canvas belt without any pronounced rubber core, but with rubber between the rolls of canvas. The outside is formed of rubber alone, and is V shaped. I have tightened it three times only in hundreds of miles of running. Neither wet nor oil make it slip, and I run it very much slacker than a leather belt. Mine is, apparently, good for a long time yet. I should mention that the belt is very pliable. Perhaps some of your foreign correspondents may be able to supply the maker's name, as I would like to know where to obtain another such worry-saver when the time comes.—Yours faithfully,
A2997.



Illustrating letter from J.G.B.

Treatment of Belts, etc.

Sir,—A few remarks on my experience of belts might be useful to your readers. My machine, a Rex, has now been only 1,368 miles after one year's use, and its second belt has now come to an end of its life. This I chiefly put down to two things, first, the pulley; and second, dressing the belt with castor oil. The pulley is, and always has been, perfectly smooth, thus causing the belt to slip up hill, and this slipping has a very deleterious effect on the belt, causing it to stretch. The pulley is also of an irregular V shape and too small for the belt, which, however, fits the back wheel perfectly, so that only the two lower plies of the belt fit the pulley. This also has a deleterious effect and prevents the use of the maximum permissible stress on the belt, causing also the rivets to start in the outer ply. The application of castor oil to the top surface of belt has, in my opinion, two effects. The first is to cause a thick black coating on the sides of the belt, which then require scraping, and the other to make the belt

soft, causing it to lengthen. The stretching of a belt implies a reduction in the area of its cross section, just as when an elastic thread is stretched, and also a lengthening of the rivet holes, the net result being a diminution in the maximum stress permissible. The cycle, however, is still sent up the same hills at the same speeds, resulting in an ever quickening rate in the shortening of a belt. During my last ride my belt was shortened twice in five hours, and is now useless. The only satisfactory dressing I know of is ordinary brown boot polish. Why do not makers supply belts with a steel band on the outside to prevent stretching?

In reply to a query I saw in "O.P.V." recently, the true reason, in my opinion, why a car runs better at night is due to the air being damper.—Yours faithfully
A. M. CLOSE.

Motorcycling in South Africa.

Sir,—I have been a subscriber to your most interesting paper since its commencement, having it sent out weekly by my people at home, and really you deserve great praise for the useful hints on motor management which it contains, and also the information on all racing events, etc., which are very interesting reading. I have purchased a 3 h.p. 1904 Werner machine, and although I had some trouble with it at first, through loss of compression, owing to a faulty piston ring which I had replaced, it is now running splendidly. I was rather dubious at first about purchasing a 3 h.p. machine for fear of overheating troubles, but if a proper mixture is used, I don't think that there need be much fear of this trouble occurring. On my 2 h.p. motor I have ridden all day with the temperature somewhere in the vicinity of 130 degrees, and the machine has not overheated, and we get some stiff hills in this Colony. Of course, I cannot say how my new machine will behave in the summer as this is our winter now, although it is fairly warm during the day. The free engine clutch on the Werner machine is, I consider, a splendid improvement. Also having the carburetter in the tank is another great improvement for this country, where dust storms frequently occur, and if one is not very careful the exposed carburetter is liable to get choked up. I might here say that my 2 h.p. bicycle was the first in this district, although there are four machines at present, and it was very amusing to watch the natives when passing them on the road, and even now I am asked by white people *where I light the fire!* Our only advantage over the old country is that we have no speed limit, unless it may be in the larger towns, but if a person has any respect for his life and machine he does not trouble about averaging more than 16 miles an hour. Of course, we have some good stretches of road, but they are few and far between. Recently I was out sheep buying, and was rather late in returning, as the roads were bad, until six miles from home; at this point it was all up hill, about 1 in 40, but in fairly good condition, so I gave the machine a little more gas, releasing the free engine so as to have a low gear, gradually advancing the spark and tightening the free engine until at the top. I was running on the high gear, and with little gas, covered the distance in 15 minutes without assistance from the pedals.—Yours faithfully,
F. J. WATKINS
Smaldeel, Orange River Colony.

O.P.U.

Rust in the Tank.

Sir,—I have read the letter headed "Rust in the Tank," from C. W. Taylor. I had the same trouble with my motor-cycle, but the "rust" is apparently not rust in the true sense of the word. It appears to be a very heavy oily substance—probably precipitated from the petrol itself. I found a simple remedy, that of taking off tank and thoroughly shaking up about a half-pint of methylated spirit in it. This entirely dissolves the sediment—or, rather, mixes with it—and it can be poured out of the tank. The supply pipe must also be treated with the spirit. If the methylated spirit is run through filter paper the whole of the deposit will be found on the filter paper, and the spirit can be used again—as it needs two or three rinsings with the spirit to entirely clear the tank. The exact nature of deposit I cannot say. It is very heavy compared with petrol.—Yours faithfully, R. HITCHINGS.

The Pedal Problem.

Sir,—May I claim space in your valuable journal to help C. E. Squire out of his difficulty? It stands to reason that the weight on the road wheels will remain the same, whether the rider stands on his pedals or sits on his saddle, for the attraction of the earth on his mass remains constant in whatever position he may be, and the wheels have to counteract this. But, now let us look at it mathematically. For the sake of simplicity, let us take the case when the crank is horizontal.

Suppose BO to be the crank, AC the chain, and let P be the weight vertically downwards, Q being the tension of the chain horizontal (or practically so). Produce these two lines of force to meet in D, and join DO. Now, since there are only three forces acting—viz., P, Q, and the thrust at O, the resultant of P and Q must pass through O; therefore, DO is its direction. Let this resultant be R. Then, by Lauri's theorem:

$$\frac{P}{\sin. ADO} = \frac{Q}{\sin. BDO} = \frac{R}{\sin. BDA}$$

$$\therefore R = \frac{P \sin. BDA}{\sin. ADO}$$

Now, let us resolve R horizontally and vertically. The horizontal component does not affect the problem, so we can leave that out. The vertical component is:

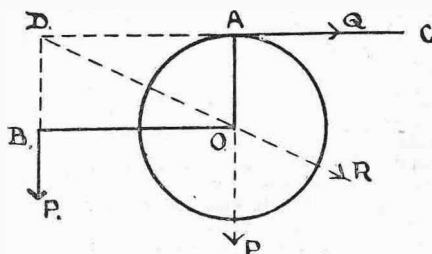
$$\begin{aligned} & R \cos. POR \\ &= R \cos. DOA \\ &= R \sin. ADO \\ &= \frac{P \sin. BDA \cdot \sin. ADO}{\sin. ADO} \\ &= P \sin. BDA \\ &= P \end{aligned}$$

since angle BDA is a right-angle.

Hence there is a downward thrust at O equal to the weight P, and, therefore, the weight on the road wheels is exactly the same as if the rider sat on the saddle, except that it would be more evenly distributed over both wheels. If the crank is not horizontal the same thing happens, only the calculation is a little more complicated.—Yours faithfully, D.N.P.

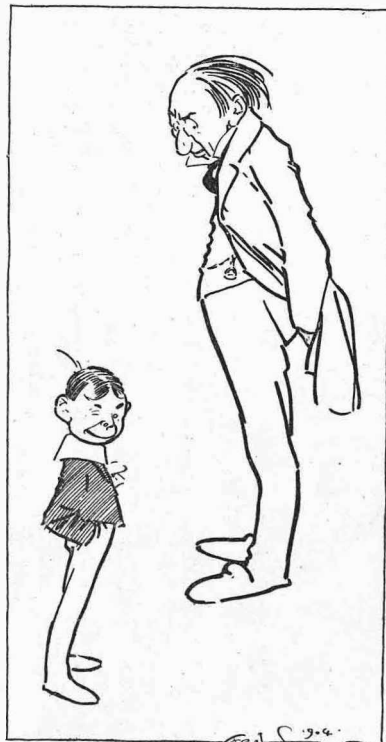
Concerning Use of Paraffin in Petrol Motors.

Sir,—The following statistics may be of interest to readers who are inclined to the use of paraffin in light motors. A Campbell oil engine of 15 b.h.p., running day and night driving pumps and dynamo, the average load of which amounts to 5.25 b.h.p., consumes 1.3 pints paraffin at 4d. per gallon. Cost per b.h.p. per hour equals .65d. A 3 h.p. M.M.C. petrol motor with surface carburetter, driving tri-car, developing on an average 2.5 b.h.p. at belt pulley on



Illustrating letter from D.N.P.

engine (from statistics taken on a tour of 2,000 miles) consumed .45 pints Pratt's "A" petrol per b.h.p. costing 1s. per gallon. The cost per b.h.p. coming out at .66d. per hour. The petrol cost is, therefore, much the same, but the amount used is only one-third, and it is also a lighter fluid. The cleanliness of paraffin can also be called into question, so there is not much room for it except for emergency, but it is just as well to have a carburetter suitable for both.—Yours faithfully, H. D. ROBINSON.



FOND PARENT: "And remember, my boy, things done in a hurry are never done well."

PRECOCIOUS YOUNGSTER: "Go on, Pa—how about the Gordon-Bennett?"

The Light Motor-bicycle.

Sir,—The various articles of opinion upon the "Light Motor," whilst being most interesting and instructive, have in many instances shown a sad lack of knowledge of the capabilities of the light motor, and given abundant evidence of the lack of average driving ability. I would wish to give as briefly as possible my views upon the matter, and my reasons for deciding in favour of the light motor, having both ridden light (70lb.) and heavy (200lb.) motor-bicycles. My first was a 70lb. machine, engine 55 by 60 mm. bore and stroke, outside fly-wheel. Results, maximum speed on track 35 miles per hour, road average 20 miles per hour easily, hill-climbing, any average hill without pedalling. On steep hills light pedalling was of material assistance, and if commenced soon enough practically any hill could be mounted. At highest speeds slight vibration was felt in the handlebar; this was attributed to a small fly-wheel, and was easily remedied. This machine was the most durable I have ridden. A 2½ h.p. 145lb. machine, with vertical engine, was the next mounted; this was unrideable at any great speed owing to vibration. A 3½ 170lb. machine, inclined engine, soon took its place. This was comfortable, could be run very slowly, good on moderately steep hills. On very steep hills, pedalling being useless, machine had to be pushed; impossible to start uphill, and very awkward to handle when not running. A well-known 2½ h.p. and an equally well-known 3 h.p. each had their turn, and were abandoned, the advantage gained by a big engine being entirely counterbalanced by their unwieldiness. My next venture was 60 by 70 mm., with outside fly-wheel, weight all on 90lb. This was far and away the finest machine I have ridden. It has maintained an average speed of 29 miles per hour on the level, has climbed any hill unassisted, which on the last-mentioned 2½ I have never succeeded in mounting even pedalling all out. My next trial for this season was a 2 h.p., with enclosed fly-wheel, 68 by 70 bore stroke, weight 120lb. This I found much handier than the larger powered machines, has an easy average of 25 miles per hour, will reach 36, is good on steep hills, with light pedalling, and is the most efficient machine of this type I have used, but is in no wise equal to the 60 by 70 previously mentioned. My present mount is a little 55 by 60 Featherweight, outside fly-wheel, and has speed and hill-climbing capabilities usually attributed to 2½ h.p. machines. The reason of my mentioning motors I have ridden is that it may be understood that the conclusion arrived at is not by a flight of fancy, but the results of a certain amount of experience and definite test, which prove beyond doubt that a thoroughly reliable, sufficiently powerful, comfortable and fast machine can be built to weigh considerably under 100lb., that a 40, 50, or 60 lb. engine on a proportionately heavy machine is absolutely unnecessary. I notice, however, this letter is assuming proportions I had not intended. I, knowing the value of your space, will reserve my opinion of what is necessary for general efficiency or the ideal motor-bicycle for a later issue.—Yours faithfully, JAS. L. NORTON.

320, Bradford Street, Birmingham.

[Several interesting letters dealing with this subject are unavoidably held over.]

O.P.U.

Dust in the Engine.

Sir,—As the above point is of vital importance, perhaps other readers will give their opinions and experiences on the subject, the more so as it appears to have been somewhat overlooked. The spray carburettor having come to stay and the dust being more or less always with us, it becomes a problem how to prevent it finding its way into the cylinder, which it certainly does on my machine and in most generous quantities; my carburettor is apparently specially designed with that view, being placed behind the cylinder and facing forward, and as I ride the dust is quite visible coming from the front wheel in straight, little streams, then sweeping round the cylinder, where it comes upon the carburettor waiting open-mouthed to receive it. The obvious solution is a nice fine gauze at the opening of the carburettor to arrest the dust: it sounds perfect; in practice, however, I have proved it to be quite useless, and I have had the satisfaction of knowing that, despite all such precautions as these, I have never yet cheated my engine out of a full supply of the best grinding mixture that it could swallow. Now, it stands to reason that if gauze is to be of any use it must be fine enough to stop the dust; goodness knows how fine that would be! At any rate, if it did stop it, it would itself get effectually stopped up, to the exclusion of further air; and after two years' riding I have never yet met with this trouble, despite using gauze 80 to the inch. The makers of my machine appear to have regarded gauze as useless, for there was not a scrap either on the inlet to the carburettor or in the induction pipe. It does not matter, really, if the carburettor draws air from below or above, frontways, or any other way; the dust in dry weather is in the air and will be included in the explosive mixture, and the only way to keep it out appears to be to muzzle the air openings with some form of filter. I would suggest a box of fair size containing a bundle of waste or a sponge easily re-

movable for cleaning out; but the extra air inlet must of course draw through this filter also, and the only way that suggests itself of preventing dust being drawn through the exhaust box when the valve is lifted is to accommodate this commodity as far from the ground as possible. In the surface carburettor, the air inlet being so high up, much less dust was drawn in, and of course that portion going through the petrol would be precipitated to the bottom of the liquid.—Yours faithfully,
E.C.W.

Six Volts for Good Ignition.

Sir,—May I ask what Mr. J. Moss Morgan means by "a nominal six volts" and "six volts (which by the way soon gets below six volts)" in his letter recently published in "THE MOTOR"? Is he referring to dry batteries or to accumulators? If to the latter he is certainly wrong. A three-cell accumulator, when fully charged, should give about 6.6 volts; this will rapidly fall to six volts, at which it will remain very constant until almost exhausted. If Mr. Moss Morgan uses a 6-volt battery with a coil which is intended for four volts, his battery will of course get run down sooner than if he used a 4-volt battery of the same capacity; for the higher the voltage the heavier will be the current forced through the coil. But nearly all ignition coils are made for a 4-volt battery, and in such a way that the smallest current necessary to produce an effective spark is consumed. Mr. Morgan tells us, though perhaps unconsciously, that the coil-maker does not know his business; possibly the makers of most of the cheap foreign coils do not. There is a certain well-known make of English coil which will give a thoroughly effective spark for exploding the mixture in a petrol motor, with a 4-volt battery and the consumption of only half an ampere on ignition, or three amperes on short circuit, that is with trembler or contact breaker blade fixed, so as to pass the current continuously without a break. I know a coil on a good make of French car, with which it is found necessary to use a 6-volt battery; it consumes on ignition about three amperes, and on short circuit more than 16 amperes. Just think of short circuiting the accumulator

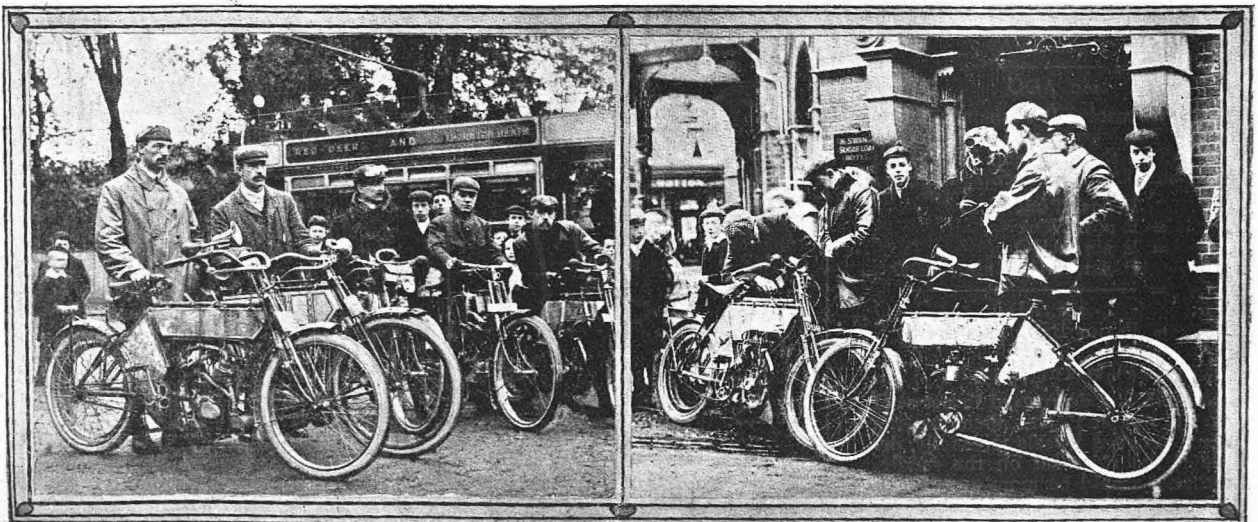
through that coil in the adjustment of the trembler, and so taking 16 amperes from it, whereas its normal output is probably about 2 amperes. My advice to motorists, especially to motorcyclists, is buy the best coil obtainable (and in so doing you will as likely as not patronise a British firm) in spite of the initial expense.

With regard to your lightweight movement and the bicycle itself I entirely agree with you, though I do not consider the trembler coil superior or preferable to the non-trembler. Apologising for the length of my letter, I cannot conclude without a word of congratulation on the excellence of "THE MOTOR."—Yours faithfully,
Y 321

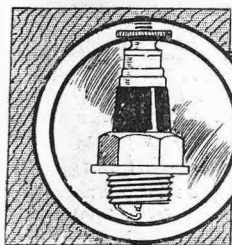
Lights on Vehicles in Lincolnshire.

Sir,—Although we were unable to induce our county and county borough councils to pass a by-law for lights on all vehicles, we were able to induce them to go part of the way, and have decided that we may now endeavour to have the present exemptions, both as to seasons and vehicles, removed, and all vehicles be included all the year. In our efforts we need the aid of every automobilist in Lincolnshire, as well as of all cyclists. We all realise the need of what is known as "universal lights," and, with the roads in very great use and fast motors about, we feel it is desirable that all vehicles should carry a warning lamp at dark, to "indicate their presence and whereabouts." To secure this, we must convert the councils, and to that end we ask motorists to endeavour to win over their nearest town or county councillors, and to send in to me a brief summary of accidents caused through lightless vehicles. The regrettable accident to the Duke of Connaught will draw attention to the danger of unlighted vehicles and will aid us in our campaign. We are approaching the various councils in the same way that we did before, so successfully, and hope that we shall on this occasion be assisted in the way indicated. Prompt and concerted action is necessary, and that is why we, the Lincolnshire Centre of the National Cyclists' Union, appeal to our motoring friends for their support.—Yours faithfully,
G. J. WILKINSON,

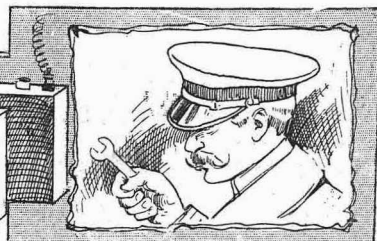
Hon. Sec. Lincolnshire Centre, N.C.U.,
18, York Avenue, Lincoln.



The Croydon Motor Club non-stop run. (1) Starting from South Croydon. (2) Discussing the Rover's points. (See page 315, last week's issue.)



OUR INFORMATION BUREAU



SPECIAL NOTICE.

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

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

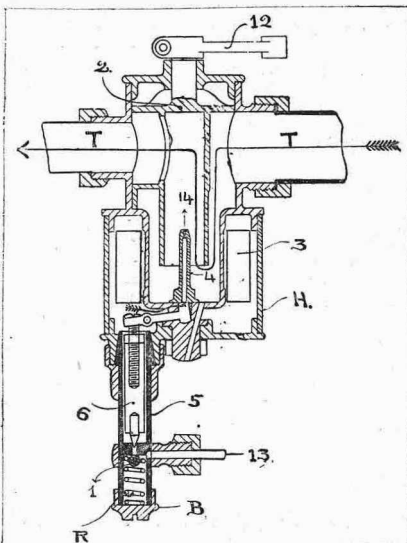
F. Hills (London, E.C.)—From the diagram of engine you send it has a striking resemblance to the Gaillardet engine. These were popular on French tricycles at one time. The Paris address was 41, Quai de Suresnes.

L.J.L. (Malnesbury).—The cost of charging accumulators is exactly the same whether you use a lamp as a resistance or coils of wire. Of course, if you use the lamp for lighting at the same time the accumulator is charging it practically costs nothing, as you would use the current in any case.

J.S.T. (Hastingsden).—(1) We will give the matter consideration. We might say, however, that yours seems to be an exceptional case, as we have had numerous testimonials from readers showing that the firm deal very fairly with their clients in the way of repairs and replacements. (2) Your gear ratio would approximately be $4\frac{1}{2}$ to 1.

The De Dion Carburettor.

S.B. (Keswick) asks for diagram and details of the De Dion spray carburettor. A sectional diagram is appended. One of the main features of this carburettor is the arrangement for keeping the petrol at a constant level in the jet. The various parts depicted are (1) gauze cap to filter the petrol; (2) regulator valve; (3) hollow metal float shaped like a ring; (5) connecting tube to body of carburettor; (6) weighted needle valve; (12) regulating handle; (13) petrol admission pipe; (14) petrol jet or sprayer; (B) cap to close end of connecting tube and support spring (R), which holds the needle valve seat in position. The arrow (T) shows the path of part of the air admitted which intermingles with the petrol spray. The regulator (2) is constructed in such a way that the air admitted to the carburettor is split up into two parts—one as just described, and the other passing direct to the mixture. The proportion of air and petrol-saturated vapour can thus be varied.



Illustrating reply to S.B. (Keswick).

The Hitchin-Wellor Gear.

F.F. (Canterbury) writes:—(1) Can you give information regarding the makers of the Hitchin-Wellor gear, and if they are a firm likely to be able to meet their guarantee of three years? (2) Do you know of any of your readers who have used the above-named gear? (3) Can you recommend any other firm as building inexpensive light vehicles, suitable for quick delivery of 10cwt. of goods?—(1) We presume any firm giving such a long guarantee are fully prepared to satisfy their customers. (2) Perhaps some of our readers might be able to give their experiences of this gear applied to motor-cars. (3) Most of our motorcar advertisers supply delivery vans: if you make a selection, after fully stating your special requirements and number each one, we might be able to better advise you.

Nov. 8th.

Nov. 15th.

With Preliminary Details.

THREE
SPECIAL
SHOW
NUMBERS of
"The MOTOR."

November 22nd.

With Fully Illustrated Report.

"Diameter" (Preston).—If the inlet pipe is short and without bends you would not gain appreciably by fitting a larger one, but you could fit a $\frac{1}{4}$ in. exhaust pipe with advantage.

A.E.B. (Hull).—Possibly there is some slight wear in the connecting rod bearings that causes the clanking in your engine. We should advise you also to have a look at the top of the piston to see if it is coated with burnt oil. Deposits of this nature have a strong tendency to cause premature ignition.

A.V. (Catford).—(1) If you intend using the machine for general road work you would be better suited with a $2\frac{1}{2}$ h.p. engine. (2) It is a very simple motor, and there is not much risk of breakage of any part. (3) Three shillings should easily cover expenses for petrol, oil, and current. (4) For recharging a 10 amp. hour accumulator the general rule is to charge about 9d. to 1s.

Expense of Running a Car.

This is so important a matter to many that we reproduce our enquirer's letter in full. J.W. (Monmouth) writes:—I want badly to start a car, but am deterred by fear of the expense. At present I run about 4,000 miles during the year on my motor-bicycle, and my average bill for horse hire is about £25; railway fares about £10. You have kindly given me your advice once or twice in the past, which has been greatly appreciated.—"J.W." gives also a list of probable car expenses, and mentions thereon 8 or 10 h.p., costing £200, to average 5,500 miles per annum, and also to be used for delivering goods up to 5 cwt. load. For £200 a first quality light car could be procured from most of our leading makers, which could be relied upon to do its work with a modicum of attention. Mileage would work out roughly at 18 per day for 300 days, excluding Sundays, and from the tone of "J.W.'s" enquiry the major portion of this distance would be for business purposes. The weight to be carried, in addition to the driver, would preclude high speeds, and would therefore not be such a great tax upon the engine or working parts as a purely pleasure vehicle. We would suggest pneumatic tyres for the front and solid tyres for the driving wheels, with 90 mm. section front tyres. A folding waterproof hood to cover up both goods and driver must be part of the scheme, and would perhaps add £10 to initial cost. A moderate gearing for the hilly country around Monmouth would be desirable. If carefully driven, the repair bill should not be heavy; and, including renewals, repairs to mechanism and tyres, petrol and oil, we should roughly estimate running expense at £52 per annum for a mileage of 5,500. It is impossible to estimate depreciation, as this varies with every car and the manner it is looked after.

BUREAU.

Henry S. Bilbe (Clapham, S.W.).—Accept our best thanks.

R.L. 320.—As long as you get good sparking at the plug you need not worry about the ticking in the coil: this is simply an electric static effect inside the coil.

S.R.W.—The "Acetyphote" lamp by Lucas and Co., Birmingham, should suit you as well as any. The other make you refer to gives an excellent light, but is scarcely so strongly constructed as the "Acetyphote."

N.D.P. (St. Helens).—Yes, you should get a very good mount (secondhand) at the figure you mention. The $\frac{2\frac{1}{2}}$ h.p. machine you refer to is not powerful enough for tri-car work, but good as a single. If going in for it make certain the magneto ignition apparatus is in good order. If it has had a lot of wear you may have trouble with it.

G. Dawson (Glasgow).—To use a single coil to fire two cylinders you would require a high tension distributing switch. You had better use two coils. We fancy that a couple of Fuller "Midget" coils would fit the compartment you have: they are very small and powerful coils. The trembler will work quite well at 2,500 revolutions. No ordinary coil will spark two plugs in series or parallel satisfactorily.

Motor Brougham Wanted.

J.T.D. (Oldham) desires the names of first-class manufacturers of motor broughams in the North of England. Perhaps the Hozier Engineering Co., Ltd., Bridgeton, Glasgow; Messrs. Humber, Ltd., of Beeston, Notts; Lanchester Engine Co., Ltd., of Birmingham; Star Engineering Co., Wolverhampton; Duryea Co., Coventry; Eagle Engineering Co., Ltd., Altrincham; Wolseley Motor Co., Ltd., Birmingham; Belsize Motor Co., Ltd., Manchester (all being actual makers) might be able to supply you.

Some Car Tips.

W.P. (Colchester) writes:—(1) An 8 h.p. De Dion engine on a Progress car smokes badly at the exhaust; this has only recently developed. Valves are nicely ground in and exhaust valve spring stiff. Pratt's "A" quality spirit is used. (2) Leather-faced clutch slips first thing in morning, but gets right after 10 or 15 miles.—(1) Try giving the lubricating oil in *small* charges at frequent intervals instead of one full charge at a longer period: perhaps there is a quantity of spent oil in the crank chamber which needs drawing off. We would recommend you to drain off *all* the oil from crank chamber, then wash out crank chamber well with paraffin, and let it drain all night; put in fresh quantity of lubricating oil in morning—at least two full pump charges. Start engine up in the open air, after cleaning with paraffin, as the first few of the exhaust strokes will be very pungent. (2) Inject some Fuller's earth powder on to the clutch face by means of insect-powder bellows: these are sold by most chemists at 6d. to 1s., and are useful to carry on every car. The engine query we have replied to by letter.

C. Stanford (Christchurch, N. Zealand).—We should recommend a Minerva $\frac{2\frac{1}{2}}$ h.p. in preference to those you mention.

F. Ashley.—Re your enquiry as to the makers of Barter engine, write Messrs. Humpage, Jacques, and Pedersen, Luckwell Works, Ashton Gate, Bristol.

BO1000.—You could do considerably better. In fact, if you think of going in for a vehicle of the class you mention it would be worth your while to get a small car, such as a Wolseley, Humberette, or Star. Amongst fore-carriages, the following are worth your consideration: Humber, Phoenix, Rexette, Riley. These are all fitted with two-speed gears.

A.E.C. (Bruton, Somerset) writes:—I have a Little Wolseley car, and was told that one Parsons non-skidding device on the back wheel was all that was necessary. I find the one chain is quite sufficient to prevent skidding, but I am now told by a friend that having it on one wheel only will strain the differential and damage the chain.—We are using a 6 h.p. Wolseley every day in the week over the greasy London streets, and as a non-skidder have found a single Parsons chain on one driving wheel quite effective. You need be under no apprehension as to the chain damaging any portion of the car or tyre.

The Throttle.

C. Black, Junr. (Upminster).—(1) We should advise you to have a look at the throttle to see that it really continues to open as the lever is pulled forward. It sometimes happens that a throttle opens to a certain point and then closes again. (2) Yes, use as much air and as small a quantity of gas as possible. (3) A leak past the piston, or else a hot bearing; see that the lubrication is all right. (4) We question if you will find the wind scoops much use. (5) Better wait some time before going into the two-speed gear question. It would be awkward to fit one to your mount. (6) Yes, a good fan and two-speed gear can be made to work all right: as an instance, the Phoenix Trimo works on this principle. (7) The back-fires are due, doubtless, to an accumulation of charred oil in the combustion head. (8) Yes, you could with advantage let the clutch slip a trifle in climbing hills, as it gives the engine a chance to pick up.

A Car for a Doctor.

Dr. H.—(North Shields) writes: I am thinking of buying a motor in place of a horse. I am a medical man in town practice and want a light car, the principal desideratum being ease of management and reliability: speed no object. At present my choice lies between 6 h.p. Wolseley, 6 h.p. De Dion, 5 h.p. Humberette, and the Baby Peugeot. Can any of these be fitted with solids when used for regular professional purposes?—All the four cars mentioned are good ones. We know that the Wolseley Company have fitted solids to a number of their cars, and, for your special requirements, we think you might have one of their 6 h.p.: be sure and specify large-size solid tyres of the *best* quality and have a folding hood with detachable side curtains and a detachable glass screen above dashboard, and you will be quite weather proof. You will be satisfied, we think, with solids at moderate speeds.

A.R. 523.—You would have to gear not lower than 1 to 4 $\frac{1}{2}$ to get 30 miles per hour. This would mean that the steepest hill you would get the machine up without pedalling would be about 1 in 11. In order of merit we place machines thus:—3, 1, 5, 2, 4.

Size of Valves for Car Engines.

J. E. Harris (Chester) writes:—(1) Could you favour me with any particulars or formulae in connection with the size of valves for different sizes of petrol engines? (2) The valves of my 8 h.p. Darracq are exactly the same size as the 6 $\frac{1}{2}$ h.p. Darracq. Has the lift of the valve (which would give a greater area) anything to do with it? (3) What speed can be got out of the Eagle runabout? (4) Could the present top speed be made high enough to give a speed of 40 m.p.h.? (5) I believe this machine has a 6 h.p. engine.—(1) Scientific formula is not relied upon for valve sizes: these are usually arrived at by experimenting. (2) There is a limit to the possible lift, and if this is exceeded power is lost, as valve (if automatic) will not close quickly enough at high speeds. (3) Has been timed, we believe, up to about 35 per hour. (4) Quite possible. (5) Yes; larger h.p. fitted if desired by purchasers.

ANSWERS BY POST.

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

Monday, October 24th.—Wm. Hamilton (Motherwell), J. E. Maiden (Southport), A. N. Orr (Preston), "Surrey" (Worcester Park), J. P. Walmsley (Wimbledon), R. Good (Edinburgh), P. K. Newcome (Margate), T. S. Hargreaves (Clitheroe), A. Linton (Clydebank), Dr. Tylecote (Bradford), T. Benger (Coventry), C. F. Langley (Salisbury), E. W. Kitchen (Thame), A. Neigh (Stoke-on-Trent), Dr. Oliver (St. Boswells), P. Dewar (Lochwinnoch), Dr. Morgan (Ladbroke Grove), J. Richardson (Lebury), C. Gates (Bury St. Edmunds), R. Kingsford (Forest Hill).

Tuesday, October 25th.—A. E. Robinson (C.-on-M.), Lieut. Charlton (H.M. Yacht "Victoria and Albert"), T. C. Murphy (Islington), G. Glover (Warwick), J. Thorburn (Newport), H. E. Maw (Birkenhead), W. Brooks (Manchester), Thos. Hills (Ashford), S. B. Tritton (Surbiton Hill), — Helsham (Beccles), W. Sanderson (North Shields), W. Mudie (Ely), B. E. Patmore (Leeds), J. Lacey (Littlington), E. F. Davies (Beckenham), C. E. Woodward (Bolsover), Chas. F. Ormrod (Birmingham), Capt. Carey (Hythe), H. H. Frowde (Eastbourne), D. Gill (Glasnevin), A. M. Smith (Navaan).

Wednesday, October 26th.—D. Webster (Sutton Bridge), J. H. Howard (Stoke-on-Trent), J. Mason (Bradford-on-Avon), Professor Procter (Leeds University), A. J. Trace (Kensal Rise), C. R. Taylor (Penistone), W. J. Grimsdale (Enfield), — Porter (Shadwell), J. H. Edney (Fareham), J. J. Hulbert (Chichester), A. L. Watson (Cambridge).