

ALCOHOL VERSUS PETROL FOR MOTOR DRIVING.

By J. W. G. BROOKER, A.I.C.

The majority of the readers of "THE MOTOR" will be familiar with the phrase "The Petrol Problem." They will have learnt from the book and possibly, too, by hard experience that a change has taken place in the petrol supplied to them. Its calorific value, or explosive power, is practically unaltered; but the specific gravity is higher (rising from '680 to '720); and seeing that in the case of the light petroleum oils, the boiling point, which is the measure of volatility, varies proportionately with the density, it follows that the petrol now on the market is less readily vaporised than the earlier supplies. This change is, of course, most noticeable in the older type of surface carburetters, which were designed for the light petrol, and which will now have to be replaced by the spray type; because the specific gravity, far from falling to the original '680, must rise in future to a figure in excess of the present '720. Digressing for a minute to another fuel, allowing for the present rate of expansion, it has been calculated that, for all practical purposes,

THE COAL SUPPLY OF ENGLAND WILL HAVE CEASED AT THE
END OF 80 OR 100 YEARS.

Coal will still exist but only at excessive depths and in small quantities. At the same time we are witnessing a gradual rise in the price and a decrease in the quality. England is by no means the only coal containing country; other nations will find, when our supply diminishes, that it pays them to mine their own coal. France and America for instance; and the United Kingdom has yet to tap the great resources of India. A similar problem confronts us when we return to our petroleum. At the present time, the crude oil is obtained in large quantities in the United States of America, Russia, and Canada; and in small quantities from Roumania, India, Italy, Germany, and other places of equally little importance as far

as the wholesale production of petroleum is concerned. The United States at present supply almost entirely the world's demand for petrol. The crude petroleum occurs together with salt water 50 to 2,000 feet below the surface of the ground, and

IS OBTAINED BY SINKING WELLS AND COLLECTING THE OIL
AS IT FLOWS OUT.

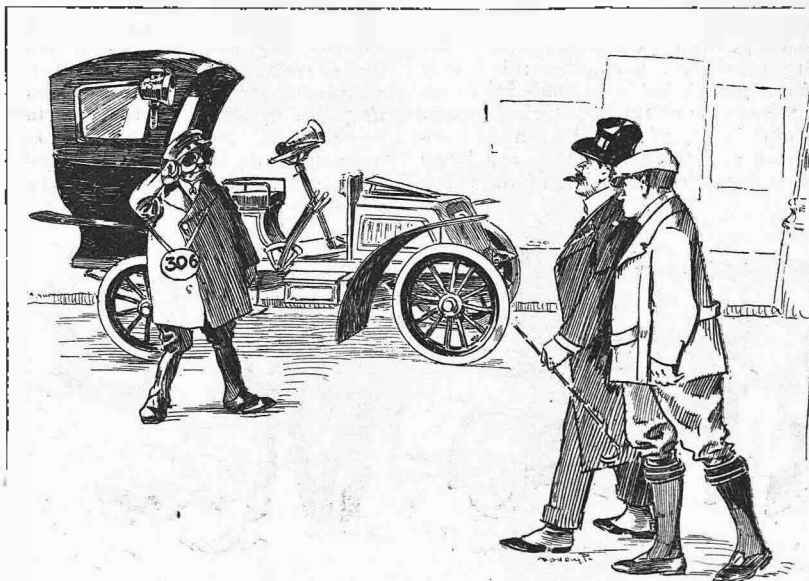
It is roughly separated into four portions by distillation from large iron retorts: (1) the very light oil, density '650 to '730; (2) a medium light oil for illuminating purposes; (3) a fairly heavy viscous oil for lubricating; and (4) a semi-solid residue from which vaseline and paraffin wax are obtained. The light oil used for motors is purified by washing with sulphuric acid, caustic soda, and water alternately, and subjected to a final careful redistillation.

During the last few years the production of this and other petroleum products has increased but slightly, and few new fields or petroleum areas have been opened up. In Russia, the district around Baku is the most important, but, so far, no petroleum found there or, in fact, in any part of the country, has proved of much use for the refining of light petrol, owing to its high density and small percentage of readily volatile constituents; so that for the purposes of petrol motors the production of petroleum in Russia need

not be seriously taken into account. In the issue of "THE MOTOR" dated July 29th,

A FIRM CLAIM TO BE
ABLE TO PRODUCE
SUITABLE PETROL
FROM RUSSIAN
PETROLEUM.

This will probably be by a process technically called "cracking," about which little is known; but the supply at best will be insignificant, and the price excessive. Canada, being the only petroleum producing British colony, deserves a little attention. The industry is mostly centred round Lambton, in Ontario; but there is believed to exist in the North-West



"CAB, SIR?"

A motor hansom, yes, but NOT a handsome cabman, alas!

district a field that will eclipse every other at present known. Curiously enough, nothing has yet been done there although, as the following figures show, the declining output is most marked.

Of every 100 gallons of petroleum used in Canada—

In 1891, 83.6	were Canadian and	16.4	American.
„ 1893, 80.2	„ „	19.8	„
„ 1895, 65.9	„ „	34.1	„
„ 1897, 62.7	„ „	37.3	„
„ 1899, 60.3	„ „	39.7	„
(Approx.)			
„ 1901, 58.0	„ „	42.0	„
„ 1902, 53.0	„ „	47.0	„

Compared with the annual import into England of about 156 million gallons of illuminating oil from the United States and 78 million gallons from Russia,

THE 20,000 GALLONS EXPORTED HERE FROM CANADA IS MERELY A DROP IN THE OCEAN, so to speak. With regard to the exhaustion of the petroleum resources, an eminent geologist predicted, as far back as 1886, a slow decline in the production; existing wells and fields would be depleted, and new areas would be increasingly difficult to find and exploit. A sure indication of this is the fact that the annual output from all sources has not appreciably increased during the last few years, in spite of the opening of new fields; and that the prices of the crude and refined products are rising. And as the crude petroleum only yields some 7 to 10 per cent. (very rarely more) of petrol suitable for motorists, it follows that, if the present rate of motor development continues—and continue it must—the supply which now is only just equal to the demand, will be quite inadequate a few years hence. Bearing all these points in mind, thoughtful motorists must agree that the action of the French and German Governments in fostering and encouraging

THE USE OF HOME-MADE ALCOHOL DESERVES THE HIGHEST COMMENDATION.

When alcohol is in universal use on the Continent, it is just possible England will be in the experimental stage, and years behind. From a patriotic point of view it seems a pity that we should be dependent on America for our fuel, especially as something equally good can be made at home. Alcohol is made in England from grains, such as barley and maize; and, to a slight extent, from molasses, the syrupy residue from the manufacture of cane and beet sugar; but owing to the regulations and restrictions with which the distiller is surrounded, he cannot utilise the materials to the best advantage, so that the price comes out just under the price of petrol, viz., 1s. 5d. to 1s. 6d. per gallon. As every gallon of alcohol that is not methylated pays a duty to the Government of 11s., it is obvious that the only fuel available is the methylated spirit costing nearly 2s. per gallon; but this latter, besides being rendered undrinkable, is made injurious to explosive motors by the addition of the denaturing agent. On the Continent the alcohol is manufactured from potatoes and beetroots, as in France and Germany there are large tracts of land little suited for the cultivation of anything else.

BY LONG AND NUMEROUS EXPERIMENTS AND TRIALS, the beetroots as now grown contain 12-13 per cent. of sugar, years back it was only 7 per cent., and the potatoes yield a very high percentage of starch. From the potato starch the alcohol is obtained by mixing the ground-up potatoes with warm water and malted barley; after several hours, the top clear liquid containing the sugar into which the starch has been converted is drawn off, cooled, and treated with yeast; after further standing, the liquid is heated with steam and the alcohol thus distilled off. Or the starch, by heating with dilute sulphuric acid, may be converted into sugar from which alcohol is obtained as above mentioned. From the beetroots, or beetroot molasses, the alcohol is manufactured by first cautiously heating with dilute acid, followed by the usual fermentation with yeast. Carried out as briefly described above,

THE ALCOHOL SPIRIT CAN BE PRODUCED FOR 10d. TO 11d. PER GALLON

with reasonable profit, so that, even allowing for the import tax of 5d. per gallon, the foreign spirit competes with the English product in the English market. The low price is due to the use of cheap materials to the best advantage without restrictions, and to the careful utilisation of all by-products. In England, the following points require most attention:—Firstly, a more efficient use of the raw material; secondly, the use of a suitable denaturing agent, such as petrol or benzene; thirdly, the extensive cultivation in England or Ireland of varieties of potatoes yielding the most starch (for it must be remembered that the grain that is now so largely used here comes from America); fourthly, partial relaxation of official restrictions and supervision, for which the manufacturer has to pay, and which, in actual practice, restrict a distillery capable of turning out 100,000 gallons weekly to a weekly output of some 30,000 gallons. Trials have already been made in France and Germany of the comparative values of alcohol, petrol, and a mixture of alcohol with petrol or benzene. It was found that, when provided with a suitable spray carburettor, the alcohol could be readily vaporised, that it exploded well, and did not foul the cylinder or sparking points; but

UNTIL THE CYLINDER AND CHARGE WAS WARM, IT WAS DIFFICULT TO GET AN EXPLOSION.

The motors, when worked with alcohol, gave off slightly more power than when petrol was used; but the rate of consumption of alcohol was greater. For example, if 10 lbs. of petrol suffices for 100 miles' running, 10 lbs. of alcohol would suffice for 80 miles; this deficiency would be balanced by the lower price at which alcohol could be sold. In the case of the mixture, one part of petrol was added to two parts of alcohol; this was found to ignite readily, and proved as efficient as petrol, except that 90 miles only, as against 100 miles, could be covered with 10 lbs. Then it must be remembered that 8 lbs. of alcohol occupies the same volume as 7 lbs. of petrol, so that the tanks would not require to be enlarged. With regard to the production of the requisite amount of alcohol, a small to medium sized distillery manufactures annually 1,000,000 (one million) gallons; if potatoes only are used, 40,000 tons would be required.



ECHOES OF THE RELIABILITY TRIALS.

HINTS AND WRINKLES.

New Sparking Plug Washers are never Gas-tight.

As a rule it will be found that when a new sparking plug is fitted in the motor a slight loss of compression may result, owing to the new copper and asbestos washer not being a perfect fit. Some riders try and remedy this by screwing up the plug extremely tight. This is not to be recommended, the tip being to leave the old washer on the plug, when it will be found that this makes a gas tight seating.

Repairs to Celluloid Accumulator Cases.

The repairing of a crack in a celluloid accumulator case is a simple enough matter if one has the proper materials at hand. These consist of, first, a small quantity of a liquid known in the chemical trades as amyl alcohol or acetone—this has a remarkable odour of ripe pears and is a volatile liquid that is a splendid solvent for celluloid; second, a piece of thin sheet celluloid is required, such as a piece from the panel of a damaged bicycle gear case. Almost any cycle repairer can, as a rule, lay his hand on a piece, as it is used for many odd accessories. The liquid acetone is not so easy to get; a

local chemist probably would not know the stuff at all. A good plan is to obtain it from a firm like the County Chemical Company. All that is necessary to effect the repair is to cut a piece of the celluloid to cover the crack in the case and then just wet both the surfaces and stick the celluloid over the crack. It will adhere strongly and make a good repair. If it is necessary to have to open the top of a case to remove the plates the best way is to lift up a corner of the celluloid where it is folded over the lid and then pour a little of the liquid underneath, when it will be possible to unfasten it completely.

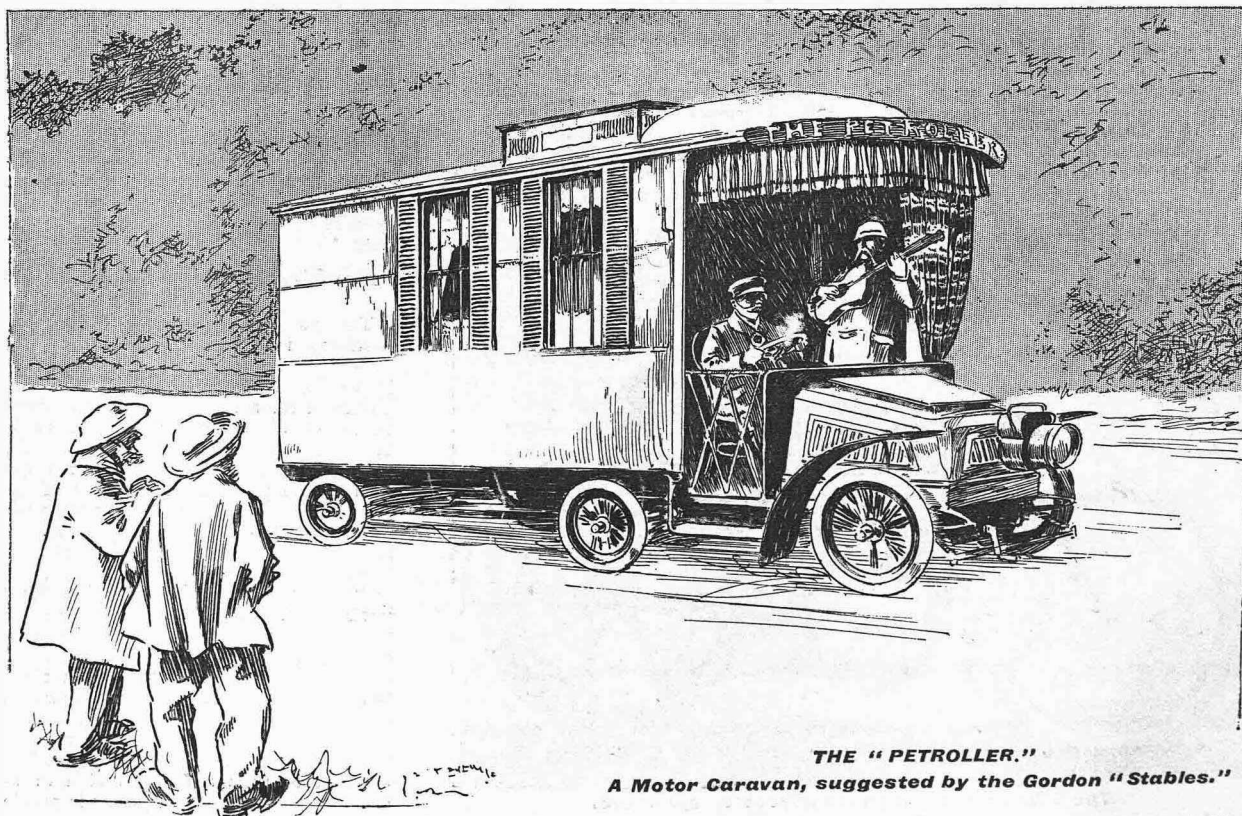
Clean out the Crank Case with Paraffin occasionally.

It is a good plan to give the crank case a good clearing out with paraffin, say, after every 600 miles' running. The used lubricating oil should be run off first and then the paraffin injected through the crank case connection to the oil pump. The machine should be mounted on the stand and vigorously pedalled to get the paraffin into all the bearings: then let the machine stand for a few minutes and drain off the paraffin. Then give another injection of paraffin and drain off, and if neces-

sary another till it appears to run off practically clean. It is surprising what a lot of grit and black residue will come away with the paraffin. The motor should be allowed to thoroughly drain for a few hours, or an injection of petrol will absorb the surplus paraffin, and then it should have two good charges of oil injected and the machine pedalled vigorously again. This last detail of relubricating is of the utmost importance and must under no circumstances be forgotten, otherwise there is a risk of the motor being ruined through the piston bearings seizing. A marked increase in freedom in running will be noticed after a motor has been well cleaned and lubricated.

A Loose Motor Pulley.

If the motor pulley should wear loose, probably owing to a defective key or keyway, immediate attention should be given to it, as it is a fault that rapidly gets worse and finally it may result in the keyway becoming so much stripped that a new shaft is the only remedy. A good repairer is generally able to fit a new key if it is taken in hand pretty soon. It is of great importance that the pulley be absolutely "solid" with the shaft.



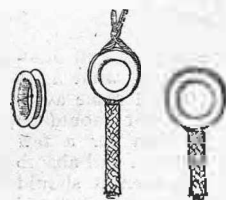
THE "PETROLER."

A Motor Caravan, suggested by the Gordon "Stables."

A PAGE OF NEW THINGS.

A Handy Terminal Connection.

Although many terminal connectors have been introduced, we think that the one illustrated is one of the simplest and easiest to fix we have tried. It consists of a brass eyelet grooved, and having a loose flange. The cable is stripped of its insulation for $\frac{1}{2}$ in., and the strands divided



into two parts. These are looped round the eyelet, twisted up tightly, and tucked under the flange. A light blow with a hammer over the top rivets the eyelet up, and makes a thoroughly neat and efficient job. The terminals are called the "Simplex," and are sold by H. Andrew and Co., Yealmpton, near Plymouth, at 1s. 1d. a box.

The Improved "Bichrone."

The latest pattern "Bichrone" two-stroke motor can now be delivered upon receipt of order. It is much stronger than the original design, the crank case being made of phosphor-bronze instead of aluminium, and the shaft is $1\frac{1}{4}$ inches in diameter in place of the previous $\frac{3}{4}$ of an inch.

The exhaust port is now on right-hand side of cylinder, and the sparking plug is fitted on the right of cylinder head. For the safe fixing of the fly-wheel the plan adopted is to screw it to shaft in the direction of drive, and it is then locked with a nut. The pulley is screwed to the fly-wheel between it and the crank case. The usual fitting is for flat belt, but any other pulley can be supplied to order.

The Vau's carburetter is included with the set. The "Bichrone" motor is sold complete ready for fitting in the following sizes: $2\frac{1}{2}$ h.p. for bicycles; $3\frac{1}{2}$ h.p. water-cooled for fore-carriage; and for car, marine; and stationary motors, water-cooled for fore-carriages; and for are four-cylinder engines. The sole agent for the "Bichrone" motor is Mr. J. C. Hencke, 41, Seething Lane, E.C.

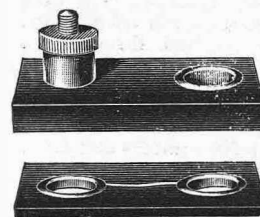
A handy basket, especially constructed for fitting under trailers or side-carriages is now stocked by Messrs. Lyons and Co., Ltd., East Street, Baker Street, W. Leather straps are provided, and it is lined with waterproof canvas. It also has an effective fastening. These have been made to meet the wishes of purchasers of the "Trafalgar" side-carriage, but they will be found equally useful for other makes.

A De Dion Plug Improvement.

Messrs. De Dion Bouton have considerably improved their sparking plugs by now soldering the copper cap on the porcelain of the plug with an alloy of copper and aluminium. Formerly it was a very difficult matter to get the cap to adhere to the porcelain in a secure manner, but by the new method of fixing the cap this is now obviated.

A Safety Fuse for Accumulators.

The illustration shows a small fitting introduced by Messrs. Davis, Kent and Stewart, 17, Berners Street, Oxford Street,

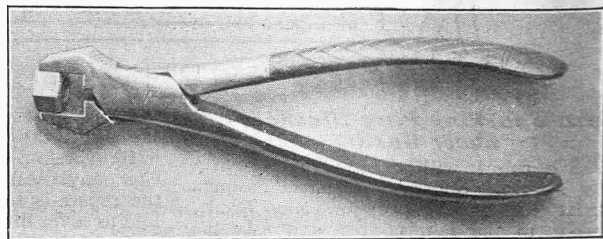


London, to prevent the possibility of the cells being short circuited by any mishap to the wiring. It is simply necessary to fix the fuse to one of the terminals and attach the wire to the terminal of the fuse. They cost 1s. per set.

We have received a sample of the "Davison" motor-bicycle stand made by A. C. Davison, 366, Camden Road, London. Its two special features are simplicity and efficiency, it being only necessary to wheel the machine into the stand when it tilts up and holds it securely. It is a good and cheap line at 7s. 6d., and we can recommend it.

A Handy Nut-gripping Pliers.

The tool illustrated will be welcomed by many motorists who have found the ordinary spanner an inconvenient tool to reach nuts placed in awkward positions. This tool is



Taylor's Nut-gripping Pliers.

made in the form of a very strong pair of pliers, with the jaws cut to such a shape that they remain approximately on the square within a considerable range. The handles give an excellent grip and leverage. A great advantage is the saving in time when a lot of unscrewing and screwing-up of different size nuts has to be done. It is small enough to carry in the pocket or tool bag. The maker has sent samples for us to test, and we can speak of it as being a useful and well-finished tool. There are two sizes, one taking nuts from $\frac{1}{4}$ in. to $\frac{1}{2}$ in., and the other from $\frac{1}{2}$ in. to 1 in. The maker is A. G. Taylor, "St. Ives," London Road, Norbury.

To repair De Dion Plugs.

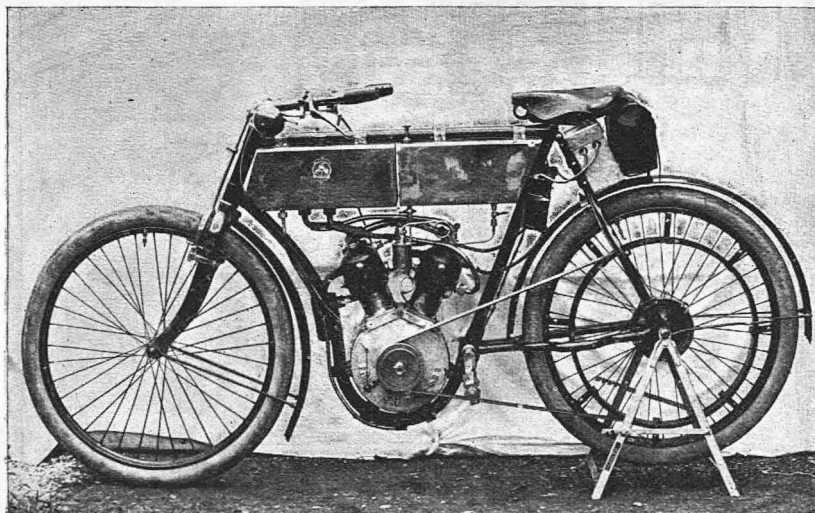
A useful line for those motorists who like repairing their De Dion spark plugs has been introduced by Messrs. Riches, 4, Gray's Inn Road, London, E.C. It is a



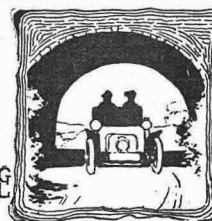
replacement porcelain with sparking wire and terminal complete, guaranteed to fit the shell of the plug accurately. The price comes out at the low figure of 8d., so that there is a good saving on the price of a new plug.

Double-cylinder Water-cooled "Iris."

The two-cylinder "Iris" bicycle illustrated is driven by a 5 h.p. water-cooled motor and has a free engine clutch. It weighs 150lbs., and will carry water sufficient for a run of 200 miles. As will be noticed, it has no chain. Fixed foot-rests are provided, and these are fitted with pedals simply to allow for a variation of the position of the foot of rider. A good show of "Iris" bicycles will be exhibited at the Stanley. The motor is mounted in a specially designed loop frame, and drives by a flat belt. The accumulators are carried in a box on the back forks. Two brakes are provided, viz., a rim brake on the front wheel and a band brake on the rear hub. The machine is started in the manner usual with pedalless motor-bicycles by running alongside for a few yards and then jumping in the saddle. The great reserve of power enables the machine to take the steepest of hills and for a side or fore-carriage attachment the power is ample.



The 5 h.p. "Iris" with water-cooled cylinders.



SOME TOURING NOTES—Concluded.

There is no difficulty in procuring petrol in Holland. The laws regarding the storage of this, to motorcyclists, indispensable commodity are far less strict than ours in England, and I was usually served from drums holding about fifteen gallons; the quality was good: it is only necessary to see the huge oil wharves at Rotterdam to understand why the supply is so plentiful.

As we are by this time running through Germany, it is time I made a few remarks on motorcycle touring in this country. I would refer first of all to some remarks of mine which appeared in "MOTOR CYCLING" last year. The roads in Germany are all macadam, except in the towns and villages, where cobbles predominate. When it is remembered that Germany is essentially a military country, and that the roads were designed for the rapid movement of infantry, not to mention cavalry and the transport of heavy artillery, their all-round excellence is not to be wondered at. There are distinctions in the quality of the roads: in the Rhineland they are supremely excellent—simply magnificent, indeed—but this is not to be wondered at, for they were built by that prince of road-makers, Napoleon Bonaparte. We must not forget that the Rhine was for a long time the boundary line between France and Germany, and we must be thankful for the militarism which keeps these splendid roads in such good repair. In Baden, and South Germany generally, the roads are not quite so good as elsewhere, but far better than many English highways. Long and stiff gradients are not unfrequently met with on German high roads, especially where the road crosses a range of hills instead of skirting it. I have in my mind's eye a steady gradient of some five miles long, averaging 1 in 10, up the last half mile of which I had to push the machine owing to an overheated cylinder. The tourist will be well advised in such cases to stop at intervals where the gradient eases slightly, and re-starting is possible, in order to allow the motor to cool; and, above all, lubricate freely! On the whole, however, the German roads, if not so perfect as the French, are well engineered, although the "pave" (German "pflaster") which is so freely used in the towns is torture to ride over. Fruit trees are planted at regular intervals by the roadside (they are Government property, so must not be robbed), and afford shady riding. Level crossings are frequent, and care must be taken in approaching them, a bell usually giving warning that a train is due. In Germany a bar replaces the gate used in this country.

Petrol is obtainable everywhere. "Benzin" (which is not benzine, but petrol) or preferably "motor benzin" should be asked for. If there is no motor depot in the place (though this is not often the case), the "Droguerie," which is a cross between an oil-shop and a chemist's, will supply the spirit, and as often as not lubricating oil as well. Care should, however, be taken that the oil is for air-cooled engines, for, as likely as not, water-cooled oil will be first tendered if the motorcyclist's want is not carefully explained. This happened to me once, but it was the only oil obtainable, and I ran some twenty miles before I could get air-cooled oil, without any ill effects however.

The "Deutsche Radfahrer Bund," which is the equivalent of our C.T.C., has made the same arrangements in every town and village as our club, and membership of the one carries with it reciprocal membership of the other. The British tourist should apply for a certificate of temporary membership. Accommodation is good and cheap, and the same adjectives apply to the food: the tourist must, how-

ever, be prepared to put up with the national cuisine for the nonce, and very good it is too!

As regards the duty, it is twenty-four marks for 100 kilos., which works out at about 1½d. per lb.; but if the Customs officials are shown that the machine is used for bona-fide touring there will be no difficulty, and no duty will be charged. It is for this reason that a brand new machine should not be taken to the Continent; in any case, no sensible motorcyclist would go on a long tour with a new and untried machine. No driver's licence is required in either country for a moderate stay. There is a tax on motorcycles in Holland, but this is not exacted from the tourist.

Germany caters well for the "man of moderate means." High prices are the exception in the country.

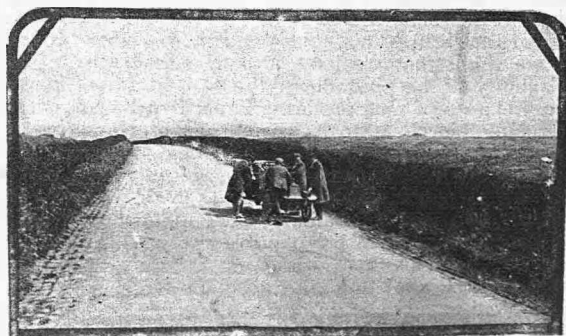
One last word: take plenty of spares. Don't forget that your machine is of foreign make, and that the only parts you can rely on getting to fit are sparking plugs. German motor repairers are clever and moderate in their charges.

A list of words and phrases given below will be of use to the motorcyclist touring in Holland and Germany:—

ENGLISH.	DUTCH.	GERMAN.
Bolt	Schroef	Schraube
Nut	Moer	Mutter
Screw	Schroef	Schraube
Accumulator	Accumulator	Accumulator
Wire	Yzerdraad	Draht
Pipe	Buis	Rohr
Petrol	Benzine	Motor Benzin
Paraffin	Petroleum	Petrol
Oil	Olie	Maschinen Oel
Tyre	Band	Pneumatik
Rubber	Rubber	Reif Gummi
Lamp	Lamp	Lampe
How far is it to?	Hoe ver is het naar?	Wie weit ist es nach?
Which is the way to?	Wat is de weg naar?	Welches ist der Weg nach?
Right	Rechts	Rechts
Left	Links	Links
Straight ahead	Recht wit	Gerade aus

I trust these hints will be of benefit to the intending tourist, and it now only remains for me to wish him a pleasant and enjoyable holiday.

"PETROLIA."



STRANDED I



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

Conducted by

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OPINION

What shall be the Racing Standards for 1904?

From a circular letter, which has been issued to the Trade by the sub-committee appointed by the Auto-Cycle Club for the purpose of drafting new racing standards for 1904, it would seem that the standard of classification by weight which has ruled the racing world during the past season is to go by the board, and that cylinder capacity is favoured as the basis of a new classification. We cannot say that we altogether agree with the idea of abandoning the weight limit. True, weight limit alone is insufficient, and we have seen in Continental events how it tends towards packing into a cycle frame the highest powered engine that the weight limit will allow, cutting down the margin of safety in the cycle frame to the absolute vanishing point, and depriving the machine of many really essential fittings. On this side, racing men and those makers who have sought the racing advertisement have been content to travel slowly in the direction of fining-down of weight—probably being compelled thereto by the fact that a smash-up entails too much unwelcome publicity over here, where the eyes of many probable purchasers are busy. But with the growth of the pastime and sport, and the firm establishment of the industry, greater risks will be taken if the opportunity be given, and it is to prevent the development of the racing machine into a mere speed freak that a really workable standard becomes necessary, because the racing machine should be the testing implement for all new ideas, the value of its speed properties for advertising purposes providing the necessary incentive to makers. On the other hand, if the weight of the racing machine is to be unlimited, the development of the lightest possible motorcycle is not encouraged, and we think that we have already sufficiently urged the advisability of keeping down the weight of, at any rate, certain classes of motorcycles. Thus, if it be conceded that the racing bicycle is to be the means of popularising the tourist machine, it would seem as if the new standards must include some limit to the weight, because lightness is essential from the public view-point. As to the number of classes, certainly two would be ample; and, in fact, one would be sufficient if there were but one grade of racing track in the country. But, as there is a vast difference between the speed properties of a banked cement track and a course marked out on a cricket field, it would seem advisable to permit two classes to exist. The difficult matter to decide is the power of the engine which shall be allowed in each class; but it is incontrovertible that high speed is fraught with

unnecessary danger, and that, if the pace be lowered all round, the sport will not suffer, the public will be equally pleased, and the appearance and fact of greater ease of control will create a much more favourable impression upon prospective purchasers. Therefore we ourselves would advocate two standards for general track racing, maintaining maximum weights, and limiting cylinder capacity.

Motorcycle Tyres.

During the season a vast amount of experience has been gained both by the rider and maker of motorcycle tyres. It has been proved that certain new principles, so far as details of construction are concerned, will have to be adopted to enable a really durable tyre for heavy motorcycles to be produced. The details refer to such matters as toughening the tread to resist the puncture demon, rendering the fabric waterproof, so that a small cut in the rubber will not result in a burst within a short period, and the adoption of a protecting flap inside the cover to keep the air tube clear of the spoke heads and nipples. It is also desirable that air tubes should be made with the tread portion stouter than the sides. Another special point that must be borne in mind by the tyre maker is that the motorcyclist requires the utmost resiliency combined with strength in his tyres. Resiliency is synonymous with comfort in riding, as well as economy in engine power. It cannot be denied that the past season has shown up the weak points in many classes of motorcycle tyres, and riders have had cause to complain of the expense entailed by abnormally rapid wear. We believe that tyre makers are already applying the lessons learned during the past few months, and next season we shall hope to have something very close to the ideal motorcycle tyre.

The Speed Limit in Towns.

In the columns of a "Romsey Advertiser," which lies before us, is the report of a Town Council meeting, at which the question of motorcar speed was brought forward. Ridiculous as it may appear, this sapient body of councillors gravely discussed a *six miles an hour* limit through the borough of Romsey, and but for the fact that their number happened to include a man who applied the test of common-sense to the matter, there is little doubt that this proposition would eventually have become law.

Assuming the existence of certain dangerous corners, is it not the clear duty of the Romsey Council to erect danger-boards at suitable spots, and leave the rest to the common-sense of the motorist? Fortunately for the reputation of Romsey Mr. Henry Guard had come to the meeting primed with a few facts. He had taken the trouble to prove, by the police method of a measured distance and a stop-watch, that along a measured stretch of 110 yards a motorcar travelling at the proposed Romsey limit would *lose eighteen yards* on a pedestrian; he had also taken the trouble to prove, with the aid of a borough surveyor, that calculation of speed by the unaided eye is a farce; he rode a bicycle along the measured stretch at a speed calculated by the surveyor to be six miles an hour, but which was proved by mathematical calculation to be *ten miles an hour*; that is to say, a speed which, on the evidence of an eye witness seemed to be a safe speed for the local conditions of the borough of Romsey was proved to be not *six* but *ten* miles an hour. Mr. Guard produced his damning facts and figures with such reliance on their obvious truth that it is not to be wondered at that the Romsey Council abandoned their six miles proposition in favour of one of ten miles.

The lesson to be learned from this is that, in rural districts especially, an amazing amount of ignorance as to the limit of safety in motorcar speed, and a ridiculous faith in the power of the human eye to calculate velocity, exist. The average anti-motorist forgets or is ignorant of the fact that a motorcar is safer, less noisy, and altogether more desirable in traffic at a moderate rate of speed—anything from 10 to 15 miles an hour—than at absurdly low speeds, such as 6 or 8. If every town council could rely on a "guard" like that of Romsey there would be less danger of ridiculous and repressive by-laws, but we fear that in many unenlightened districts the borough authorities will calculate the safe-limit of motorcar speed from their knowledge of the limit of horse-vehicle speed.

THE ROAD PROBLEM: REPORT OF THE DEPARTMENTAL COMMITTEE.

The Departmental Committee on Highways appointed by the President of the L.G.B. to enquire into the subject of Highway Authorities and Administration has issued its report and the minutes of its meetings. The Committee was composed of the following gentlemen:—

Mr. J. G. Lawson, M.P. (Chairman), Rt. Hon. Sir J. E. Dorington, Bart., M.P., Hon. Arthur Stanley, M.P., Hon. J. Scott-Montagu, M.P., Mr. W. J. Bull, M.P., and Messrs. E. R. Pickmere (Town Clerk of Liverpool), G. C. Kent (Town Clerk of Longton), S. Woodbridge (Clerk to the Brentford Urban District Council) and B. Challoner (Clerk to the Abingdon and Culham Rural District Councils).

The meetings of the Committee were held on twelve days, generally at weekly intervals, from the beginning of April to the middle of July, and eighteen witnesses were examined, the most interesting of whom to motorists were Mr. W. Rees Jeffreys, Colonel R. E. Crompton, Mr. J. A. Brodie, Mr. J. Moncur, and Mr. W. W. B. Hulton. During the course of the proceedings nearly 3,000 questions were put, a considerable percentage of these having direct reference to motor traffic, and to matters with which the future of automobilism is intimately connected. Space will not allow us to do more here than to give a short summary of those special heads which are more particularly connected with the well-being of motorists and the motor industry. We may say that a perusal of the report *in extenso* has confirmed us in the belief that the present administration of the roads of the country is in a hopelessly muddled and unsatisfactory condition, and that the recommendations of the Commissioners do not altogether promise immediate or drastic reform.

Roads, it would appear, are at present classified under two heads—(a) main roads; (b) roads other than main roads. The classification is by no means sharp and distinct; indeed, it seems that the local authority has the power in most cases of deciding, of its own free will, whether a road shall be a main road or otherwise. "In some counties," says the report, "nearly every road of any importance has been declared to be a main road; in others the County Councils have adopted a policy of steady opposition to 'maining.'" In theory a main road is required to be maintained and repaired by the County Council, but as this privilege may be handed over in part to the urban authorities, or may be claimed by them, it follows that in practice no definite scheme of maintenance can exist. Out of 52 County Councils, in 1901, 33 administered their roads directly, 14 indirectly, and 5 adopted both methods. Roads which are not main roads are maintained by District Councils: but here again the District Council may in practice be robbed of its power by the County Council: in short there seems to be no reason why any road (main or otherwise) should not be administered by one or other or more of the various ranks of councils and boroughs in the Kingdom. The total number of highway authorities in England and Wales (exclusive of the County of London) who have power to deal with roads is 1,855. The Departmental Committee report, as a consequence of this, a great want of uniformity in the maintenance of the road surface, and much evidence of excessive watering and the employment of unsuitable binding material conducing to wear of the road and the formation of mud and dust. The Committee suggests a County Highway Board to represent in every county all those authorities who at present administer the roads; and recommends the classification of roads into (a) National roads; (b) County roads; (c) other roads.

That many of the statutes dealing with highways are absurd and contradictory was shown by Mr. Jeffreys when he pointed out that under the Tramways Act of 1870, the County authorities are not the local authorities on their own roads, whilst under the Light Railways Act of 1896 they are so; nor have

they the power in extra-urban districts to regulate traffic, which they have in towns under the Towns Police Clauses Act of 1847. They are not lighting authorities, and so are unable to provide a light on a bridge vested in them, e.g., the new bridge at Kew, which does not come under the jurisdiction of either of the local authorities in whose districts it is situated, and cannot be lighted by the County Councils of Middlesex or Surrey under whose jurisdiction it does come. Highway authorities have no power to reduce the height of hedges at road corners and cross roads, or to round off the corners of dangerous buildings.

The question of sufficiency of roads which includes, of course, the burning question of congested traffic, elicited much interesting and valuable evidence, all tending to show that whilst there is no marked insufficiency of roads or road space in rural districts, there is, undoubtedly, frequent congestion of traffic in and near large towns: this is caused by (1) insufficient width of road; (2) want of alternative routes for traffic proceeding beyond the centre of the town; (3) tramway and light railway traffic; (4) opening up of the roads for subterranean repairs, and (5) insufficient powers of the police to deal with slow moving traffic. As a remedy for these evils the Committee suggests (1) compulsory widening by County Boards, and a minimum legal limit from centre of road for new buildings—20 feet suggested; (2) builders and other makers of new roads should be compelled to submit their plans to the County Highway authorities and construct it in accordance with their directions; (3) no tram or light railway to be laid down on any road narrower than 33 feet (for double line), and 27 feet (for single line, ordinary gauge), and not at all where extraordinary traffic is found. (4) "No provision of road accommodation will ever be adequate if the public are to be deprived of portions of it at frequent intervals, and for protracted periods by the operation of sanitary authorities and private companies," says the report, but it makes no practical suggestion for the removal of the evil beyond recommending that penalties against anyone who obstructs for an unreasonable period shall be more easily recoverable. No. 5 is not specifically dealt with, but the Committee draws attention to the damage done to roads, especially in wet or frosty weather, by traction engines.

With regard to the ever-growing question of motorcar traffic a large amount of evidence was forthcoming. The presence of Mr. Scott-Montagu on the Committee being a guarantee that the motorcar would get fair play, apart from an official declaration by the Chairman that there was a desire not to harass the motor industry. The amount of damage done to roads by the motor vehicle was summed up as follows:—Light cars practically nil, their dust-raising properties perhaps necessitating more scavenging and watering; heavy commercial cars with broad smooth tyres caused less destruction than a horse car; corrugated wheels of traction engines very destructive. Mr. J. Moncur advocated special tracks, with passing-places or bays, for motor and cycle traffic and a tax of £10 on cars to help to defray the cost of constructing these. Colonel Crompton stated that in his opinion tramways would be found inadequate to cope with the business of carrying the working classes to and from their work; he believed this class of traffic could be dealt with much better by the "future development of the motorcar and motor wagon traffic which can be supplemented by extra cars at the busy times, so that there would be no cars idle, no streets spoilt, no rails idle during the day."

Whatever be the result of this Commission, and that some benefit will accrue from it we doubt not, we can at least congratulate ourselves that it is to the coming of the motor that this stirring up of the stagnant waters of road reform is due.

NEWS.

"THE MOTOR" Show Numbers.

They will be characterised by many striking new features.

Tuesdays, November 10, 17 and 24 will be the dates of their appearance.

The proposed autumn motorcycle tour of the C.T.C. had to be abandoned through lack of support.

A most interesting article entitled "Alcohol versus Petrol," from the pen of Mr. J. W. Brooker, A.I.C., appears in this issue, and should be read by all motorists.

The reporter of the "Automobile Club Journal" must be an Irishman. Speaking of the run on the last day but one of the recent Reliability Trials, he says: "At Winchester the usual luncheon hour of forty-five minutes was allowed!"

It appears very probable that makers of fore-carriages will have to adopt a 3½ h.p. engine as standard for next season. The 2½ h.p. motors now fitted have done excellent work, it must be admitted, but the demand for more power is a growing one.

Motorists in the Cardiff district may be interested to learn that Messrs. J. Parsons and Co., motor engineers, Tynycoed Place, are making a special garage for cars and cycles, and their works are being equipped with machinery to enable them to tackle any repair or make special parts with accuracy and despatch.

The 6 h.p. Pegasus Car.

The light car shown in the illustration has been recently introduced by the Motor Car Co., Ltd., 168, Shaftesbury Avenue, London. It has a tonneau body to seat four or five passengers. The wheels are equal size artillery pattern, 700 by 65 mm. The engine fitted is the 6 h.p. De Dion, which is also provided with the De Dion spray carburetter. The transmission is by propeller shaft and cardan joint, and ball bearings are provided for the wheels and back axle. There are three speeds and a reverse and direct drive on the top speed. All the gears are actuated by one lever; special attention has been paid to the fitting of effective brakes. Thus there is a bronze lined foot brake, and emergency brakes of the expanding type, which act on the drums of the rear wheel hubs. The water-cooling works on the thermo-syphon principle, and thus pump troubles are avoided. The engine is controlled on the exhaust, and ignition is high tension electric, with contact breaker detachable for ease of adjustment. The steering is by the usual inclined wheel and pillar. Other good features about the car are the petrol tank and lubricators mounted on the dashboard right before the driver. The tool box is readily accessible under the driver's seat, and a panel in the floor gives ready access to the gear-box, etc. The springs are of special strength, and the wheel base being over six feet, great smoothness of running is obtained. The makers claim that the car will easily average 15 miles an hour. The finish and design of outline are excellent. The price is £195.

Coming Events.

- Oct. 15. Automobile Club House Dinner, at which biograph views of the Gordon Bennett Race will be shown.
- " 22. Automobile Club House Dinner and Paper on the "Governing of Gas and Petrol Engines," by Mr. Dugald Clerk.
- " 22. Mile and Kilometre Speed Trials at Dourdan (France).
- Nov. 5. House Dinner and Paper on "Heavy Motor Traffic," by Mr. E. Shrapnell Smith.

Brighton has an up-to-date motor fire engine.

The feature of the 1903 Shows will be the remarkable increase of motor vehicles. Ample as is the accommodation at the Crystal Palace, we believe that it will on this occasion be overtaxed. At the Agricultural Hall the bookings already run into hundreds.

Ex-Police Constable Stainer, who has captured most of the motorists fined at Kingston-on-Thames, was presented recently, says the "Daily Mail," with a clock from the members of the local police force on the occasion of his retirement after twenty-five years' service. It will remind him of happier days.

The first illustrated report of the Southport trials appears in "THE MOTOR."

Our representatives journeyed to Westham to see the re-run trials on Monday week on a Vauxhall light car which behaved splendidly on the journey and, though not in the trials, surmounted the hill in good style.

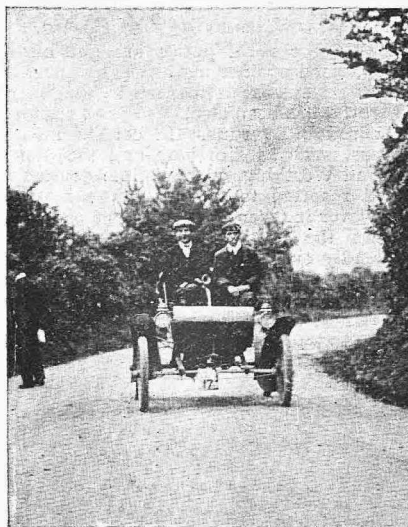
The Rex Motor Company have recently received a testimonial from a rider of a Rex machine who has ridden 8,600 miles since Easter, and has found all wearing parts of motor in perfect condition. For 3,000 miles the motor had to pull a loaded trailer.

On page 172 of our last issue we gave a photograph reproduction of what is stated to be Otford Church. Through a printer's error a wrong description was given, as several of our readers have pointed out. The photo is really that of the gateway of Maxstoke Priory, in Warwickshire.

Motorcyclists in the N. and N.W. London districts are not having a joyful time of it at present in their attempts to get out into the country. The state of the main roads, notably the Finchley and Edgware Roads, is simply deplorable, and a disgrace to the authorities who are controlling the work of laying the electric tram lines.



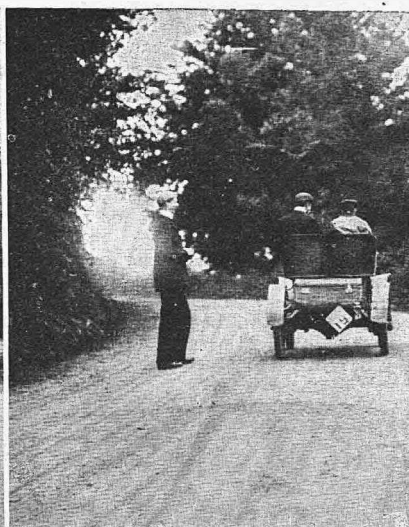
The New Pegasus Light Car.



The Oldsmobile.



Elswick tackling the hill.



Elswick at the top.

LIGHT CARS IN THE RE-RUN TRIAL UP WESTERHAM.

118 Miles per Hour!

The world's record for speed attained by any class of motor vehicle or locomotive is now held by an electric motor train which was tested the other day on the 40 mile stretch of military railway at Zossen, Germany. It touched a speed of 118 miles per hour. It was reported to have run with perfect smoothness and without injuring the track as on previous tests.

The Direct Drive Scores in Races.

A machine that has on several previous occasions shown up very prominently in track races and hill climbing contests is the "Knap," made by a French firm in Troyes. The curious feature about this machine is that the drive is by means of plain gearing, and the motor is mounted on one side of the back wheel. In a recent race on the Parc des Princes track at Paris, M. Mignart covered nearly 44 miles in the hour on a machine of $2\frac{1}{2}$ h.p. arranged on this principle.

Daring Theft of a De Dion Car.

Mr. Victor Ashby, who will be remembered as a successful participant in the 1,000 miles trial, has been the victim of a rather unusual occurrence. Mr. Ashby runs a motor depot at Towcester, and his premises face the main Coventry to Dunstable road, having originally been used as a place of worship. These were burgled early on a recent morning, and an 8 h.p. De Dion car stolen by a Liverpool youth named Stevens, who drove the car to London. Mr. Ashby and a police inspector gave chase, starting two hours after the thief, whom they probably would have overtaken had it not been for a broken chain on their car. The St. Alban's police had been advised by wire, but the fugitive rushed through at such a speed that they could not catch him. The next afternoon the car was found in some mews off the Edgware Road, where the thief was also arrested and taken back to Towcester with the car, which he had damaged by being in collision with an omnibus. The party did not get back to Towcester till midnight on Sunday, but the townspeople, hearing of the affair, turned out and gave them a hearty welcome.

In the re-run trials for cars claiming to have been impeded, the light vehicles, a 5 h.p. Oldsmobile and the Elswick, reached the summit in 4 mins. 51 secs. (7.55 m.p.h.) and 8 mins. 22 secs. (4.38 m.p.h.) respectively.

A New Light Car.

The Automobile Transport Co., of 72, Comeragh Road, London, W., inform us that they intend to bring out a new pattern "Twentieth Century" light car for 1904. It will be fitted with a 6 h.p. single cylinder motor shaft and gear transmission, three speeds and reverse, honeycomb radiator, and square bonnet, Channel steel frame, artillery wheels, pneumatic tyres, two-seated Victoria body. Price will be about £150.

Electric Tram Second Best.

What is undoubtedly a novel incident is that reported the other day of an encounter between a motorcar and an electric tram on one of the West London routes. It appears that a fairly powerful car ran into the back of a tram, probably through the latter pulling up suddenly. This resulted in the gear of the tram being so deranged that it had ignominiously to put back to the depot for repairs. The extraordinary part of the affair was that the motorcar was practically uninjured, especially so when one considers the immense weight and solid construction of an electric tram and the comparatively fragile frame of an automobile.

Cool!

A customer (?) walked into a London motor depot the other day and asked the proprietor to lend him a set of tyres for a few days. It appeared that he was able to borrow a tyreless car from another firm, and as he only wanted the tyres for a few days, he seemed to think someone ought to oblige him. The request struck a member of the staff as so humorous, that he walked into the editor's sanctum and with a solemn face, said, "I've got a starting handle, will you please lend me a motorcar to start with it?" When one comes to realise that it is possible to do several pounds' worth of damage to a set of pneumatic tyres on a heavy car in a few hundred miles, the humour of the customer's request will be apparent.

On another page will be found a table showing the performances of the light cars day by day in the recent trials.

A Truthful Policeman!

On the Winchester run of the Reliability Trials between Farnham and Alresford, the roads were infested with policemen. One of these stopped the White steam car, and demanded the driver's name and address. On asking the nature of his offence, the driver was informed that he had been timed (by a watch which the constable held in his hand) to cover 105 yards in 38 seconds! Seeing that this works out at about six miles an hour, Mr. White did not dispute the policeman's statement.

Not the Cars that Smell.

An anti-motorist whom we met at the Crystal Palace last week was very severe on the motorcar which he said diffused a vile stink all along the front of the Palace Parade; "not only," he grumbled, "does the Parade reek of paraffin when the hundred cars are lined up in the early morning waiting for the start, but the odour clings to it all day: choked with dust along the country road and nauseated with oily smells in town, is it any wonder that we protest against this modern invention?" All of which is very fine if it were true, which it is not. The stink which this indignant individual refers to is of a particularly mild and unobjectionable type, and is not due to the cars at all, but to the beneficent action of the Westrumite Company who have treated the surface of the Palace Parade with their patent dust-annihilating liquid "Westrumite": this preparation is a mixture of petroleum, ammonia and water, and its effect on the road as demonstrated at the Palace and at Windsor is distinctly beneficial: indeed, it appears to check the formation of dust in quite a remarkable way. If the anti-motorist really wants to find out how the modern motorcar smells he should go into one of the storage tents where, in the confined atmosphere of a marquee, the car will have a fair chance of asserting itself. As we have already indicated in a previous issue, the smell is a negligible quantity.

About the 1904 Ariel.

Great activity is being displayed by motor-bicycle manufacturers, and in various quarters additions have been made in view of increased business next season. The Ariel Cycle Co., Ltd., as an instance, intend to be well prepared for the anticipated heavy demand for motor-bicycles next season, and are now working full pressure, putting machines into stock ready for next season's trade. The 1904 2½ h.p. model will be improved in various minor details, but notwithstanding this, and also that the dimensions of the engine have been increased, the price will be reduced to 45 guineas. The Ariel Minerva 2 h.p. model will also be reduced to £40.

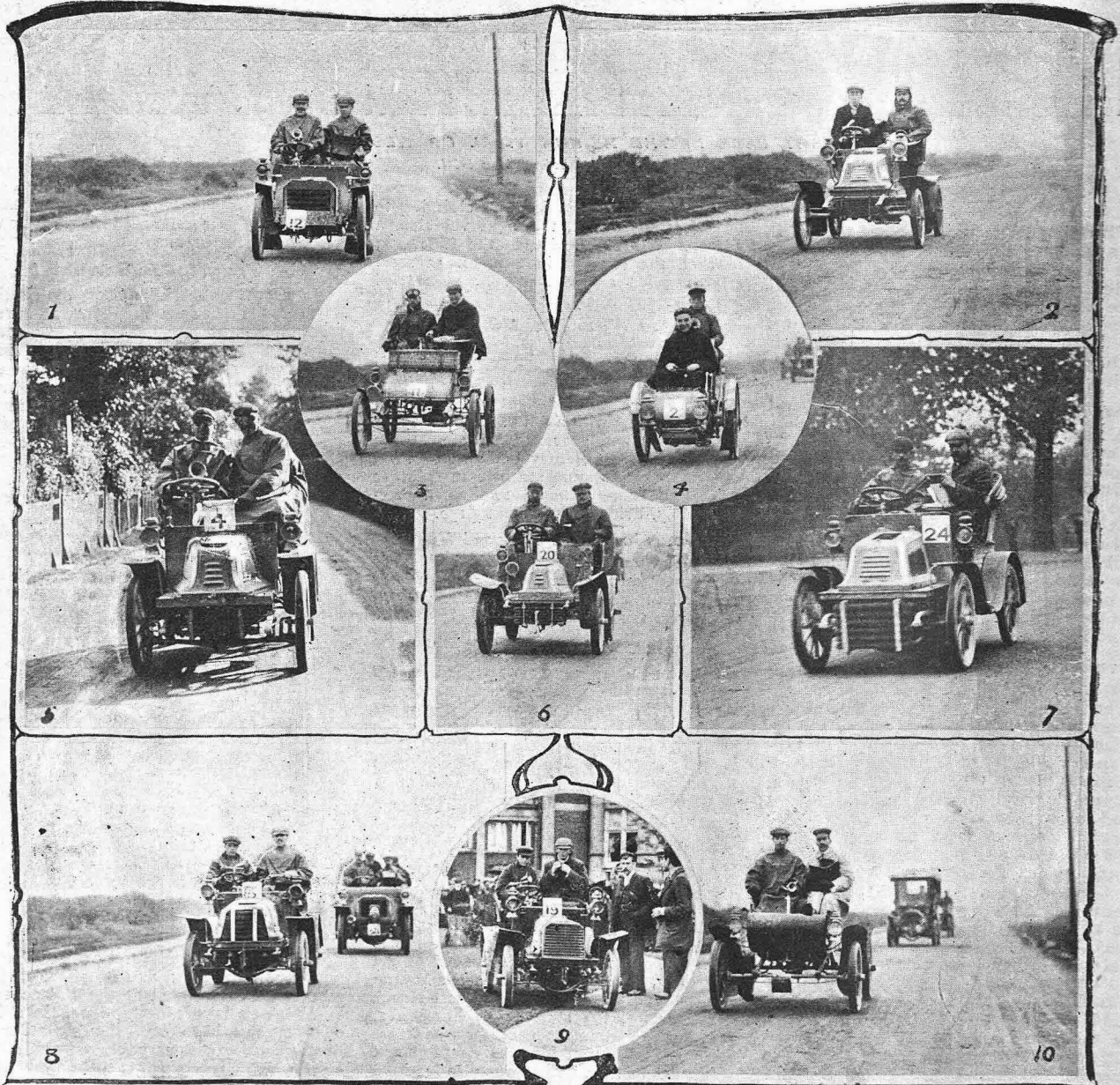
New motor showrooms under the comprehensive title of "Autocaria" have recently been opened at 100, George Street, Edinburgh. It is intended to show off all leading makes of motorcars.

Self-sealing Air Tubes for Light Cars.

It may not be generally known that the Self-sealing Air Tube Company, Hinckley Street, Birmingham, make—in addition to their excellent lines for motorcycles—a special air tube for the wheels of light cars. These are made of the finest Para rubber and of a special thickness on the tread. We have had a pair of these tubes recently sent to us by the makers for trial, and these are now undergoing a test.

Friendliness of the Force.

That the rural police are not blindly prejudiced against motoring, except when their actions are influenced by magisterial bigotry, has been clearly shown in some of the reliability runs. In certain infected areas, such as Horsham and the district round Worthing, contemptible devices are still resorted to to entrap the motorist, however innocent his motives; but in the main the rural constable has quite a friendly eye and a genial smile for those on the car, and is by no means averse from dropping on to a surly or lazy carter or coachman who tries to vent his spite on the supplanter of the horse by unnecessary slowness.



SOME OF THE LIGHT CARS WHICH PERFORMED SO WELL IN THE TRIALS.

- | | | | |
|--------------------|-------------------|-----------------|---------------|
| 1. The Humberette. | 3. Stanley Steam. | 4. Eagle. | 2. The Clyde. |
| 5. Baby Peugeot. | 6. De Dion. | 7. Swift. | |
| 8. Regal. | 9. Elswick. | 10. Oldsmobile. | |

N.B. - We regret that our plate of the Cadillac car, which performed so well, got broken.

THE SPEED TRIALS AT SOUTHPORT.

Quite unique in its conception is the meeting which was held last Friday and Saturday at Southport on the Lancashire coast. As a rule, officialdom looks somewhat askance at the motor-driven vehicle; its owner demands such perfection of roads, and (so it is asserted) does not hesitate to travel fast and so cause the surface to be sucked up. In fact, officialdom, so far, has gone out of its way to find cause for complaint against the motorcar, but the Mayor and Corporation of Southport have taken the first step towards the alteration of all this, and by handing over the whole of the magnificent parade in a suitable condition for motor racing, have shown that they are fully alive to the important part which the motorcar must, of necessity, play in the future, and that they are desirous of actively encouraging the movement.

With these ends in view, neither expense nor trouble had been spared to provide a suitable course for the competing cars. The promenade on the sea-front consists of an asphalt road, with footways on either side. It is quite a mile in length, and practically flat, a very slight rise to the pier entrance occurring about two-thirds of the way down. There is also an easy curve at about this part. The Corporation had repaired all the defective spots in the roadway, and the gutters had been filled up with asphalt, so as to strike a level from the pavement to the centre of the road. Thus no kerbing is to be seen from end to end, because the asphalt now stretches from side to side, with a very slight crown in the centre. The width in the narrowest part is 40 feet, and in the widest 60 feet. All obstructing lamp posts and

ELECTRIC LIGHT STANDARDS HAD BEEN REMOVED,

and even the big fountain which stood by the pier entrance had gone for the time being. From end to end of the course a heavy timber barrier was erected to keep the crowds back, and a further wise provision was that against dogs, wire netting having been carried along on the barriers.

Southport having gone so far towards providing an entertaining programme, the Automobile Club and the Liverpool Self-Propelled Traffic Association could not but enter into their part of it with vigour and verve, and,

SO WELL HAD THE PROGRAMME BEEN PLANNED,

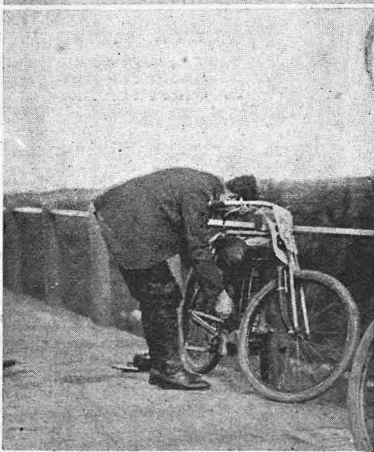
that no less than 180 entries were received, whilst a number of late entries were said to have been refused.

Of competing cars there were just over 150, and it was significant that absentees were very few. All sections of motor vehicles were well-catered for, and thus it came about that the programme of events contained the names of many drivers who have become well-known in motorcar and motorcycle circles.

The programme opened on Friday with the preliminary heats for the open motorcycle events.

Motorcycles were divided into four classes. Class A was a scratch race for

lightweight machines, 114lbs. being the limit, and the engine limited to a cylinder capacity of 70 mm. by 70 mm. The prizes were a silver cup, a silver medal and a bronze medal. This drew eight entries.



THE TRIALS AT SOUTHPORT.
Getting the machines ready.
Protection from the elements.
Tessier and the 62½ miles per hour
Bat.

Class B was a handicap for any weight of machine up to 170lbs. and with cylinder capacity not exceeding 84 mm. by 84 mm. The prizes were the same. This drew 21 entries. Class C was a local handicap for residents in Lancashire, the conditions relating to the cycle being the same as in Class B, and the prizes consisting of a challenge cup and gold medal to the winner and a silver and a bronze medal to the second and third men. This drew 12 entries. Class D was an open scratch race for machines of any power provided they weigh not more than 170lbs. This drew 18 entries. The prizes were the same as those for Classes A and B. The competitors were given a standing start, the length of the course being seven furlongs with a further 300 yards at the top end for slowing down. The start was set down for 11.45, but just before that hour rain fell in torrents, and as the machines were cut in the open against the railings of the Parade, overcoats, mackintoshes and ground sheets were, for a few minutes, at a premium. By a stroke of luck, some cute rider noticed that a large house on the Parade was empty, and when he ran his machine into the porch many followed his example, whilst the late ones discovered a covered side entrance and an open gate which led to the rear garden where there was a fine cycle house. This at once became the receptacle of tool bags and accessories, and on the whole the motorcyclists came off well, thanks to their enterprise.

Class A was now called to the post, and the first heat sent away after much anguish amongst the officials and violent work on the telephone. Richards, on his little light Minerva, won it, but it was discovered that the timekeepers had not been informed and so the heat was run again. Richards again got home first in 1 min. 37 secs., with J. Spencer (Ariel motorcycle) second, in 1 min. 41½ secs. The second heat was won by J. F. Crundall (Humber) in 1 min. 42 secs., with A. C. Wright (Ormonde) second. These four were left to run in the final on Saturday morning.

Class B was the handicap, in which there were seven scratch men, and the starts ranged up to 15 seconds. The high wind told against the heavy machines at starting, so, although the pace at the finish was fast, the net times were no better than those of the light machines.

Heat 1: S. Wright (Excelsior), 1 min. 39½ secs., 1; S. J. Watson (Ormonde), 1 min. 44 secs., 2. Heat 2: H. Rignold (Riley), 1 min. 39½ secs., 1; C. H. Richards (Minerva), 2. Heat 3: J. F. Crundall (Humber), 1 min. 46½ secs., 1; H. C. Prickett (Riley), 2. Heat 4: B. Yates (Humber), 1 min. 34 secs., 1; C. Parish (Riley), 1 min. 30 secs., 2. Heat 5: T. Tessier (Bat), 1 min. 51 secs., 1; W. Judge (Excelsior), 1 min. 52 secs., 2.

Now came the open race for motorcycles of any cylinder capacity that could be packed into the weight limit of 170 lbs. Weird noises like a concealed firework display on an extensive scale had been proceeding from the aforementioned porch,

and now there was produced Tessier's Bat, with a Soncin engine, measuring 87 by 108. Crundall, too, had got a special Humber, 89 in the bore and 102 in the stroke, whilst Watson's mysterious Ormonde was no less than 125 in the bore and 120 in the stroke. It was all engine, and scarcely any bicycle, for it is said to only weigh 111½ lbs. However, the latter did not get tuned up in time, or its presence might have created a stir. The four heats were won by S. Wright (Excelsior) in 1 min. 54½ secs.; B. Yates (Humber), in 1 min. 22½ secs.; J. F. Crundall (Humber), in 1 min. 12½ secs.; and H. Rignold (Riley), in 1 min. 21½ secs.; and these four were now eligible for the finals.

LIGHT CARS.

The voiturettes entered for Class E were now at the starting line, with engines running the drivers impatient to get on with the proceedings, which were dragging very badly. Cars to be eligible for this contest had to cost not over £200 and to carry two persons. They were sent away in heats of two, and were timed over a flying kilometre, the faster vehicle in each heat qualifying for the semi-finals. The 6 h.p. De Dion (driver J. W. Stocks) covered the kilometre in 1 min. 38½ secs. (22½ m.p.h.), and beat the 5 h.p. Oldsmobile (W. M. Letts) did 1 min. 55½ secs. (19½ m.p.h.), and beat the new 6 h.p. Wolseley, which did 18½ m.p.h., this being the first appearance of the new type. The 6½ h.p. Vulcan did 1 min. 47½ secs. (20½ m.p.h.), beating the 6 h.p. De Dion (G. Myerscough), which did 20½ m.p.h. The 6 h.p. Pick did 1 min. 55½ secs. (19½ m.p.h.), and beat the 4 h.p. Oldsmobile (18½ m.p.h.); whilst the 5 h.p. Peugeot (J. A. Bennett) did 1 min. 57 secs. (19½ m.p.h.), beating the 7 h.p. Cottareau, which did 15½ m.p.h. The five winning cars were thus qualified for the semi-finals.

MEDIUM PRICED TOURING CARS.

Class F, for touring cars costing between £200 and £400, to carry four, was the next to be contested. Powers ranged from 9 to 12 h.p., and, as a very popular form of vehicle, the competing cars attracted a lot of attention. The best performances were by the 10 h.p. Duryea (72 secs., or 31 m.p.h.); the 10 h.p. Dechamps (75½ secs., or 29½ m.p.h.); the 12 h.p. Richardson (1 min. 28½ secs., or 25½ m.p.h.); the 12 h.p. Darracq (a fifth of a second slower); and the 12 h.p. Wolseley (1 min. 29½ secs., or 25½ m.p.h.). Other cars which won their heats were a second 12 h.p. Richardson, a 12 h.p. Phoenix, a 12 h.p. Vulcan, a 10 h.p. Argyll, and a 12 h.p. Georges Richard.

The next class was for cars carrying four, and costing up to £550. The survivors of the preliminary heats were the 16 h.p. Argyll (A. Govan), time 73½ secs.; the 12 h.p. Gladiator (Miss Dorothy Levitt), time 74½ secs.; and the 24 h.p. Darracq (Professor Hele-Shaw), time 78½ secs. But there was some mistake about price, and so Professor Hele-Shaw decided to withdraw from the final heat. So the final now rested between the Argyll and the Gladiator, the Argyll having been a second faster over the course than Miss Levitt's car.

HIGH PRICED CARS.

The classes for the big touring cars were well supported. In that for cars



MOTOR CYCLES IN THE SOUTHPORT TRIALS.

1. Testing prior to a race.
2. Start for final heat of light cycle class.
3. Start for final of the motorcycle handicap.

up to £750 seven cars qualified for semi-finals, including two 16 h.p. Lanchesters, an 18 h.p. James and Browne, and three 24 h.p. cars. The best pace was the 36½ m.p.h. of Mr. Williamson's Lanchester. The £1,000 class came down to 24 h.p. cars of the De Dietrich (two, one of which did 36½ m.p.h.), Gobron-Brillie, and Fiat makes, a 25 h.p. M.M.C., a 15 h.p. C.G.V., and a 30 h.p. Darracq. The luxurious class (over £1,000) was reduced to the 20 h.p. Napier and an 18 h.p. Mercedes. The Napier did 44½ m.p.h.

RACING CARS.

The crowd was now all agog for the racing cars. In the class for light racing cars Mr. Rawlinson's Paris-Madrid Darracq had a walk-over, neither the 10 h.p. De Dion Spider nor the 20 h.p. Prunel

showing up against it. It did nearly 61 m.p.h., and its passage visibly stirred the crowd. In the next class S. F. Edge appeared on his Gordon-Bennett racer, beating the Wolseley, and doing 60½ m.p.h. Mr. Higginbotham's 60 h.p. Mercedes did 50½ m.p.h., and beat Mr. Rolls's 70 h.p. Mors. Mr. Hutton now pitted his 70 h.p. Panhard against Mr. W. Pugh's little Napier (which was a reserve in the Gordon-Bennett race), and, covering the kilometre in 33½ secs., or 66½ m.p.h., scored highest pace up to that point. The Star racer just beat Mr. Fletcher's 60 h.p. Mercedes, doing 58½ m.p.h. The early heats of Classes P and Q were not productive of great excitement or fast pace, the wind blowing almost a hurricane against the drivers. In both classes J. E. Hutton's

Panhard did fastest time, namely 67 m.p.h. in Class P and 68½ in Class Q. Six cars were left in each class to contest the semi-finals on the morrow. After the racing was over Mr. Hutton drove his car the reverse way of the course, in order to get the benefit of the wind, but the latter had fallen away at the time, and, so far as it was mortally possible to judge, his pace was little in excess of what had been done against the wind. On the figures being checked the time was announced as 32½ secs., or 69½ m.p.h. Tessier on his Bat did 57 m.p.h., and this was first announced as 49 m.p.h., the difficulty of accurately receiving the telephoned figures causing the trouble. Other attempts at record were made, Mr. Rawlinson's 64½ m.p.h. being the most notable. The proceedings for the day were now concluded, the only events left over for the Saturday being the semi-finals and finals of all classes, and the record attempts with the wind.

In the evening the Mayor and Mayoress (Mr. and Mrs. T. T. L. Scarisbrick) invited about 35 members of the Corporation, of the Automobile Clubs, and of the Press to Greaves Hall, about five miles out, to dinner. The guests met in the Mayor's Parlour at the Town Hall, and were taken out in carriages, the weather now being finer. The experience was unique in every way. Greaves Hall is only about five years old, but is built on the lines of an old baronial mansion. The guests were received by the Mayor and Mayoress, and the tables were graced

with the presence of other lady members of the Mayor's family. The function was most enjoyable, and, with a few unpretentious speeches, the proceedings were carried on till past eleven o'clock.

SATURDAY'S EVENTS.

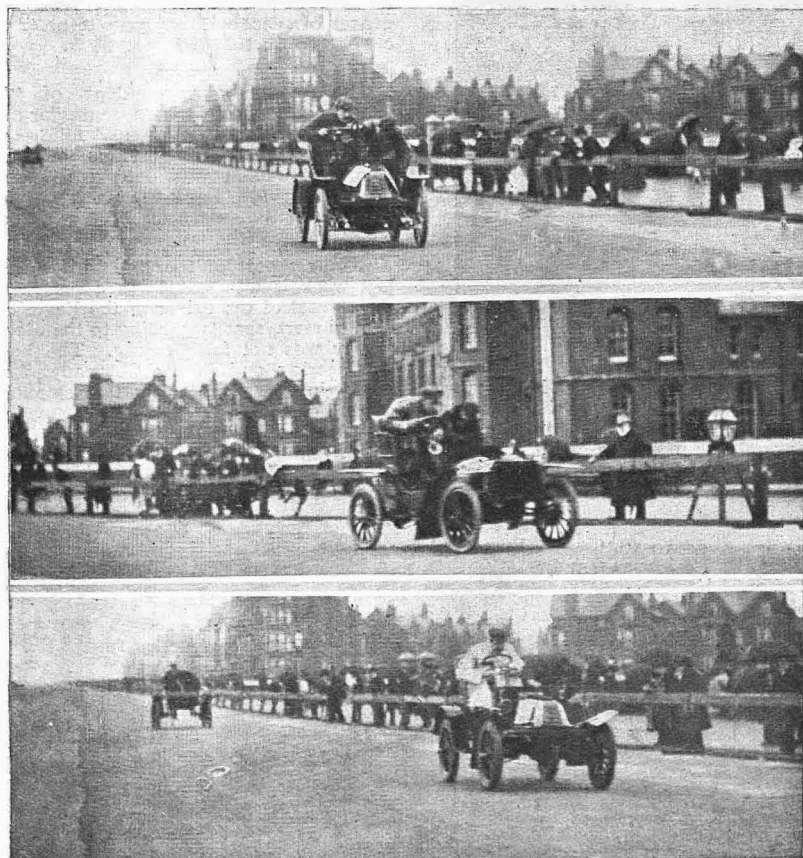
At four o'clock on Saturday morning the rain was falling in torrents. At breakfast time a raw chilly wind was blowing up the track, and many an official could be seen during the day clad in his heavy motor clothing. There was a slight shower once during the morning, but during the afternoon the sun at intervals shone down bashfully upon the rushing and roaring streaks that sped along the track. At ten o'clock on the Saturday morning the crowds had already taken up their position along the course, and by mid-day the number of spectators had quite trebled that of the day before, when, on good authority, the attendance was placed at 10,000. As the business places closed, trains and boats constantly poured people into Southport, and the speed events of the afternoon were witnessed by at least 50,000 persons.

The first events were the finals of the motorcycle races. In the contest for the small machines the opponents were Richards, Spencer, Crundall and Wright. A very good start was effected and Spencer pedalled all he knew up to the permitted limit, and thus gained a good twenty yards. This gap the others were unable to close. Crundall worked up into second place, and then, by the Pier, Richards came up, travelling fast. He

got into second position, but could not overhaul Spencer, who won by about three yards, the same distance separating Richards and Crundall. The force of the wind will be gauged when it is stated that Spencer's time was 2 mins., equivalent to a speed of about 26 m.p.h. For the handicap there were five competitors: Wright, Rignold and Yates on scratch, Tessier, with 5 secs. start, and Crundall with 10 secs. The scratch men soon caught and passed their opponents, and in processional order, with a gap of about ten yards between each pair, they finished in this order:—S. Wright, first, 1 min. 37½ secs., Rignold, Yates, Crundall and Tessier bringing up the rear. A very hot fight was witnessed between Wright, Yates, Rignold and Crundall in the final of the high powered class. Crundall had the most powerful engine, its dimensions being 89 bore by 102 stroke. Yates's engine was 89 × 89, and those of the other two were 84 × 84. There was a capital start, but hard pushing was the order of the day. Crundall at first forged ahead, but Wright gradually overhauled him, and won by 10 yards in the fine time of 74 secs., Crundall being second, and Rignold third. The local handicap was run in three heats and a final, those to qualify for the latter being C. H. Threlfall (Excelsior), H. Rignold (Riley), R. Crossley (Riley), and J. Edge (Bat). A close race resulted in a win for Threlfall in 79½ secs., with Rignold second and Edge third. It was afterwards found that Threlfall was ineligible to compete, and we understand that the first prize has been withheld.

The light cars, of which there were five survivors, now lined up before the starter, and Mr. Stocks's 6 h.p. De Dion was again matched against an Oldsmobile, this time the victorious 6 h.p. But the latter was not quite the equal of the De Dion, which gradually crept away, and, gaining all along, won by 30 yards. The 5 h.p. Baby Peugeot now tried conclusions with the 6½ h.p. Vulcan, and beat it; whilst the 6 h.p. Pick had a walk over. Then the De Dion was drawn against the Peugeot for the semi-final, and a very close match resulted, because both Stocks and Bennett are good drivers. However, Stocks won in 1 min. 42½ secs., Bennett's time being 1 min. 55 secs. The Pick again had a walk over, and then came up to the mark against the triumphant De Dion. The latter started to get away at once, and won, hands down, with 150 yards to spare, in the best time, for light cars, of 1 min. 34½ secs., the Pick taking 1 min. 58½ secs. on the journey. Stocks's win was very popular. The Peugeot takes the prize for being the fastest loser. The next contest was that between the medium priced light cars. Four more heats were necessary, and these were, in turn, won by the 10 h.p. Duryea, the 12 h.p. Richardson, the 12 h.p. Darracq, and the 10 h.p. Argyll. The semi-finals were then won by the Duryea and the Darracq, and the final was captured in splendid style by the Duryea. The car ran perfectly, being quickly off its mark every time, and always showing its opponents a clean pair of heels. Its times were consistent, being 72 secs. in the first heat, 68½ in the next heat, the same in the semi-final, and 67½ in the final—very creditable running.

The withdrawal of Prof. Hele-Shaw's 24 h.p. Darracq from the £550 class left the final of this to be contested by the 16 h.p. Argyll and the 12 h.p. Gladiator. Miss Levitt took the latter off the mark the mo



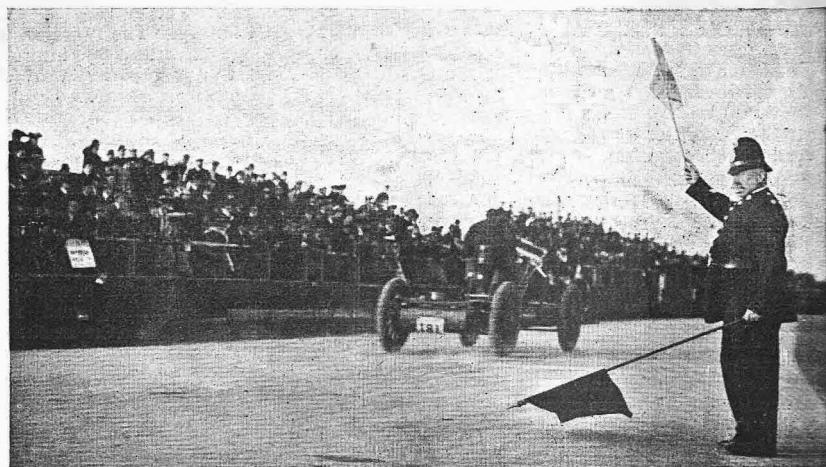
LIGHT CARS IN THE SOUTHPORT TRIALS.

1. The Baby Peugeot wins its heat.
2. The new Walsley: the first one made.
3. Stocks (De Dion) beating Letts (Oldsmobile).

ment the flag dropped. Mr. Govan, however, stopped the Argyll's engine, and it was only just restarted in time to avoid the disqualification which ensues if the car be not on the move within 30 secs. Miss Levitt covered the flying kilometre in 64½ secs., and won, the Argyll's time being 1 min. 31½ secs.

THE HIGHER PRICED CARS.

The finals for the other classes were well contested. Mr. Williamson, with his 16 h.p. Lanchester, won Class H in 57½ secs., with Mr. Overton's 24 h.p. Georges-Richard second. In Class J the finest race among the touring cars occurred in one of the early heats. Jarrott, with his 24 h.p. De Dietrich, met Geo. Iden, with his 25 h.p. M.M.C. Jarrott went slightly ahead at the start, and then Iden drew level at the commencement of the kilometre, and gradually drew ahead. Then Jarrott suddenly swung behind the leading car to save windage, and so avoided being dropped. On the rise to the pier Jarrott dropped to his third speed, whilst Iden had to remain on his top, which was a bit too high, and so Jarrott just drew level at the finishing line. As he had a fifth of a second in hand at the start he won the heat by that amount. But in the final he was beaten by 20 yards by Mr. Nesbitt's Fiat car, in 51½ secs. A. E.



Policemen acted as flagmen to signal "course clear" during the trials at Southport.

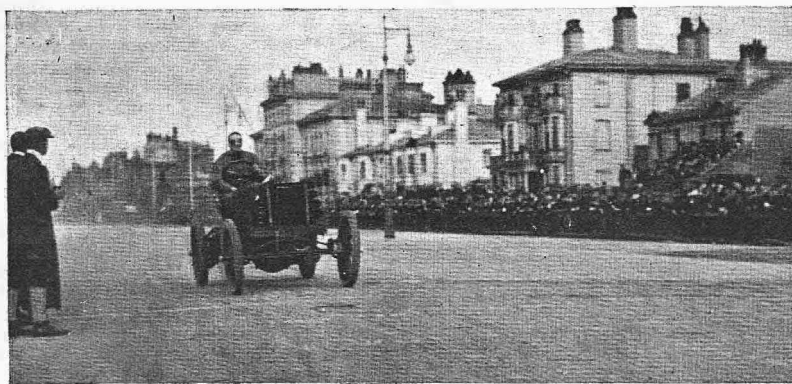
m.p.h., Hutton travelling at 50 an hour and being visibly in trouble. Some matches which followed amounted to little except in the case of the motorcycles. Nine riders essayed speed runs with the wind,

was produced by Andrew Fletcher's Mercedes when he did 69½ m.p.h. and beat Edge.

In the evening a large gathering at the Cambridge Hall witnessed the presentation of prizes by the Mayoress, and wildly cheered the most popular winners. There were many speeches, some being interesting. Later on still a meeting of members of the Corporation and of the leading clubs was held at which the plan of campaign was mapped out for next year, and a new organising committee elected. Exigences of space will cause us to defer our comments on this till next week.

The Vienna correspondent of "Le Velo" gives the Austrian team for next year's Gordon-Bennett as follows:—Braun, Werner, Hieronymus or Max. The last named was one of the competitors in the Paris-Vienna race last year; he had a smash up in the Arlberg country, but without damage.

In our report of the Reliability Trials last week it was stated, as a reason for the refusal of the driver of the Eagle tandem to start, that (according to the driver) money was not forthcoming. The Eagle Engineering and Motor Company, Ltd., of Altrincham, think that this statement might be taken to infer that money was not forthcoming from them for the use of their driver, and desire us to say that the statement, so far as it might be read to refer to them, is without foundation.

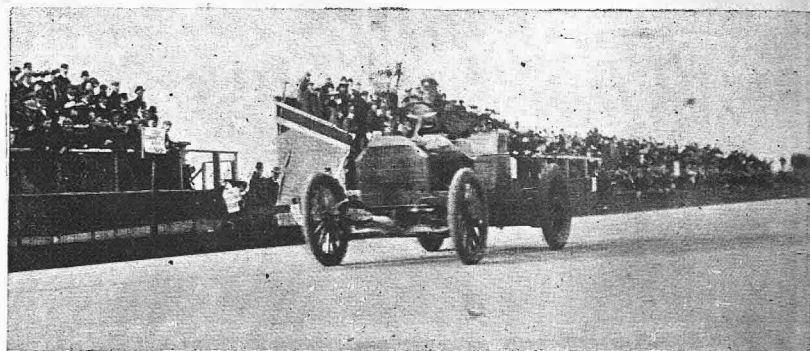


J. E. Hutton on his 70 h.p. Panhard, winning his heat at over 66 miles per hour.

Macdonald won the class for costly cars on the 20 h.p. Napier, in 54½ secs., beating the Mercedes by 6 secs. The local handicap was won by Mr. Williamson's Lanchester.

After the luncheon interval the racing cars were put through their paces. The course was cleared and further barricaded, and then Rawlinson's Darracq rushed along at nearly 60 an hour. Hutton's Panhard at 65½ m.p.h. beat the Star racer hollow, and then Edge beat Higginbotham's Mercedes at 68 an hour. In the final for this class Edge beat Hutton by nearly 2 secs. at 67½ m.p.h. Class P was finally reduced to Hutton and Edge, and the race between the pair was magnificent. They came along neck and neck and flashed over the tape with but a yard between them, Hutton winning at 60 m.p.h. The crowd was much stirred and tongues were loosened for the first time that day. But fast travelling had necessitated adjustments, and as time did not permit of these the Panhard was beaten in the next race by Andrew Fletcher, whose Mercedes covered the distance in 42½ secs. or 53

and Tessier, on his 4½ h.p. Bat, covered the flying kilometre at 62½ miles per hour, whilst S. Wright, on his Excelsior, said to have a 2½ h.p. engine bored out larger, did 60½ m.p.h. Crundall did 56½ whilst the others were slower. The highest car speed



Andrew Fletcher makes his debut on the 60 h.p. Mercedes, and attains a speed of 69½ miles per hour.

DAILY PERFORMANCES OF THE LIGHT VEHICLES IN THE RELIABILITY TRIALS.

The following tabulated record of the performances of some of the cheaper light cars in the recent Reliability Trials will be of interest to our readers. Names and addresses of the makers are given in the table of the first day's run, as is also the h.p. of the cars. The returns are subject to revision:—

Date of Run and Destination.	Performed Non-stop Runs.	Completed Distance, with delays involving loss of five marks or less.	Completed Distance, with delays involving loss of more than five marks.	Retirements and Remarks.
FRIDAY, SEPT. 18TH, MARGATE. Total distance 150½ miles.	Regal (6 h.p.) £178 10s. J. C. Selbach, 66, Great Russell Street, W.C. Cadillac (6½ h.p.) £200. Oldsmobile, Ltd., 1000, Queen Victoria St., E.C. Swift (6 h.p.) £220 10s. Swift Motor Co., Coventry. M.M.C. (8 h.p.) £270. Motor Manufacturing Co., 95, New Bond Street, W. Mohawk (9 h.p.) £210. Mohawk Motor Co., Chalk Farm Road, N.W.	Eagle Tandem (6 h.p.) £160. Eagle Eng. Co., Oakfield Road, Altrincham. Baby Peugeot (5 h.p.) £175. Friswell, Ltd., 1, Albany Street, W. Vulcan (6½ h.p.) £175. Vulcan Motor Co., Southport. Cov. Humberette, £131 5s. (5 h.p.) Humber, Ltd., Beeston Notts. Oldsmobile (5 h.p.) £150. Jarrott and Letts, 45, Gt. Marlborough Street, W. Clyde (6½ h.p.) £175. Clyde Cycle and Motor Co., Leicester. Oldsmobile (5 h.p.) £150. Jarrott and Letts, 45, Gt. Marlborough Street, W.	Stanley Steam (5½ h.p.) £194 5s. J. Cockshott and Co., Deansgate, Manchester. Elswick (6 h.p.) £200. Burlington Carriage Co., 315, Oxford Street, W. De Dion (6 h.p.) £200. De Dion-Bouton, Ltd., 10, Great Marlborough Street, W. Achilles (8 h.p.) £175. B. Thompson and Co., Frome, Somerset.	Rex Tricar (3½ h.p.) retired through clutch trouble. Pony Richard (5½ h.p.) Engine heated. Relyante (6 h.p.) abandoned the trials owing to collisions. N.B.—Result of Century Tandem Run not computed.
SATURDAY, SEPT. 19TH, EASTBOURNE. Total distance 121 miles.	Nil.	Baby Peugeot, Coventry Humber, Swift, M.M.C.	Cen. Tandem (6½ h.p.) £125. Century Eng. Co., Willesden Junction. Eagle Tandem, Regal, Vulcan, Oldsmobile, Clyde, De Dion, Oldsmobile, Achilles.	Elswick (6 h.p.) Ignition trouble—required. Mohawk not computed. N.B.—The Stanley steam car, reported to have completed the distance after serious delay. The Cadillac figures in the official return as having retired through a broken wheel.
MONDAY, SEPT. 21ST, WORTHING. Total distance 118½ miles.	Clyde, Oldsmobile, M.M.C.	Century Tandem, Eagle Tandem, Baby Peugeot, Cadillac, De Dion, Swift.	Regal, Stanley Steam, Cov. Humberette, Oldsmobile, Achilles, Mohawk.	No retirements.
TUESDAY, SEPT. 22ND, FOLKESTONE. Total distance 137½ miles.	Eagle Tandem, Coventry Humberette, M.M.C.	Baby Peugeot, Oldsmobile, De Dion, Oldsmobile, Swift.	Century Tandem, Regal, Stanley Steam, Cadillac, Clyde, Mohawk.	No retirements. N.B.—Result of Achilles run not computed.
WEDNESDAY, SEPT. 23RD, SOUTHSEA. Total distance 144½ miles.	Century Tandem, Baby Peugeot, Cadillac, Oldsmobile, Clyde, De Dion, Swift, M.M.C.	Nil.	Eagle Tandem, Regal, Stanley Steam Car, Elswick, Oldsmobile, Mohawk.	No retirements. N.B.—Coventry Humberette's run not computed. The Elswick is returned, though previously officially reported retired.
THURSDAY, SEPT. 24TH, BEXHILL. Total distance 121½ miles.	Regal, Cadillac, Oldsmobile, M.M.C.	Century Tandem, Stanley Steam Car, Clyde, Elswick, Oldsmobile.	Baby Peugeot, Coventry Humberette, De Dion, Achilles, Mohawk.	No retirements. N.B.—The result of Swift run not computed.
FRIDAY, SEPT. 25TH, WINCHESTER. Total distance 133½ miles.	Century Tandem, Baby Peugeot, Cadillac, Clyde, Elswick, Swift, M.M.C., Mohawk.	Stanley Steam Car, De Dion, Oldsmobile.	Regal, Oldsmobile Achilles.	Coventry Humberette, retired through breaking of connecting rod.
SATURDAY, SEPT. 26TH, BRIGHTON. Total distance 91½ miles.	Baby Peugeot, Stanley Steam Car, Cadillac, Elswick, De Dion, Oldsmobile, Swift, M.M.C., Mohawk.	Century Tandem, Regal.	Oldsmobile, Clyde.	No retirements. N.B.—The Eagle Tandem did not start. Achilles not computed.

Motorcycling in Milan.

On the 27th September before 6,000 spectators a motorcycle race meeting was held on the track at Milan. The affair is described as a huge success. The principal event, a 100 kilometre (60 miles) race, attracted 28 entries, and was run off in two heats. The winner was Maffei, Junior, who completed the distance in 1 hour 29 mins. (just over 40 miles an hour); Tamagni, 1 hr. 35 mins. was second: the names of other competitors: Giupponi, Cerabolini, Brambilla and Lanfranchi, seem to indicate that the sport has caught on with the natives.

A New Light Car.

To meet the requirements of a rapidly increasing business, the Hon. C. S. Rolls and Co. will open as a showroom the premises at 28, Brook Street, Bond Street, W., recently vacated by Messrs. De Dion Bouton. The works at Little Road, Earl's Court, constitute the largest repair depot in London. Motorcar driving is taught there, and has been a special feature for some time past. The terms are moderate, and include the use of cars. A light car is in course of production. It is to be put to very severe tests before being offered to the public. We hope to report upon its qualities as soon as it is ready.

Hotels and Motorists.

A capital article in a recent issue of "La Locomotion Automobile," entitled "Hotels and Motorists," draws attention to the want of proper accommodation for motorcars in most hotels in France. The writer argues that the motorist should be as well catered for in this respect as is the owner of the horse vehicle, and proceeds to urge the country hotel-keeper, from the point of view of his own profit if for no other reason, to provide ample stabling, to keep supplies of petrol, oil, and any of the smaller requirements and accessories which are likely to be in demand. In the season, too, a mechanic with sufficient experience to undertake ordinary repairs should be engaged: lastly, in these days of almost universal electric lighting, a charging station or, at any rate the means for re-charging ignition batteries should form an adjunct of every hotel.

Speed Trials in France.

"Le Monde Sportif," one of the daily organs of French sport, has organised a speed trial competition to take place at Dourdan on the 22nd of October. The trials will include a mile and a kilometre and will be open to all classes of cars and cycles. The entries up-to-date include six Darracs (three voituresses and three light cars); three Serpollets; three Boyers (two of which are touring cars); two Gobron-Brillies (heavy cars); a Mercedes; a Pipe, and a big Mors: whilst among the motorcycles there are two Doues, two Poppes, two Iris cycles, a Pierre, and a Moto-Cardan, a machine which showed a good turn of speed in the recent "Quart de Litre" trials. The organisers of the competition have decided to adopt three systems of classification: (a) weight; (b) cylinder capacity, and (c) price of chassis: this latter will be sub-divided into six classes as follows:—(1) Under 4,000 francs; (2) 4,000 francs to 8,000 francs; (3) 8,000 francs to 12,000 francs; (4) 12,000 francs to 18,000 francs; (5) 18,000 francs to 25,000 francs; (6) 25,000 francs and over.

C12



Ingenious trap warning on the Southsea run in the recent trials, written across the road in French chalk.

It is announced that the millionaire proprietor of the "New York Journal" is about to start a journal called "The Motor." Imitation is the sincerest flattery.

No Peace.

Five times have I been summoned in the season.

The fines have mounted up to twenty pounds.

This persecution gets beyond all reason—This wretched business grows beyond all bounds.

I find my income day by day diminished, I find my purse grow lighter by degrees. And claims for compensation yet unfinished,

Hang o'er my head like swords of Damocles.

My nerves are giving way beneath the torture,

Sometimes I dream I'm caught by ghostly "cops."

They stand around the gallows, bawling "Scorchers!"

I wake in terror as the trapdoor drops.

At other times I am a hunted bandit, Motoring through space from mountain peak to peak.

My head grows dizzy, till I cannot stand it, And, falling headlong, waken with a shriek!

Let me take courage. These are idle fancies.

A torpid liver brings such dreams as these.

I will away where golden sunlight dances, And on my motor race the freshening breeze.

Now let the splendours of the autumn morning

Chase all these gloomy visions from my brain.

* * * * *

Heav'ns! a blue uniform the hedge adorning!

Brake! brake! for all you're worth! I'm caught again!

SIDNEY J. TAYLER.

Fore-carriage Machine safer in grease than a Bicycle.

It is becoming a quite usual practice with many riders of fore-carriage machines to remove the carriage body and ride the machine singly instead of converting it into a bicycle. They are thus able to venture on the roads when they are in a dangerous state for a two wheeler, as the stability of the fore-carriage attachment is remarkable. Mr. van Hooydonk tells us that quite a number of his customers have ordered fore-carriage machines with the special object of thus riding them.

Racing Standards for 1904.

The sub-committee of the Auto-Cycle Club, appointed to frame suitable standards for the racing cycles to be used next year, has issued the following letter to the leading firms in the trade. (We deal with the matter on our Editorial page):—

"At a sub-committee meeting held on Tuesday to discuss this question, it was considered desirable to obtain the views of the manufacturers before taking any definite steps, and we shall be glad if you will be good enough to let us have your opinions. We may say that the following proposals are intended to apply to engines for track racing purposes only, and the committee consider that high-powered engines should be excluded on the grounds of safety, as it is found that existing tracks are not safe enough for the very high-powered engines that have been in use during the past season.

"This committee have agreed generally to abandon classification by weight limit, and propose:—

"1. That there shall be but one class: engines to have a maximum cylinder capacity of, say, 76 mm. by 76 mm.; or

"2. That there be two classes, one for engines not exceeding 70 mm. by 70 mm., and the other for engines not exceeding 80 mm. by 80 mm.

"We shall be pleased to have any observations you can offer, and to hear whether you are in favour of one or two classes, and the size of engines you advocate."

OTHER PEOPLE'S VIEWS.

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

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

1. Plain Writing. Type-writing for preference.
2. All letters to be written on one side of the paper.
3. Letters to be kept as brief as possible.
4. For the purpose of illustrating any letter, rough diagrams may be sent, which will be worked up by one of our artists.

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

Tyre Companies and their Customers.

Sir,—In your issue of September 9th a correspondent complains of the treatment he has received at the hands of the Dunlop Tyre Company. In justice to that firm would you allow me to say I have also had dealings with Messrs. Dunlop within the last few days? An incident arose in connection with a car cover of mine which involved a much larger sum than that mentioned by your correspondent. Without an instant's hesitation Messrs. Dunlop did me the most perfect justice in the matter. I am a stranger to them and there was no influence of any kind at work. I mention this incident as a set-off to that of your correspondent.—Yours faithfully,

HARRY FIKKHOUSE.

Some Points about the Old Werner F.D. Machine.

Sir,—In your issue of 9th September "Constant Reader" states he cannot get his F.D. Werner motor-bicycle, with wick carburetter, to work. Having ridden the first 1½ h.p. Werner machine ever made by Werner Freres, I can safely say from experience that my little F.D. Werner was as reliable a machine as anyone could possibly desire. The carburetters of these pioneer motor-bicycles are by no means to be sneezed at, and by the addition of a hot air pipe from engine, will run in any weather (including a bitterly cold frosty night). Will certain modern spray carburetters do this? There is no spray to choke with grit; no float to "hang up"; no valve to leak; and it acts as an ideal filter for the engine; the belt is out of the mud and dirt; the engine in the best possible position for cooling; and the contact breaker, De Dion, is one of the simplest and most perfect, if properly constructed. "Constant Reader" should get a knitted mitten made to fit over his tin and gauze box, or a piece of an old vest put once round, or as a further alternative a sack-like material, which I believe is known as "Wrapper," three times round the gauze and tin box.—Yours faithfully,

E. REGINALD WEBB.

Invicta Motors.

Sir,—Answering your correspondent, "S.E." (Coventry), in your issue of September 9th, we have pleasure in stating that we own the patterns and designs of the above-named motors. They are manufactured in Coventry under our direct personal supervision. Details are as follows:—Bore, 78mm.; stroke, 83mm.; power at 1,400 revolutions per minute 3½ h.p.; weight of fly-wheel, 26lbs.; total weight of motor with wipe contact breaker, 50lbs.; automatic valves interchangeable with M.M.C. engine, i.e., nickel exhaust valves. The motor may be fitted in either the vertical loop or Minerva position.—Yours faithfully,

BRANDES AND JOHNSTONE.

67, John Street, Coventry.

Wanted: a Two-speed Gear for Motor-Bicycles.

Sir,—In a recent article in "THE MOTOR" dealing with the lessons to be learnt from the results of the reliability trials there is one fact which must have impressed itself upon all who read it, i.e., the frequency of belt troubles and the comparative immunity from transmission breakdowns in chain-driven machines. We have heard the opinion expressed by many of those who, like ourselves, ride for pleasure and comfort that a comparatively low-powered motor is easier and more convenient to handle than the high-powered machines, provided that some form of device is added to enable us to mount hills without effort. We cannot call to mind any form of two-speed gear with free engine, somewhat analogous to the "Dupont" two-speed gear, which can be fitted to motor-bicycles. We should like to hear of some two-speed gear (with free engine) built in to the back hub, which, by merely rebuilding the back wheel and fitting a new cog-wheel and chain in lieu of engine pulley and belt, would convert our now almost obsolete 1½ h.p. motors into serviceable and up-to-date machines. Numerous investigators have demonstrated that the idea is feasible and we are now waiting for some enterprising firm to place on the market something of the kind, at a reasonable price, which can be fitted by the ordinary cycle mechanic.—Yours faithfully,

Thornton Heath.

C.B.
M.B.

Riding Sidecar without a Passenger.

Sir,—Mr. E. H. Arnott in his recent letter comparing the trailer, fore and side-carriages, says of the side-carriage: "it is not practicable to use it without also taking a passenger." Although I do not care for the side-carriage myself, I see Mr. Arnott has overlooked the fact that the side-carriage is practically a "Morette" by simply sitting in it yourself and steering with an extended handlebar. I saw a man riding one in this way the other day. I think it was a "Trafalgar" side-carriage, as it was near Baker Street that I saw him. If this should meet his eye perhaps he would be good enough to explain his method.—Yours faithfully,

London.

H.G.T.

Lighting Acetylene and Oil Lamps with Ignition Spark.

Sir,—The following hint may be of use to the readers of your paper. If, on wishing to light a motor lamp, should this be of the acetylene variety, you find you have no matches, or that matches will not burn on account of a strong wind, the difficulty may be overcome by disconnecting the high tension wire from the spark plug, and, with the end held about ¼ inch above the burner, moving the trembler blade, when the resulting spark will easily fire the gas and produce a light. If the machine is fitted with wipe contact and trembler coil, paraffin lamps may be lit by allowing the spark to play over the wick, as, by being continuous, its heating power is greater.—Yours faithfully,

GEORGE DEARLE.

The New Act and the Medical Man.

Sir,—I have read the article entitled "The Motorcyclist and the New Act" in your issue of September and with much interest and sympathy. One point in particular strikes me: I am a medical man, and in the course of my work, especially in country work of which I do a good deal, I use a motor-bicycle. I do not keep a horse. Now, supposing the local authority obtains the permission of the Local Government Board to close certain roads in this neighbourhood to motor traffic, how shall I reach my patients? Shall I have to hire a horse for that occasion or pedal an ordinary bicycle? Surely the Auto-Cycle Club will be able to obtain some exemptions in favour of medical men. I can conceive the possibility of a doctor having to make a long detour in order to avoid using a lane which in happier days led straight to his destination. Again, suppose that a person living in one of these protected areas desires to possess a motor: imagine the prospect of this unfortunate individual being unable to approach his own place of residence with his car or cycle! I shall be glad if you could place these points before the Auto-Cycle Club.—Yours faithfully,

GODFREY LOWE.

C15

November 10th.

November 17th.

November 24th.

THREE
SHOW SPECIALS
of "The Motor"
Note the Dates!

Longuemare Carburettor Hint.

Sir,—The following may be of interest and use to some motorcyclists. I found recently that my 2½ h.p. bicycle motor misfired if, after being ridden at a high speed for a few miles, it was stopped a few minutes for inspection. It would go well for a distance again, but would misfire at any slight hill. Eventually, after trying the usual adjustments, as a last resource the heating pipe from exhaust to the Longuemare carburettor was disconnected, with the result that the engine has run most regularly ever since; evidently the heat was too much, and caused the petrol to vaporise too freely. I am putting a brass washer with ¼th hole in centre in the flanged nut attached to carburettor, and this will keep down the heat to some extent, no doubt.—Yours faithfully,
B.
Exeter.

Skidding of Motorcycles, etc.

Sir,—I quite agree with your correspondent, Alfred Meigh, as regards the skidding of motorcycles, having had exactly the same experience myself. But with reference to "Police Traps" I cannot follow him. Only a few Sundays ago I saw a young man with a motorcycle and fore-carriage, which was punctured, travelling at not more than eight miles an hour into Aylesbury, Bucks; unfortunately, he was caught in a police trap with the result that his name and address were taken for riding at 19 miles an hour. If Alfred Meigh will journey to Aylesbury via London Road next Sunday, weather permitting, at eight miles an hour, he will have the distinction of being one of the so-called "motor cads" at a fee of about £2 2s. and costs—very reasonable. If this should meet the eye of the unfortunate motorist who was caught, and to whom I supplied my name and address as a witness, he may feel comforted to know that not a motor of any description had passed by for about two hours the whole of the time the trap was open.—Yours faithfully,
"JUSTICE."

Accumulators v. Magneto Ignition for Australian Riding.

Sir,—Much may be said in favour of the accumulator system, but the conditions obtaining in various parts of the world that the motor-bicycle is used in often alter people's opinions; for instance, if motor-bicycling in this part of the world (600 miles from Perth, West Australia) and your accumulator runs out you are under a compliment to some mine manager to allow you to have it re-charged by his electrician, no place being available elsewhere; and I doubt if there are more than a very few places in the whole of Australia where a motorist can get his accumulator re-charged without being under a compliment. Most motor troubles seem to my mind attributable in some way to the wires or accumulators. Our firm possess a "Singer" motorcycle with the dynamo igniter attached, and it has caused no trouble whatever, though the bicycle has been in use for three years. The position the Singer engine is fitted in is not to my liking, and if it were placed in another part of the bicycle, more easily get-at-able, it would be more satisfactory. Manufacturers supplying motors for the Australian trade should, in my opinion, build them to suit conditions of rough roads, etc. The tyres fitted at present are too small;

people here who ride motors will bear me out (though an English motor-bicycle company could not see it), that motor tyres should not be less than 2½ inches, and up to 3 inches diameter for the Australian trade. We have no properly formed or made roads inland in this State where towns are sometimes 200 miles apart. The difference out here is that Australia has not the roads that you English people enjoy, and therefore, in my opinion, for the manufacturers to be successful in the Australian trade they should study local conditions.—Yours faithfully,

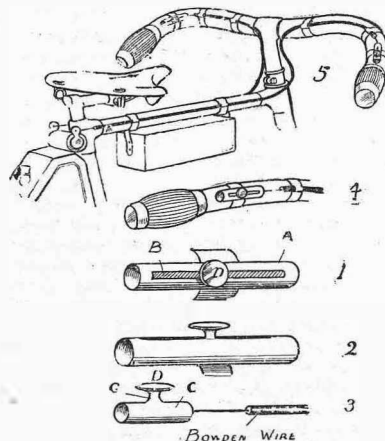
WALTER FORMAN,
Marshall and Forman.

Cue Cycle Works, Western Australia.

[Our correspondent is evidently unaware that Messrs. Singer have made great advances in the design of their machine during the last season or two. The chain drive pattern has the engine arranged in a very accessible position.—Ed.]

A Regulating Device for De Dion Carburettor.

Sir,—I beg to send you drawings of some small thumbslides which I use on my motor-tricycle to move the gas and air levers. By means of these the levers can be actuated without taking the hands from the handlebars. This is a great convenience in finding the mixture at starting, as it is difficult to pedal with only one hand on the handle of



the tricycle, and also in hill climbing it is surprising how easily one can find the exact mixture necessary. They also have the advantage of staying where they are placed, whereas ordinary levers, I find, are constantly shaking loose. Figs 1 and 2 show the thumbslides, which consist of a piece of ½ in. brass tubing, A, about 2½ in. long, having a slot, B, nearly the whole length. A slide C (Fig 3), fits inside the tube and is moved by means of the button D, which is attached to C by a neck G. To C is attached the inner wire of a Bowden brake wire, the other end of the wire being fastened to the lever. Fig 5 shows the thumbslides attached to a motor-tricycle. Of course the Bowden wire can be hidden in the tubes of the tricycle if necessary. I may say I am protecting these thumbslides.—Yours faithfully,
GEORGE ROBERTS, M.R.C.S., etc.
Twyford, near Winchester.

"THE MOTOR" MANUAL
Is the Book you want.
FIFTH EDITION - - - 1s.

Riding Side-carriage Attachment without Passenger.

Sir,—Having noticed in your column one or two letters which tend to show that riding a motor-bicycle with a side-carriage attached, but without a passenger, is a difficult or practically impossible matter, I am taking the opportunity of informing you in defence of this form of attachment. I am in the habit of doing this at all times in the streets of London and in the country without any weight in the side-carriage and that after a little practice it is quite an easy matter to take even sharp turns to the left at seven or eight miles an hour; in fact I now find the steering quite as easy as with a passenger. I may add that mine is a "Liberty" sociable which is connected to the bicycle in four places. I have ridden the machine with this attachment some 600 miles and have never found the steering tiring, even after a long ride. I find however that the side-carriage throws a good deal of strain on the back tyre, with the result that the wearing down of the tread is rather rapid; but I have now had a thick Bates' tread vulcanized on, and this appears to have overcome the difficulty. My gear of 5½ to 1 gives good hill climbing capacity with a 2½ h.p. engine and will take at a reasonable speed gradients of 1 in 18 without pedalling.—Yours faithfully,
R.G.M.

Hints on Driving and Fitting Cyclometer to Olympia Tandem.

Sir,—In your issue of September 2nd "Cyclometer" wishes to know how to fit a cyclometer to a Humber Olympia tandem. Being the happy possessor of one of these machines, I am pleased to send particulars of how I fixed one to mine. In the first place I cut a piece of blind lath to which I screwed the cyclometer, then having made two holes in each end of the wood I bound it round the mudguard stay with copper wire, and as the mudguard move laterally with the wheel the cyclometer is always in position, and is not affected by the steering; another advantage is that the cyclometer can be seen by the back rider whilst travelling, so that the lubrication of the engine at regular times becomes an easy matter. I have noticed several queries on the difficulty of starting the Humber tandem. As I have mastered this difficulty perhaps my experiences will help some of your readers. Before going out I place the hind wheel upon a stand and get the engine running for about four or five minutes so as to thoroughly warm it up. Upon mounting the machine, and getting sufficient momentum on it, I advance the ignition lever to one notch before the half compression notch, and upon getting the second consecutive explosion immediately advance ignition lever to the compression and commence giving the engine more air until the beats of the engine are regular. The levers for starting are as follows:—Throttle open full, air lever to right, exhaust valve open, carburettor flooded. If your readers will try the machines as above they will find that they go off with the first turn of the pedals. Of course, after starting it is necessary to adjust levers to atmospheric and road requirements. I recently drove my machine with passenger, 97 miles on one gallon petrol, which I consider highly economical.—Yours faithfully,

J. H. JUDD.

A Four-cylinder Motor-Bicycle.

Sir,—With reference to your reply to "J. F. Wolfe" in your issue of the 9th September, I am pleased to inform him that there will shortly be placed on the market a four-cylinder motor-bicycle, with chair seat, which will also be practically noiseless. It is started by means of a small foot lever, and then the clutch is let in. When the clutch is thrown out for traffic riding the gas is automatically throttled. Of course no pedals are necessary as the engine is capable of developing 5 h.p., and will take any hill, although it is no heavier than a medium power motor-bicycle. The drive is by the chain from a short countershaft. The machine will be on view at the Stanley Show.—Yours faithfully, B.H.P.B.

Motorcycles and Cars for India.

Sir,—It will probably be of interest to many persons now in Great Britain on leave from India, or who are leaving this country for India, to know that petrol is now obtainable in Madras from Messrs. Addison and Co., the well known cycle agents there. This firm has recently imported several makes of motor-bicycles, including the Singer, Quadrant, Humber, and Clement-Garrard, and will shortly be in a position to supply the Humber 5 h.p. car. Addison and Co. have had to erect a special store for petrol, and I know they keep at least 200 gallons in stock. The proprietor of the firm is in England and will be pleased to discuss motor matters with anyone interested. His address is "Hillgrove," Stonehouse, Gloucestershire.—Yours faithfully, "MADRAS."

How a Petrol Fire was Caused.

Sir,—Having recently had a somewhat alarming experience with my motorcycle I think the account of it may save some other novice from a similar mishap, with, perhaps, a more serious ending. Last May I bought a 2½ h.p. "Excelsior" machine with fore-carriage. About a month ago, finding it occasionally misfiring I put it on the stand in the coach house and proceeded to investigate the cause. I first filled the tank with fresh petrol, thinking what remained in tank might be stale, but found this did not improve matters. I then searched for short circuiting. Removing the sparking plug, but keeping it attached to the high tension cable, I tried the sparking against the engine. Finding it was intermittent I removed the make and break cover, and resting the left hand (still holding the high tension cable and plug) on the top of the petrol tank, I knelt down and tested the trembler blade on the platinum tipped screw. Immediately I was surprised by a flash of light, and looking up found flames rising all along the top of the petrol tank. At first it was only a few inches high, but it increased rapidly and by the time I was on my feet it was at least a foot high. Knowing my tank was full to the brim with nearly a gallon of petrol I expected every moment a tremendous explosion. As quickly as I could I lifted the back wheel from the stand and ran the whole concern, all ablaze, into the stable yard. There I noticed a pail standing near the pump, and seizing it found it, very fortunately, half full of water. This I dashed over the motor and then pumping more as rapidly as possible I continued to drench the machine until I

put out the conflagration. The only damage, fortunately, was a large celluloid pump destroyed, and the low tension wires injured. The cause of the fire was simply this: the cap for refilling the tank with petrol, instead of being raised above the level of the tank (as I think it should be) is sunk below it, and as it is not perfectly petrol tight the vibration forces the petrol through and it lodges in the cavity of the screw cap. I must have inadvertently held the sparking plug near this and so ignited the vapour: the flame then spread to the celluloid pump which being highly inflammable immediately caught fire. Had not the pail of water been at hand the probability is that my £70 motor would have been quickly reduced to scrap iron. The morals to be drawn by novices from my experience are never try your sparking plug near the petrol tank; avoid carrying a celluloid pump; and as soon as you possess a motor make haste to get it insured.—Yours faithfully, Oakham. F. A. BRASNETT.

[Our correspondent could have adopted a much more effective remedy than deluging the machine with water had he thought of it. He might have slipped off his coat and smothered the flames in a twinkling. He was exceedingly lucky in not having his machine destroyed.—Ed.]

Inner Tube Splitting Trouble Explained.

Sir,—I notice in your columns devoted to "Other People's Views" that two of your correspondents complain of a most annoying splitting of the inner tubes of motorcycle tyres. I myself have suffered severely with trouble from the same source; hitherto in silence, because I believed that I had got hold of a peculiarly bad specimen of what is usually a fairly reliable article. It has often been my experience to leave the machine ready for the road only to come back and find the tyre flat, the inner tube having in it a slit about ½ inch long: this misfortune occurred too frequently to be lightly regarded as one of the minor worries of motoring, so a remedy was earnestly sought. Examination with tyre on a rim, without spokes, showed that when put on with ordinary or even great care and very lightly inflated the inner tube seemed to be pinched in places between the thickened edges of the outer cover: when a little more inflated (to nearly riding pressure) the inner tube disappeared and the thickened edges just met properly in the bed of the rim. When inflated to riding pressure the thick edges were so effectively pressed into their grooves that a gap ½ inch was left between them, revealing the inner tubes slightly distended and entirely unsupported. Solutioning a one inch strip of canvas on inner circumference of tube cured the defect. Grumbling is not my forte, yet I must say it is a great pity wealthy manufacturers idly shift the worries and expenses of experimenting upon the shoulders of other people.—Yours faithfully, ROBERT NEILL.

New Things

at the Shows will be first described and illustrated in "The Motor" Show Specials.

Merits of the Chain-drive.

Sir,—I read with interest the recent letter in "O.P.V." by a "Believer in Chain Drive," and seeing that he considers it would be useful if other readers of "THE MOTOR" would give their experiences with chain-driven machines, I herewith give mine: I have ridden Humber machines, both with 1½ and 2½ h.p. engines, over 2,000 miles now and I have never had a moment's trouble from the chains. I do most of my riding in a very hilly district, but the snapping of a chain is an unknown quantity. I change the chains from side to side every 200 miles so that they get an equal amount of wear. As a lubricant I use the "Gartor" chain lubricant which preserves the chains in good condition. I have lately had Messrs. Humber's free engine clutch fitted to my machine and this, in connection with their system of chain-driving, I find an excellent combination.—Yours faithfully, G.S.N.

Interesting Notes on Various Motor Matters.

Sir,—Under this comprehensive title kindly permit me to say something, based on my own experience, and dealing with points recently raised by some writers. (1) Oil for engines water-cooled and air-cooled. Someone recently advised trying or substituting a lighter oil on engines with water-cooled heads than is used on those with air-cooled ones. I tried a mixture of three parts Price's Motorine "B," and one of Sterne's oils for water-cooled engines. It did not answer at all. I found the engine groan, etc., and have little doubt that had I not returned to the original Price's I should soon have destroyed the engine. I was charged at the rate of 6s. 6d. per gallon for the Sterne's, whereas I only paid 4s. for the Price's. The 3 h.p. engine I tried the experiment on was originally an air-cooled one, but I had fitted a water-cooled head to it. (2) Engines overheating after a short run. Writers are constantly asking the cause of this phenomenon. If the engine or the driver of the machine are new, the reason is the obvious one, that is, a stiffness on the part of the piston and rings, causing undue friction, and the too liberal use of the gas lever on the part of the rider. Very few riders, however, stop to think that the cause is due to an inherent fault in design, or want of proportion in the engine itself. The De Dion people spent thousands of pounds experimenting on their now famous motor to get perfect results, and even now all the best-known engines of this type are copied almost to a fraction of a millimetre in measurement. But of late a craze for getting still greater power out of these little motors has induced some firms to lengthen the stroke of their engines; one firm, whose productions are world renowned, has had, I am credibly told, a very unpleasant experience on this score. (3) Exhaust silencers. Several writers complain of the inefficiency of the so-called silencers fitted to their motor-bicycles, and not without reason, for the noise these little engines make is irritating to everyone who hears them. Here, again, the fault is not always due to the silencer, but often to the bad design of the engine itself. I was convinced of this recently by lending a friend a silencer from an Ariel quad, which he fitted to his 2½ h.p. bicycle. The quad is a 3 h.p. one, and I think everyone who

has ridden an Ariel will agree that no machine runs quieter on this score. I was surprised to find no perceptible improvement took place—the same pom-pom row, and apparently no diminution of back pressure. In this case, too, I concluded the cause was some error in design of the engine itself. (4) The carburetter. The battle of the surface with the spray system is still being waged in "THE MOTOR," so I will only say that, as a user of both systems, I prefer the old surface type to the average specimen called a "spray." The Ariel surface type is the only one I have used of that pattern, and I have never, even in cold weather, had any trouble in starting up, even with comparatively stale stuff in the carburetter. But to do this I always open the feed from the tank a little, and also inject with the squirt a drop or two at starting. Most of the surface types of carburetter sent out on motor-bicycles are altogether badly made; many have no capacity for feeding a big engine, and one that runs so rapidly as these De Dions do. One further advantage, too, is the fact that with the surface type one knows when the engine refuses to do its work the fault is not that it is starved of its propelling power, provided, of course, the float feed shows there is spirit in the carburetter; whereas with the spray one may be fiddling with all the gear, usually the electric part, for some time, only to discover that the wretched feed pipe is stopped up.—Yours faithfully, H.B.

To Adapt De Dion Contact to Trembler Coil.

Sir,—It may be of interest to some of your readers possessing De Dion pattern engines to know that a trembler coil can be used thereon without the trouble and expense of fitting a new contact. This, I find, may be done by bending the existing contact blade so that it presses deeper into the cam notch, and screwing down a spare blade on top of the one in actual use, so as to get double the contact pressure. This ensures a firm contact, and does away with all possibility of a misfire. I recently fitted this to a $\frac{1}{2}$ h.p. De Dion launch engine as a makeshift, and find it so satisfactory that I shall make no further alteration.—Yours faithfully, A. C. CLARK.

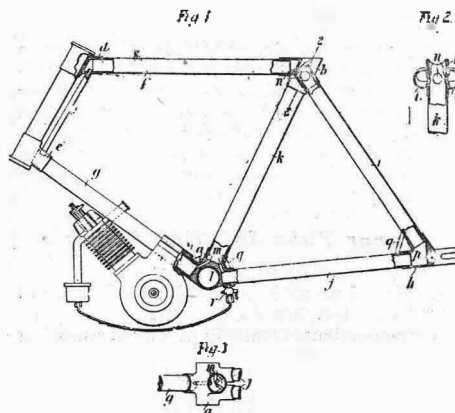
The Spark Gap.

Sir,—Having seen your correspondent Mr. Leopold Canning's article re spark gaps, I think he makes a mistake in saying that the spark gap intensifies the current, or prevents misfiring in the case of a sooty plug. I have had considerable experience in testing motor engines, and I must say I have never found much value in the spark gap. From a theoretical point of view, there is a slight advantage, but this is very seldom found in practice. As regards misfiring through a sooty plug, neither a spark gap nor anything else will prevent misfiring as long as there is sufficient carbon deposit on the plug to form a passage for the high tension current. While the current is short circuiting across the carbon on the plug, the spark gap goes on sparking every time you try the ignition, and is therefore no indicator as to the condition of the spark plug. A great many people have the idea that, as long as the spark gap sparks, the ignition is all right, and they therefore set the trouble down to the carburation, and go wandering on the wrong

track: a great many cases of this mistake have come before my notice. In conclusion, having tried a great many kinds, I say that a spark gap is not worth having, as the trouble in fixing, adjusting, etc., is a great deal more than the benefit one is supposed to derive from it.—Yours faithfully, JOSEPH PARKER.

Interesting Type of Tankless Motor-Bicycle.

Sir,—Some time ago I secured a patent for what I term a tankless motor-bicycle, that is, the whole of the frame tubes are utilised for the carrying of petrol or other oil. I have since had a machine constructed on the lines of the specification, and have ridden it several hundreds of miles. You will see from the accompanying photographs that the machine presents the appearance of an ordinary bicycle with a Minerva engine attached. The frame, the tubes of which hold nearly a gallon of petrol, is built with slightly



Illustrating letter from F. H. Green.

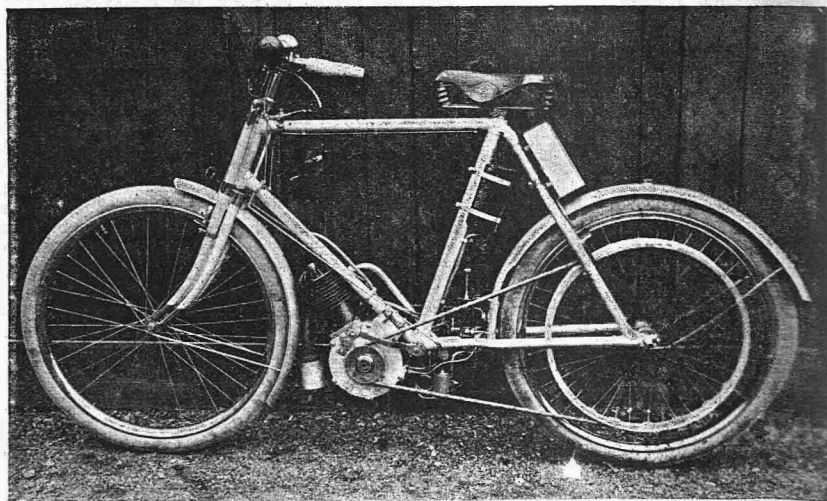
larger tubes than usual, and, owing to the special construction of the connecting frame tube lugs petrol circulates freely through the entire set, when poured in at the opening provided in the seat pillar. The back mudguard is made hollow, and acts as a receptacle for nearly a quart of lubricating oil, and is filled at the opening on top of guard, which is easily seen in photo. A pipe from the bottom bracket

is connected to an ordinary F.N. carburetter, which supplies the 2 h.p. Minerva engine in the customary style. The sparking and throttle levers have been carried well up near the steering pillar, so that the frame space is entirely free, and I can at any time fix to the top tube an ordinary touring luggage bag. The accumulators and coil are carried in a small box at rear of saddle. The machine runs very sweetly, and I attribute this in some measure to the equal distribution of weight throughout the entire frame, instead of "lumping down" on an uneven road, as in the case with a tank. So far I am very pleased with this first machine built on these lines, and I may mention that some very excellent work has been put into its construction by Messrs. Stretton, Ltd., motorcycle makers, Cheltenham. Enclosed please find copy of specification drawing, which I hope may be of some interest to your readers.—Yours faithfully, F. H. GREEN.
87, High Street, Cheltenham,
September 9th, 1903.

"Balata" versus Leather Belts.

Sir,—May I thank you in the first place for the great help I have received from time to time from your paper? As the owner of a small 6 h.p. belt-driven car, doing my own driving and repairing as far as possible, I have often had reason to be grateful for the useful articles and answers appearing from week to week. Lately you recommended the Balata belt to an enquirer. My experience has been the reverse of happy. The specimen I send you only ran about 150 miles on the low speed, and then simply melted to rags on the hill between Ashton and Chipping Campden in Gloucestershire. Previously, since first putting it on, I had cut out quite a foot or 14 inches on account of stretching. You will see that all the composition has melted away, and the fastener is torn out. Another length I put on began to go just in the same way and I took it off in disgust after running from Evesham to Gloucester. The edges go first, the whole belt heating and getting soft, while the composition forms a sticky surface on the pulley wheels. I have gone back to leather.—Yours faithfully,

C. F. C. KNAPP.



Illustrating letter from F. H. Green.

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.

"Subscriber."—All the technical terms you wish explaining are dealt with in a particularly clear manner in our "Motor Manual." It will pay you to write for a copy at once; fifth edition is nearly sold out.

J.T. (Loughborough).—We should not fit a higher power than $3\frac{1}{2}$ h.p. for air cooling. Best arrangement of fan you had better discover by experimenting. Revs. of motor, maximum 1,200 per min.; wheels 28 in.; tyres $2\frac{1}{2}$ in.; gears 6 to 1, 9 to 1, and 12 to 1.

F.D. (Grayshott).—It would not be possible to give an opinion as to whether the crack in the Ormonde motor gear case would prove a serious defect without inspecting it. Best to take the machine to a competent motor repairer. Of course, it may mean nothing of any moment except that some of the oil may get out.

Loss of Power.

H.W.L.C. (Highgate) writes:—I have a new $2\frac{1}{2}$ h.p. motorcycle (Excelsior) which will not climb hills as it did at first. I have only been about 200 miles on it altogether. Ignition is perfect, accumulator is not run down, and I get a nice "fat" spark at the plug: carburetter spray works well, compression is good, valves seem to be all right, belt does not slip. What I cannot understand is that on the stand the machine runs splendidly and on the level I can get great speed out of it, but directly I come to a hill of any kind power seems to go. I have tried everything I can think of, different petrol, etc., without any improvement.—It would appear to us that your motor overheats, and that the overheating is due to flooding of the carburetter. It may be a leaking valve which causes the flooding. If the carburetter is a "Longuemare" it would be as well to experiment with a smaller size spray nipples, as the one fitted may allow too much petrol to come through. If the gear is not higher than 1 to 5 this machine should take hills in fine style.

W. H. Ball (Newcastle).—A good second-hand "Quad," we think, would be the best investment. If you can obtain an "Ariel" or "Royal Enfield" at your figure do so. $2\frac{1}{2}$ h.p. with two gears would be better than single gear. In this case water-cooled head would be necessary. If the brakes are not powerful enough get the Bowden Patents Co. to fit special ones.

Humber Motorcycle Difficulties.

E. S. Walker (Miffield) writes:—I have a 3 h.p. Humber machine (Beeston) which goes well on the level except at high speeds when it seems to misfire; on the hills it goes well when cold and also up medium hills, but up steep ones will stop dead even with spark retarded. The exhaust pipe is only $\frac{1}{2}$ in. bore; is this large enough? Humber's say it ought to be large enough, but I do not think so: do you think it would be an improvement to put in a 1 in. pipe? I also think the ratchet and pawl arrangement for starting the engine is hardly satisfactory, mine having broken right out from the crank twice in a month. Do you recommend the free engine Humber's have just brought out? Thanking you very much for past advice that has helped me.—You should first have a look at the brush contact and put a little more "set" on the spring. Then is it not probable that your carburetter floods and causes engine to overheat? It is also important to run with the least possible amount of gas or you will not be able to get a full charge in cylinder for hills. Personally, we should prefer a $\frac{1}{2}$ in. exhaust for this power motor. It is very rare to hear complaints about ratchet. Free engine is satisfactory and we hear this is proving very convenient for traffic riding or in the event of having to start on a steep hill.



A competitor starting in the recent 200 Miles Trial of the Motor Cycling Club.

Battery Query.

W. F. M. Copeland (Stoke-on-Trent).—We have found it advisable to remove the carbons out of the battery when bichromate salts are used as there is a strong tendency for crystals to form on them: these are extremely difficult to remove. Of course, the crystals only form when the liquids are about exhausted, but this point wants careful attention. For this reason we have found chromic acid much more convenient as a depolarizer, as this does not form crystals. In any case remove and wash the zincs.

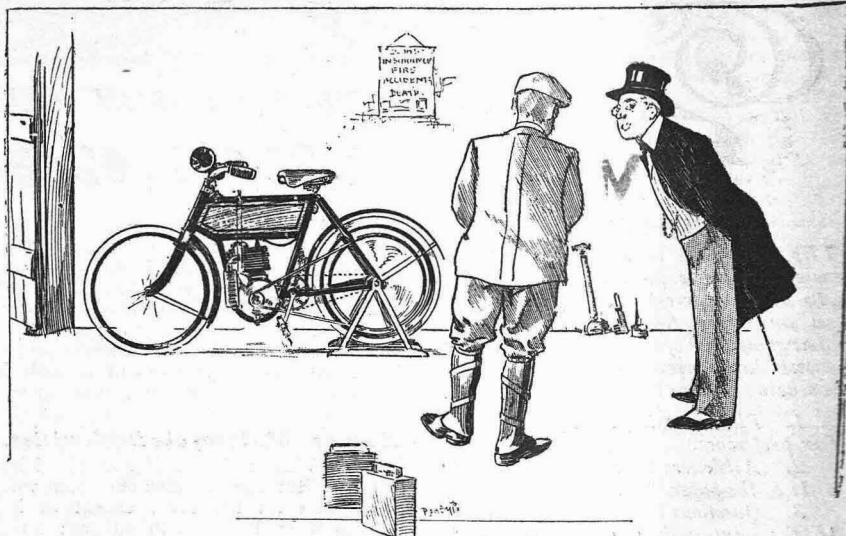
Sparking with Two Volts, etc.

"Voltmeter" (Dublin) writes:—(1) Having seen it recommended in a letter in a recent issue as a remedy against destructive burning of platinum contacts to run a bicycle on 2 volts only, i.e., on one cell of accumulator, I tried it and was much interested to find that it seemed to make no difference in the running of machine. In a fifteen mile ride it did not misfire once, and exploded even the largest charges. What, then, is the object of the customary 4 volts? Why not as a regular thing keep the other cell as a "spare"? (2) Can you give me an idea of the degree of heat, as estimated by touch, which constitutes "overheating"? I have heard that a good test of careful driving consists in being able to start right off, after machine has been laid aside for some hours, without having to unstick piston rings with paraffin. This shows that during the preceding riding the heat was never so great as to burn the lubricating oil. Now I invariably have to use paraffin before a ride, and on getting home again cannot touch the engine even momentarily. Inlet pipe is unbearably hot quite six inches from valve. Would it be advisable to try to fit up a wind scoop of some kind? (3) Is it finally settled whether external spark gaps do or do not injure the coil?—(1) In our opinion the reason why it is customary to use 4 volts for obtaining the spark is that it is not so vitally important to have the contact breaker and spark plug points so delicately adjusted as it would be when using the lower pressure; and again, there is much difference in the efficiency of different makes of coils, as we have found out by experiment; some will give a very fair spark ($5\frac{1}{2}$ -6ths inch) with 2 volts and others barely $\frac{1}{2}$ in. Again, something depends on the degree of compression obtained in the cylinder: at 70 or 80 lbs. to the square inch it is doubtful if a 2 volt primary current would fire the charge which it might at 50 lbs. compression. Still, all riders can try the experiment, and if they can get perfect firing with 2 volts it would be an economy to do so. It is as well to remember that the plug points require adjusting to $1\frac{1}{4}$ to $1\frac{1}{2}$ inch or less and are liable to be short-circuited with a particle of soot. (2) With regard to the degree of heat that constitutes overheat-

ing it may be said that one should be able to bring the hand within two or three inches of the combustion head without the heat being very noticeable. An overheated engine feels pretty warm six or eight inches away. By driving with the minimum of gas we have found it possible to hold the fingers on the combustion head of a good engine for a few seconds without burning them. We hardly agree with the test of careful driving you refer to: it does not by any means imply that because a motor requires a few drops of paraffin injecting that the lubricating oil has got burnt up. Some grades of oil get thick at normal temperatures. Wind scoops are of questionable value. (3) A spark gap undoubtedly puts a greater stress on the secondary insulation, but a good coil is quite able to stand it.

Fault with the Wires.

F. T. Townsend (Sheffield) writes:—My difficulty is as follows:—Accumulator runs down after about ten miles (sometimes less) and I think the cause must be similar to that in the case of "H. N. Spindler" in September 16th issue, viz.: the coil. It is a Basse and Michel "Nil-melior," plain make and break: I have a P. and R. spark-gap on top tube: my contact points are pure platinum and properly adjusted. After having accumulator recharged the engine runs beautifully, without the sign of a misfire, for about ten miles; then misfires and finally stops, and I find the accumulator quite run down. After an hour's rest it will spark well again for a mile or so, and then go off again. I thought it might be the accumulator, but have tried different ones, with the same result. No short circuit anywhere: there is a *very heavy spark* at contact breaker, although I have put a wire direct from contact plate to a nut on motor. Would you advise me to try placing a length of german silver wire in circuit of accumulator or get another coil? If the former, will you please tell me exactly how to fix this; I mean at what points should it be connected to the accumulator, and ought it to be insulated like the other wires? The contact points get pitted badly, and have to be cleaned every five or six miles, although they are guaranteed platinum by Derby and Co.—The coil you have is one of the best, and we can hardly think that there is anything wrong with it. If you had not specially mentioned that you find that different accumulators run down in the same way we should have said your accumulator was defective, probably short circuited inside. There can only be two reasons for your trouble: either you have the circuit incorrectly wired; or there is a "short" on one of the wires, most likely on the positive wire from the coil to accumulator. You require to make certain that the M terminal of coil makes a good connection with the motor; because not only is this terminal the return for the high tension current, but one pole of the condenser (inside coil) is joined to it, and it is important that this be in contact to frame, otherwise heavy sparking results. We feel sure that a very close investigation will show up the fault if you can rely on your accumulator and coil. It is not worth while experimenting with a resistance in circuit till you are sure about the wiring. Of course, you might get a competent electrician to test the coil and see how many amperes it takes to work it.



"That's the machine."
 "Ah, yes—very jolly."
 "It weighs but 95 lbs."
 "Ah, yes—now—how much a pound?"

Throttle versus Exhaust Lifter.

E. H. Wynne (Uppingham).—The lifting of the exhaust valve certainly does automatically control the amount of gas that is taken in. The more fully the exhaust valve is opened the less pull there is on the inlet, hence the gas admitted is less in proportion. It would be much better in our opinion to fit a throttle valve; Ross, Courtney and Co. (see advertisements) could probably fit you up with one; let them know exact requirements. If you cannot get the petrol to flood out on pressing float there is likely to be something at fault, perhaps an obstruction in supply pipe. We believe the fact that your motor gets hot shows the necessity of having a throttle fitted, as when the exhaust valve is down you are running on full gas the whole time.

Charging by Primary Battery.

J. Haslop (London, N.) writes:—I have fitted up a primary battery from instructions in "THE MOTOR," 25th March, but for some (to me) unaccountable reason I cannot get the full amperes out of it when accumulator is in circuit. Will you kindly help me in this matter? Battery gives over 5 volts, and something more than 6 amperes (my instrument only registers up to 6 amperes). When I put accumulator in circuit it first shows about 2½ amperes, and gradually goes down to ½ ampere, and there remains steady. (1) What is most likely to be wrong? (2) Would it be detrimental to accumulator to charge at a lower rate than the makers specify? (3) If not, would it charge as well, only taking longer? (4) How many pints of water to each pound of chromic acid? (5) Should the ammeter show 2 amperes right up to the time accumulator is fully charged? I have tried three accumulators (P. and R. armoured) and get same result: they were all only about quarter run down, so the resistance would be (I suppose) at almost its highest point.—(1) You must have some imperfect connections, as the battery should show nearly 8 volts. You probably also have the solutions too weak in acid. Do not have the plates far apart in the liquid and see that all connections

are clean. (2) If you can get ½ ampere through the accumulator and it keeps steady it will charge up all right, but if you get more volts from the battery you will get a corresponding increase of current through accumulator. (3) Yes, if you charge at a low rate it takes more time. (4) A good strength is: chromic acid, 8 ozs.; water, one quart; and then add 4 ozs. sulphuric acid. (5) As the accumulator gets fully charged the current will drop owing to the back pressure against the charging battery.

A Starting Trouble.

T. Gaskell (Worksop) writes:—Please help me through your valuable paper to overcome the following difficulty: I have an 8 h.p. car which I am running with two dry batteries coupled together showing well over 5 volts by my voltmeter. Last week I got a Peto and Radford's accumulator showing 4 volts the two cells when tested by the voltmeter at the charging station, but only 3.8 by my instrument when the back of case is open and 4 volts when closed. Which do you consider the best way to test, open or closed? The difficulty I have is this: with the above accumulator it takes me sometimes an hour to start the engine, and when the engine is running, if I advance the spark it stops. I have examined the spark plug and find that it gives a splendid spark. Do you think the fault lies in the accumulator?—We could not say what is wrong with your voltmeter to give two different readings. We get ours to read the same, open or closed. The cells should show nearly 4½ volts if well charged. The make of cells is a first-class one, and it may be that it has not been thoroughly charged up. From the fact that advancing the spark stops the motor it looks as if it was either a poor spark from weak accumulator, or as if the trembler or contact breaker were not well adjusted. Another matter may be that the gas supply is not good. Alteration of the amount of movement of rocker on advance side might be the cause. We should require more details to suggest further, as some points in the letter contradict each other.

E. Clay (Reading).—We believe you will get over the starting difficulty by fitting an air throttle on your carburetter; you have too much air at starting.

W. Basham (Brighton).—When you say that the crank arm of your motor has a lot of play we understand you to mean that the end bush or bearing of the connecting rod is worn and allows a certain amount of back lash on the crank pin. The remedy will be to have a new bush fitted: this will cure the knocking you speak of.

Fore-Carriage Query.

"Doctor" (Nuneaton) writes:—I have a $2\frac{1}{2}$ h.p. Excelsior machine and fore-carriage. When fully loaded with its two passengers (weight 24 stone) I find that I am unable to get up a hill of any size, say 1 in 14, even with heavy pedalling. Can you suggest anything? Could I have a two-speed gear? Would it be wise, or would it be advisable to have a larger engine? I am delighted with the fore-carriage, and I have been running it with the chair off as a single. I find it most useful in this form to me: no vibration to arms, no side-slip.—We cannot think you are getting the best work out of your motor. The $2\frac{1}{2}$ h.p. Excelsior engine should be quite equal to a 1 in 14 gradient without pedalling assistance. It is just possible that you have a rather high gear fitted, perhaps the ordinary 1 to $4\frac{1}{2}$ bicycle ratio: we think you should try a 1 to 6 ratio. We do not know how you drive the motor, but it is important to keep it as cool as possible by throttling down on the level and then when you come to a hill open the throttle and gradually retard the spark. We should not advise fitting a two-speed gear for the present, neither do we think a larger engine really necessary, if you will get your present one up to pitch. A good article "How to Drive a Fore-carriage" appeared in a recent issue. This would assist you.

Curious Trouble with 12 h.p. Twin Cylinder Motor.

R. H. Jones (Colwyn Bay) writes:—I am in trouble with a twin 12 h.p. car, and am really unable to locate the trouble. The car will start well, but when going at high speed or sometimes on the approach of a hill one of the engines will instantly stop and the machine will run on only one engine, but on changing the gear to slow speed the motor instantly picks up speed and goes to work again: this very often happens on a good level road. The electrical connections are all right, and upon examination when stationary the throttle answers well to the governor; the sparking is also good. The engine is fitted with a B. and M. coil, non-trembler pattern.—This is really a matter for close investigation of the motor itself. The first thing we should do would be to see that there is no chance of a spark missing for the particular cylinder, as it often happens that the contact breaker may be adjusted rather fine and miss at high speeds although giving a good spark at low speeds. At any rate, first make absolutely certain that the sparking is regular. If this is assured and the trouble still continues it may be that one cylinder runs hot quite continuously, and a very little extra load overheats it to such an extent that it pulls up. A defect in the lubrication would accelerate overheating. It would be as well to also see to the valves to ensure good compression.

W. W. Harris (Garston Dock).—We advise you to take the following tools and parts with you:—(1) Pair of cutting pliers. (2) Adjustable spanner to take every nut on the machine. (3) Screwdriver. (4) A smooth and also medium cut flat and half round files. (5) Piercer or bradawl for belt. (6) Spare exhaust and inlet valves and springs, spark plug, small spare accumulator, trembler and screw, belt hooks, copper wire, insulating tape. This equipment should see you safely through.

Carburetter Flooding.

W.C.M. (Preston) writes:—I am riding a machine fitted with 1903 2 h.p. Minerva motor which has run splendidly until recently, with the exception of occasional flooding of carburetter. Latterly the engine has begun to overheat and run jerkily after going five or six miles with gas cut down as low as possible. It is also much harder to start than formerly. The engine has been overhauled by two separate repairers, who both say it is in perfect order. Careful attention has satisfied me on the following points:—Compression excellent: lubrication carefully attended to: accumulator fully charged: wiring in perfect order: carburetter cleaned out and new needle valve fitted, float in order: valves ground in and apparently working right. What is probable cause of: (a) Overheating? (b) Difficulty in starting? If the carburetter is at fault would you advise a new one? and, if so, what make?—We should advise close attention being paid to the carburetter: it is pretty certain to be in a continual state of flooding. Examine float carefully to see if it is cracked and so letting petrol get inside. Are you certain that the engine gets properly lubricated? Want of lubrication for the piston will, of course, cause overheating.

Capacity of Cells, etc.

"Antipodean" (Melbourne) writes:—(1) How long does the average 4 volt. 20 ampere-hour accumulator, as used on motor-bicycles, take to fall below the point of sparking efficiency when freshly charged and then not actually used? (2) What is about the life of the above type of accumulator when properly looked after? (3) What distance should four of the best dry cells run a machine? Do not they also cause much less wear and tear on the platinum points? (4) What is the best kind of leather for flat belts? (5) What is "Collan" oil, often used as a dressing for belts? (6) Do all motor cylinder oils come from a petroleum source? Could a thick oil be thinned down with, say, paraffin?—(1) A good make of accumulator will not have lost more than two or three ampere-hours after not being used for a month. (2) We know of several accumulators that have done 5,000 miles, and are none the worse for wear. (3) Depends on the size; the old De Dion cells used to last 2,000 miles or more according to reports: we think 1,000 miles a good average. They certainly did not fuse the platinum rapidly, but this was due in some measure to the coil being specially suited to the smaller current strength. (4) Raw hide was much favoured at one time, but ordinary leather seems to have proved the most reliable. (5) Collan oil is a special dressing sold by the Collan Oil Co., Long Lane, London, E.C. (6) Yes, but not advisable to add paraffin as it lowers the flash point.

Fan Cooling for Fore-Carriages.

A.J.B. (Stroud) writes:—My fore-carriage prevents the cooling by air currents of $2\frac{1}{2}$ h.p. Excelsior motor. I should like your opinion of the efficiency of cooling by means of a propeller-shaped fan as recommended by R. G. Priest in a recent issue, say, a 6in. to 8in. diameter fan driven by a half-crossed band from a countershaft. Would this take much power? Would the fan return some of the power in propelling the machine as in the case of the fan-driven machine on the ice illustrated in a recent issue of "THE MOTOR"? Can you give me the name of makers of fans used for cooling radiators on motors?—Although we have not actually made the experiment we see no reason why a small fan placed in a good position to blow air on to the combustion head should not act efficiently. If fitted on a good ball bearing the amount of power it would take would be negligible. Much, of course, would depend on how the fan was mounted, and this would have to be found out by experiment. The problem of satisfactorily cooling fore-carriage engines has yet to be solved, but for our part we should much prefer to adopt some form of forced draught cooling than the complication and weight of a water-cooled system. We do not at the moment know of any firm making fans specially for the purpose. Most firms using them make their own.

Longuemare Carburetter Trouble.

A.E.R. (Sheffield) writes:—Having profited before by your "Information Bureau" I now come to you with a difficulty which has puzzled me for some time, though whether I am entitled to conclude that there is something wrong I cannot say. I have a Longuemare carburetter type "E" with two chambers and use it with a $1\frac{1}{2}$ h.p. engine. My ignition (trembler coil system) is perfect, and very powerful, the spark in fact would ignite almost anything. And yet I find driving very troublesome; the air regulation has to be so very delicate I have found it far more troublesome than a surface carburetter in practice. When I get the right mixture everything is perfect, though I cannot run at high speeds with a low throttle without missing. An important point, I think, is that I could not get any satisfactory results, except at low speeds, until I ignored the air regulator on the carburetter, leaving it shut, and used a regulating cap nearer the engine. Before doing this I got the effects of too strong or too weak mixture, as the case may be, but certainly at high speeds no good intermediate mixture.—It seems probable to us that you have not got the most suitable size of spray jet and choke tube (the latter being the copper funnel which concentrates the air on the petrol as it issues through the slits in the sprayer). From the fact that you have had to shut off the air regulator permanently it would appear that you do not get enough petrol through the sprayer. If you have one with a larger number of slits we should advise fitting it, or the present slits may be very slightly enlarged with a fine saw. The explanation of the misfiring at low throttle confirms the above suspicion, as there is not enough pull or suction effect on the jet. Of course, it would be as well to first make sure that the needle valve in the float chamber works freely.

Explosions in Exhaust.

F. Burgess (Shorncliffe) writes:—I have a 2½ h.p. Excelsior motorcycle. I have only one fault with it, viz., the loud report it makes on switching on; it frightens horses and people alike. I get this report each time I switch off and on again. I shall be thankful to know of any remedy for this.—Try the following:—Switch off a few seconds before lifting exhaust valve and do not have the spark too much retarded. The report is due to the exhaust valve being full open whilst the ignition is taking place; exploded charges consequently occur in exhaust box. It sometimes occurs also through weak charges missing fire, passing into silencer, and then being exploded by the next exhaust.

Bogus Platinum Again.

C.E.B. (Paisley) writes:—I have had some trouble in starting my motor lately; that is, starting it in the first few yards as I always used to. I have found that the trouble lies with the platinum points, as when they are cleaned up with emery cloth the motor starts off on the first stroke of the pedals as of yore. Now each time I take the machine out for a 15 to 30 miles' run and let it stand for a bit it will not start for 150 yards unless I dress up the platinum point. The platinum screw after running always has a small conical deposit of platinum and also a little black substance gathered on it, which has to be removed. The trembler has lately been re-tipped with what was sold to me as pure platinum. Would inferior platinum cause this? or might it be a fault in the condenser?—We really believe that you would find that the contacts are silver. Real platinum does not show a black deposit, although if the coil is not a very good one they fuse after a time. Safest plan would be to buy a small quantity of the genuine platinum wire from a reliable firm like Derby and Co., 44, Clerkenwell Road, London, E.C., and either make the contacts yourself or get a jeweller to do it.

Destructive Sparking at the Cam.

W. E. Eltringham (Shrewsbury) writes:—Please tell me what is the matter with my "Ariel" tricycle, which has recently developed the following peculiarity:—Noticing a good deal of inexplicable misfiring, I took off the commutator cover and found quite a stream of sparks being given off from the half-speed cam on which the trembler blade rests when not in notch. They exactly resembled the sparks given off from a knife grinder's emery wheel. My coil has four terminals on one side and one on other leading to spark plug. Is my wiring right? Accumulator, petrol, etc., are all right, but I have never noticed these sparks before. The commutator has been in use three years and is now rather loose.—The explanation is as follows: Owing to the contact plate having worn loose there is a very imperfect return from trembler blade to motor, and it is only when the trembler presses on the cam that the current can get through; hence the sparks. The remedy is simple: have a hole tapped in base plate for a screw and then take a wire from this to a bolt on the motor so as to give an independent connection. We recently overcame an exactly similar case of sparking by this method.

H. W. Eastcott (Gateshead) writes:—I have an electric current of 110 volts. Would you kindly inform me what lamp I should put in circuit to charge a 4 volt accumulator?—You will find a 32 c.p. lamp just right if your accumulator charges at 1 to 1½ amperes. If it is a small size accumulator use a 16 c.p. lamp. Our "Motor Manual" gives diagrams and full directions.

Charging Accumulators.

E.O. (Scorrier) writes:—Through the medium of "THE MOTOR" will you be good enough to answer the following questions respecting my accumulators:—(1) The voltage reads 4.2; after riding about 40 miles voltage reads 2.2 for both cells; after resting 24 hours voltage again reads 4.2: "Invicta" is the name on accumulators, capacity 8 amperes. (2) Is a 4 volt current constant right for charging these accumulators? (3) I have permission to charge my accumulators from a secondary battery of 60 cells, how should I do so?—It is quite evident that your cells are practically exhausted. An exhausted cell will always slightly recover with a long rest and show 4 volts. This is quite a fictitious indication as there is no capacity left. You require at least 6 volts to charge a 4 volt accumulator. It will be quite easy to charge from the battery of 60 cells. Simply connect the 4 volt cell in series with a 110 volt 16 c.p. lamp right across the 60 cells, having positive pole of small accumulator to end positive of the large cells and leave on till the small cell effervesces strongly.

Throttle Valve Query.

W.H.M. (Leicester) writes:—Like almost everybody else who has trouble with motors I want your advice, on the following points:—(1) Would a throttle valve on a 4½ h.p. De Dion phaeton of the 1901 type make the car run more quietly on the slow speed for traffic driving? (2) Would it be best to throttle the induction valve directly by a lever and spring as on M.M.C. cars, or to put a separate throttle valve in the mixture supply pipe? (3) The exhaust box seems to be very small for the car, and there is a good deal of noise from it. Would a larger one decrease this? (4) There is a lot of general rattle which I can only trace to the gear box: I wonder if this indicates some lash between the gears and the axle. Would renewing the gears be a very expensive job?—(1) We certainly think a throttle would be an advantage. (2) The general tendency is to govern on the throttle. (3) A larger silencer properly designed would undoubtedly conduce to quieter running. But everything depends on the design. (4) The gears doubtless want carefully examining. A clever motor repairer can as a rule readjust the gear wheels with a great reduction in the noise. Renewal would be rather expensive as you say.

ANSWERS BY POST.

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

Friday, September 25th.—C. T. Willetts (Birmingham), W. K. Bell (Teignmouth), M. B. Saunders (London, N.), G. Heath (Bath), J. F. Robinson (Stoke Pogis), Dugga Bros. (Plymouth), J. S. Darwell (Leigh), W. F. Macey (Ponder's End), Chas. Harrison (Callander), H. S. Fuller (Bedford), E. F. Allen (London, W.C.), E. G. Henigan (Fulham), J. Horswill (Chester), H. Barnes (Petersfield), E. J. Wardleworth (Manchester), L. B. (London), A. Stiles (Worcester), T. F. Cox (Dulwich), H. N. Warren (Liverpool), J. Rennie (Chelsea), J. T. Anderson (Wigan), A. E. Thurgood (Guildford), A. R. (Norbiton), Banks and Park (Kewick), T. Firminger (Southampton), J. Bateman (London), C. J. Keeble (London), S. Morrish (Aixminster), Bank and Sons (Derby), J. S. Strangeways (Market Deeping), N. McIntyre (Chislehurst), D. McCulloch (London), J. Chapman (Hammer-smith), R. S. Clifford (Loughborough).

Saturday, September 26th.—J. C. Vaughan (Holmwood), F. A. Morgan (Chilwell), R. R. Hare (Tooting), J. McKerrrow (Cummock), R. M. (Rochester), T. H. Cochrane (Falkirk), G. Roberts (Twyford), S. M. Stears (Belfast), T. F. Norris (London), J. H. Jolley (Wigan), H. E. Brook (South Elm-sall), E. P. Robinson (Worcester), G. E. Turner (Rugby).

Monday, September 28th.—W. L. Addison (Shanklin), F. B. Hart (Manchester), G. Havinden (Maidstone), C. Moore (Lincoln), C. Holman (London, S.E.), H. Law (Congleton), M. Mockford (Blackheath), D. Hughes (Sunderland), W. J. Garratt (Ockham), C. Wood (Dürkheim, Germany), P. J. Hood (Treen), W. T. Maddison (Bristol), E. Hyde (Freshwater, I.W.), H. A. Brereton (St. Aubyn's), W. Robinson (Kempston), G. Russell (Southampton), J. Thorburn (Newport), J. Kerry (Downham), C. H. Champness (Walton-on-Thames), E. J. Wardleworth (Manchester).

Tuesday, September 29th.—A. Taylor (Grimsby), I. Kirkland (King's Lynn), B. D'Olier (Arundel), W. B. Hislop (Leith), G. H. Brochie (London, N.W.), E. G. Guthrie (Liverpool), A. Kemp (Barking), D. Roberts (Portmadoc), P. B. Ingham (Guernsey), J. Normand (Abroath), A. Reid (Brixton), F. S. Macrory (Limavady), W. Harrison (Sheffield), B. G. Bowens (Hemel Hempstead), H. E. Brooks (South Elmsall), H. Jackson (Hornsey), L. Dixon (Littleboro').

Wednesday, September 30th.—E. Bartlett (New Brighton), W. Cook (Redhill), H. Skipper (Horsley Down), P. S. Lewer (Cardiff), A. B. Johanning (London), F. Rathborne (Camberley), E. Garland (Warrington), J. V. Moniet (Reading), J. B. Fielding (Holywell), E. G. Waters (Brighton), A. M. Blake (Lowestoft), S. H. Wells (Lower Edmonton).

"THE MOTOR" SHOW SPECIALS

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