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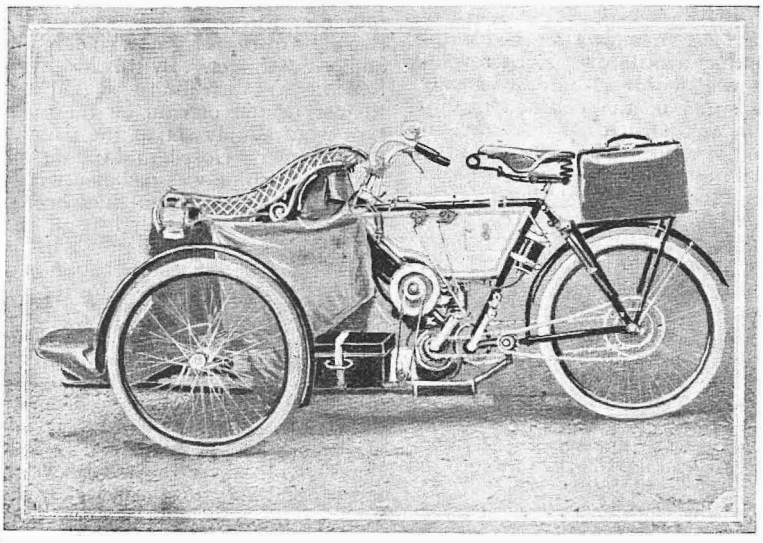
SOME EXPERIMENTS ON A FORE-CARRIAGE WITH A LIGHT MOTOR.

By CYLINDER.

The man who wants to "pass everything on the road" or "take any hill without pedalling," gets a three-horse-power machine of a record breaking type, which looks so attractive in the advertisements, and generally finds that it is heavy and difficult to handle in traffic, and that he has more power than he knows what to do with for ordinary purposes, especially in a police ridden district. He naturally adds a trailer or a fore-carriage to utilise his surplus power; but then, owing to the high gear, the machine will not climb hills so satisfactorily, and the speed on the level is dangerous to the fair passenger.

I belong to the less ambitious majority who prefer to combine exercise with outing, and would rather choose a light machine, easy to start and handle, even if it required occasional assistance with the pedals, and had now and then to submit to the ignominy of being passed and smothered by a motor-car. Motorcycling by oneself or with a trailer is dull work. The fore-carriage is safer, more compact and sociable, and at the same time much better adapted for carrying luggage on long tours, or for short rides in traffic. I have, therefore, been much interested in testing the capabilities of a light motor to drive a fore-carriage, and I hope the results of my experiments may be of interest to readers of this journal. When Messrs. Garrard assured me last January that the little Clement motor, with a cyclinder only 60 by 70 millimetres (about the same size as the old 1¾ Minerva, and less than half the capacity of the 2¾ Humber) was quite strong enough to drive a fore-carriage, I confess that I was a trifle sceptical, but I thought it worth while to try the experiment.



The machine referred to in this article.

HOW TO AVOID OVERHEATING.

The great complaint against the fore-carriage is that besides being harder to push than a trailer is to pull, it screens the engine, and so causes overheating of the motor. The same objection is raised against the use of a light motor with a low gear for hill-climbing. With the combination of a light motor and a fore-carriage, trouble from this source was naturally the first that I encountered, but it was also the easiest to remedy. In the course of the first five or six miles the exhaust valve became so heated that the spring softened, and the valve refused to shut. I then got my wife to make me a wind scoop of brown holland in the form of a conical bag, tied with tapes to the lamp brackets on either side of the fore-carriage in front, and tapering behind so as to concentrate the draught on the head of the engine. The trouble at once disappeared, and it became possible to drive the engine continuously at high power without further difficulty from this cause. A wind scoop of this kind is washable, light and easy to fix, and adds very little to the wind resistance in comparison with the increase of efficiency which it imparts to the motor.

NECESSITY OF LOW GEARING.

The C.G. motorcycle, when fitted with the fore-carriage, weighs 210 pounds. The two passengers weigh 300 pounds, and we carry 80 pounds of luggage on tour. Including petrol, etc., this makes about 600 pounds. To start and drive such a weight with a light motor necessitates low gear both for the pedals and the engine. As originally received, the motorcycle had 6in. cranks and 66in. pedal gear, and the engine two gears, about 6 to 1 for starting and 8 to 1 for hills. This was no doubt the most suitable for the motor-cycle, but it was not low enough for the fore-carriage. For ease of starting and managing in traffic, I found it necessary to fit 7in. cranks, and to change the sprockets so as to give 49in. gear for pedalling, thus gaining a crank ratio of 7 to 1 in place of 11 to 1, which enabled me to start without excessive exertion up a gradient as steep as 5 per cent., even with the fore-carriage fully loaded.

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The original engine gear was fairly satisfactory for good clear roads and moderate gradients, and the two-speed arrangement was a great advantage, as enabling the driver to take advantage of different phases of the road. On the high gear the engine drives through an epicyclic train, which is brought into action by the friction of a leather band on a drum. This provides the necessary slip, and gives a very smooth drive, so that the jerks of the engine on the chain are not felt even at starting. On the low gear the drum is free, and the gear turns as a whole without friction at the same rate as the driving sprocket; the drive is transmitted to the rear hub through a free-wheel roller clutch, so that the machine can be pedalled or can run free down hill without working the engine. This is a great convenience, except that the engine comes to rest when switched off. For riding in traffic it is most convenient to use the high gear, because it works more smoothly at a slow speed than the low gear, and also to save repeatedly starting the engine after switching off. I found, however, that the high gear was inconveniently high for running in traffic with the fore-carriage, and that the low gear was not low enough for several of the hills even in the immediate neighbourhood of London. I also found that the long, heavy chain from the two-speed gear to the back wheel was apt to get into a dangerous state of vibration at particular speeds. The risk of a broken chain was avoided, and the gear lowered to a suitable extent, by dividing the long chain in two parts running on a pair of gear wheels with 16 to 20 teeth respectively turning on an intermediate axle fixed to the chain stays near the back tyre. This gave 10.5 to 1 for the low gear, and about 7.8 to 1 for the high gear. The high gear with the smooth friction drive thus became the normal running gear, and proved delightfully steady and free from vibration. The low gear with the direct chain drive was reserved for gradients exceeding 5 per cent.

SPEED, POWER, AND PULL.

It would naturally be thought that with so low a gear the speed would be excessively reduced, but I did not find this to be the case. The change of gear had practically no effect on the speed attainable with the fore-carriage. A speed of 20 miles per hour on a good level road was reached without difficulty, the engine making a little over 2,000 revolutions per minute, which was well within its limit of steady and efficient running. The speed of the engine was increased by the change of gear, so that it made more revolutions for a given distance, but it required less gas, and the efficiency of working at the higher engine speed was so much increased that the consumption of petrol was actually reduced. Before lowering the gear, my best record for a long run was 112 miles per gallon, with the fore-carriage fully loaded, at an average speed of 14 miles per hour, including several miles in heavy traffic at a reduced speed. After making the change, I succeeded on several occasions in reaching nearly 140 miles per gallon, at the same average speed. Allowing something for increased experience in running the motor, there still remains a balance to be credited to improvement in the efficiency of the engine due to the higher speed of rotation. The reason is that in these small engines the gases cool so quick that high speed and rapid expansion are essential to utilise the maximum pressure of the explosion while the burnt gases are still very hot.

To test the power and pull of the engine, I fitted a curved spirit level graduated to read gradients per cent. This gradimeter was tested by raising the back wheel on blocks of measured thickness, and found to be approximately correct in its indications. To take the gradient accurately on a hill, it was, of course, necessary to stop the machine so as to eliminate the effects of inertia of the spirit in the tube. The speed at any moment was indicated by a small hot wire voltmeter of home manufacture, connected to a little dynamo, which was also employed for charging the cells while running. With the engine running on the low gear at its most efficient speed of about 1,600 revolutions per minute, it was possible to take the machine fully loaded up 200 or 300 yards of a gradient of 1 in 10 at the rate of 12 miles per hour, with pedal assistance. A steeper gradient could be negotiated provided that it was short enough to rush without tiring the pedals. The machine and luggage, without the passenger, could be driven up a long gradient of 15 per cent. (1 in 6.7). But as the machine was not very heavy and the engine was free, we generally preferred, for the sake of sociability, to rush it up the severe gradients as far as possible, and then push it till a convenient place could be found for a fresh start. To take a weight of 600 pounds up a gradient of 1 in 10 requires a pull of 60 pounds, which is equivalent to nearly two horse-power at a speed of 12 miles per hour for the mere raising of the weight. I believe the little Clement engine is really capable of working at something like this power for a considerable stretch when efficiently cooled. The pedal assistance comes in for overcoming the additional resistance of the friction of the road surface and engine gear.

CARBURATION AND IGNITION.

With so heavy a weight to drive, quickness of starting on the part of the carburetter was a most important consideration. The machine was fitted with a float-feed spray carburetter of a common type, with throttle and air adjustment, in which the vaporisation of the petrol was assisted by a small copper tube from the exhaust, passing just above the jet, through a somewhat enlarged mixing chamber. The instructions for starting were: to empty any stale petrol out of the float chamber, flood the carburetter with fresh petrol by poking a pin through the hole in the top, then open the throttle wide and shut off the air supply. With an injection of paraffin to free the piston, the machine would generally start after pedalling a short distance, if these instructions were followed, but I could not get it to run steadily at a slow speed, and I found it necessary to keep the air inlet closed in almost all cases to get sufficient supply of petrol. The symptoms indicated defective suction and vaporisation. The carburetter had evidently been designed for .680 petrol, whereas I could only get .720. In order to increase the suction I removed the copper tube in front of the jet, and inserted in its place a sleeve of thin copper surrounding the jet, so as to restrict the air passage and increase the draught. The exhaust gases passed through the annular space surrounding the copper sleeve. The petrol was vaporised by two discs of copper gauze soldered in the copper sleeve above and below the jet. By this means, the suction and vaporisation was so much improved that it was unnecessary to flood the carburetter or shut off the air supply at starting. The taps were simply set at the usual running point (with the throttle nearly closed, and the air inlet more than half open), and the machine was pedalled with the engine free; as soon as sufficient momentum had been gained, the engine was thrown into gear loosely by pulling the high gear lever into the first or second notch; the exhaust valve was then closed, and the engine invariably began to fire regularly in the next two or three yards, except on the rare occasions when I had forgotten to turn on the petrol or free the inlet valve. The insertion of wire gauze in the carburetter is a great advantage with poor petrol, but in frosty weather it may freeze up if the heat supply is not adequate. Hence it should be soldered to the hot copper sleeve. On very dusty roads it may become partially choked, which is indicated by a slight weakening of the mixture. To avoid this, I at first fitted a linen bag to cover the whole carburetter and exclude dust, but I found the gauze was very easily cleaned at any moment while running by simply opening the throttle wide for two or three seconds at a high speed, and, if necessary, closing the air inlet. In ordinary running, I follow the maker's instructions, and keep the throttle nearly closed and the spark advanced to the utmost, with the mixture on the weak side; except, of course, for reducing speed through villages or police traps, or at awkward corners, or on greasy roads, when the spark must be retarded.

For hill-climbing, one is generally advised in all the manuals and makers' instructions to open the throttle wide and retard the spark. This is bound to overheat the engine and foul the cylinder on a hill of any length, unless one goes very slowly, as so much of the combustion takes place during the stroke.

(To be concluded.)

HINTS AND WRINKLES.

Spark Gaps Unsatisfactory with less than Four Volts.

It is generally understood that an ignition accumulator only retains a voltage of 4.4 for a certain period. Then it falls to exactly 4, and keeps constant at this figure till approximately four-fifths of its full capacity has been used up. After this the voltmeter shows 3.9 and 3.8, at which latter point, for all practical purposes, the accumulator may be considered discharged. Since spark gap attachments became popular, it has not been possible to get good sparking with a gap over one millimetre after the voltage has touched 4, and, as a rule, it is necessary to join the high tension cable direct to the plug terminal. The writer tried the experiment a number of times, and found that the spark gap put sufficient resistance into the circuit to prevent a spark taking place at the plug at all when full compression was on. The voltmeter showed just a fraction under 4 volts when placed across the accumulator terminals. Immediately the spark gap was short circuited the motor fired perfectly. There are doubtless many instances in which misfiring could be remedied by short circuiting the spark gap.

The Treatment of Belting.

Complaints of inefficient and slipping belts on motorcycles often appear in the correspondence columns. By adopting the following plan, which has been evolved from advice that has at different times been given in "The Motor," the writer has practically eliminated all belt trouble. With round, twisted, or flat belts the flesh (not the grain or skin) side of the leather should always be placed next to the pulley; this side is not only stronger, and therefore better able to stand the wear and tear of contact with the pulley, but, owing to its structure, it is better adapted for retaining a gripping surface, and is less liable to become glazed than the outer skin. The chief care of a belt should consist in keeping it as free as possible from oil, grease and grit. Supposing a belt has given trouble by stretching or slipping, unfasten the coupling and submit it to the following treatment:—Affix a wooden clamp, formed from two pieces of wood screwed together, to each end of the belt, so that it is firmly gripped; fasten one of these clamps to a beam or support near the ceiling, and to the clamp at the opposite end attach a 56lb. weight, so that it is suspended free from the floor. The belt, whilst in this position, should be thoroughly cleaned by well rubbing it on both sides with a rag saturated in stale petrol; this should be continued until all grease and dirt have disappeared: if trouble is found in removing some of the hard glazed portions, scraping with a knife will hasten matters. When it is quite clean, and the petrol has evaporated, apply and rub in on both sides a good dose of castor or collan oil; do not stint this, and when the belt is well saturated leave it in this position for a few days, if possible giving it a second treatment with castor oil after the first has well penetrated the leather. The ends under the clamps must subsequently receive the same attention, for if they are left harsh and dry the coupling is bound to pull through. Before replacing the belt on the machine, clean both pulleys well on the face and edges. If a minimum amount of trouble on the road is desired, keep two belts going, and always have one under treatment, changing them about as soon as any signs of slipping are noticed. It is probable that a frequent cause of belt trouble is use of resin or belting syrup; a moment's thought will show that these substances are only of very temporary assistance; for, being of a sticky nature, and unable to penetrate the leather, they soon lick up all the dirt and dust, and cause the surface to become hard and glazed, thus destroying the frictional contact between the leather and metal. If at any time it is found necessary to use such substances (as for example, in wet weather), one should always make a practice of cleaning the belt and treating it with castor oil at the earliest opportunity afterwards. Detach belt when not using machine.

Explosions in the Exhaust Box.

Most riders of motor-bicycles have experienced at some time or another the annoyance of charges exploding in the silencer. As a rule the report is pretty loud, and it is liable to startle pedestrians and horses. There are two principal causes for these explosions. (1) Misfiring, resulting from faulty sparking or irregular carburation. A charge of gas may be too weak to ignite with the spark and may be ejected into the silencer; the next charge is probably a stronger one and ignites, and the hot spent charge will come into contact with the last unfired charge in the exhaust pipe, and explode it. The other reason is that of firing very late in the stroke. In this case practically all the energy of the explosion is spent on the exhaust stroke, and this causes a peculiar dull bang in the exhaust box, which is readily distinguished from the noise caused by the explosion of an unfired charge. It is not unusual to get these explosions if the spark is not switched off previous to lifting the exhaust valve. Apart from the annoyance of the report, it sometimes happens that the ends of the exhaust box get blown out; so that it is worth while going to a little trouble to remedy matters.

An incident of the motorcycle reliability trials. A roadside repair.

CYCLOMOT'S CAUSERIE.

Carrying the War into the Enemy's Country.

The idea has been mooted in another quarter that now Parliament has chosen to treat motorists so repressively, a vigorous war should be instituted for the purpose of keeping all road users up to the mark, and of mitigating some of the nuisances from which every motorist suffers. The idea is an excellent one, and it practically embodies a notion which I tried to advance a few months ago. I suggested to a well-known motoring member of the House of Commons that the new Bill, instead of dealing with motor vehicles alone, should cover the whole gamut of road traffic, imposing fines and penalties for reckless driving of any vehicle, whether horse-drawn or engine-driven. But the subject was so large and time so short, if any move was to be made this session, that nothing more was done. Assuming that the Act comes into force in January next, we have three years in which to put this policy into effect; and, really, I think it will pay us to wage a hot war on the horse and the libertines who treat it so badly. I yield to none in my admiration for the friend of man. It has served us splendidly for some thousands of years, and it looks all the better for our careful development; but we have now got something better, with fewer disabilities and fewer limitations. If we put a pair of horses in the shafts and take them over country which is only moderately hilly, their average pace will not exceed four miles an hour, and their maximum distance in a day will be less than forty miles; they are subject to illnesses; they may not be worked more than so many days a week, and they must be taken out and exercised, even if it be decidedly inconvenient, otherwise there is trouble on account of freshness on the very next journey. And there is always the chance of the animals taking fright and bolting, a proceeding which is generally attended with dire results. Compare with this recital the capabilities of a car to transport an equal number of passengers. It will, over hilly country, easily average ten miles an hour. Its daily distance is only limited by the capabilities of the driver, who can easily do 150 miles in the day. The car can be worked every day, or can stand in its stable for a month, and will not be subject to tricks in consequence of the lack of work. It can never take fright and bolt on its own account, and it does not render the roads filthy and insanitary. It is apparent to the meanest comprehension that the better instrument must prevail, and in displacing the horse we shall be causing it no hardship, whilst at the same time we shall be improving our own conditions.

But if the horse can be left to time and circumstance to displace, not so the man at the other end of the reins. He has so long held his monopoly of chartered libertinage that he must be expected to fight when that monopoly is threatened; but, whatever happens, he must go under. He is, in many cases, incompetent, and in nearly all other cases thoughtless and inconsiderate. He drives round a corner on the wrong side of the road if it suits his purpose, and if any other vehicle or road user happens to be in his way—well, so much the worse for that other person. Any cyclist or pedestrian that he should chance to run foul of is bound to be the weaker vessel, and, should there be trouble afterwards, he can always lie and swear that the injured person brought the accident upon himself. Only the other day I saw something of the kind, but the attempts on the part of the delinquent to shift the blame were foiled by the witnesses of the occurrence, who pointed out to the man what, perhaps, he had not noticed himself—namely, that his wheel was right over by the off-side kerb. Then there is a vast amount of reckless and furious driving, particularly on the Sabbath, when the publicans and the butchers get out with their fast trotters and make a racing track of the highway. One road I know is rendered quite impassable for cyclists on a Sunday afternoon because of the vile behaviour of this particular class. Two of them, and sometimes three, will come tearing along, often abreast, or, if not, with the rear one attempting to overhaul the foremost, and everything must get out of their way. And what makes me marvel is that the police take no notice of these doings, the reason for this attitude being, so far as I could find out, that the brutes are troublesome to handle. The policeman feels his helplessness when pitted against a couple of vagabonds behind fast trotters and with a skinful of beer. But if a motorcyclist comes along at a much more considerate pace he is captured, the constable knowing that he has a different class to deal with—a self-respecting and law-abiding citizen, who obeys the summons to stop, and who meekly hands over his name and address! There is no question about it, all this sort of thing has got to be stopped, not only in the interests of motorists, but of cyclists and pedestrians, and that is why a general Bill dealing with the regulation of all forms of road traffic should stand so good a chance of becoming law.

The Nuisances of the Road.

Another thing we have to secure is the universal use of lights on vehicles during the hours of darkness. We must remember that in but a few counties is the carrying of warning lights compulsory. The cycling associations have been at work for years endeavouring to secure the passage of a Bill making it an offence to drive an unlighted vehicle, and two or three years ago, in default of getting any help from Parliament, they approached the County Councils, some excellent results following. Motorists are enjoying the benefits of this work, and can well devote themselves, not only to seeing that the by-laws are enforced, but to the inclusion of a clause in the "Road Traffic Bill" which shall compel every vehicle to carry a lighted lamp at night time, so placed that a white light is shown forwards and a red light is shown to the rear. Then the doubtful rule of the road must absolutely be made law, although, I believe, the provision really appears in a very old Act. However, some magistrates persist in regarding the rule of keeping to the left as a custom which cannot be legally enforced, so this matter can be cleared up in our Bill. Then the matter of dogs—a most important one to motorcyclists. The number of accidents already caused by these erratic and vicious brutes has been out of all reason, and I would make it a penal offence for a dog to be allowed loose on the streets, one penalty being the cancellation of any dog licence held by a person who has been twice convicted for permitting his dog to be loose. This would be a very salutary measure, because most people keep dogs for the purpose of protecting their houses, and they will not risk being deprived of them just for the sake of a little liberty given to the dog. And there is no hardship in this suggested measure. I keep a dog which is an absolute terror. No unauthorised person or animal dare approach the house, but free ramblings in the streets are forbidden, and it has been taught to keep out of the road and to leave cycles alone. There are many other matters which could be dealt with in a general Bill, such as insanitation, the care and upkeep of roads, and their proper construction with a view to the absence of dust, the use of skids and brakes, the erection of warning boards at the top of steep hills, and little items of that sort. I suppose that I am not far wrong in saying that 70 or 80 per cent. of vehicles on the road are unprovided with brakes. This fact must account for hundreds of accidents in the course of a year.

As will be seen, the task before us is a very big one. We have to educate the public up to the new era, when controllable speed on the road will be deemed of the first importance; we have to fight the horse interests, and impose certain restrictions upon them; we have to remove some of the disabilities under which road users suffer, and we have to level things up somewhat, so that the sauce for the motor goose shall be served up with the horsey gander.

MOTORCAR RACING IN AMERICA: EMPIRE TROTTING CLUB MEET AT YONKERS.

On Saturday, July 25th, the most important automobile race meeting yet held in the United States took place on the race track of the Empire City Trotting Club, at Yonkers. The meeting was notable for the success of the Ford-Cooper and Franklin cars, both of which are of American manufacture, and for a wonderful "flying mile" record by Barney Oldfield, which, to judge from the reports in the American motor journals, was a particularly breathless and thrilling spectacle. The track is an oval, a mile in circuit, with a good surface, which, however (in view of its use for horse trotting events), has to be kept rather on the soft side for motorcars. A crowd of about six thousand watched the racing, which was conducted under exceptionally favourable conditions of weather, so far as the spectators were concerned, although the heat was, perhaps, prejudicial to the running efficiency of the cars themselves. Opinions were freely expressed that motorcar track racing is a sport full of interest and excitement, capable of rivalling road racing. When we mention that owing to the width of the track half-a-dozen cars may safely race together it will be understood that interest and excitement are quite potential accompaniments of the sport.

AMONG THE COMPETING CARS

were an 80 h.p. Ford-Cooper, an 80 h.p. Peerless, a 70 h.p. Panhard, a 60 h.p. Mercedes, a 40 h.p. Decauville, and a 40 h.p. Darracq, from which it will be seen that the cream of American and Continental manufacture was represented. It is interesting to note that the Peerless mentioned above was the identical car driven by Louis P. Mooers in the Gordon-Bennett race, a car which, though it was no more successful than either of its two confreres in upholding the reputation of the States, at least gave an indication of its powers during the great international race by flying across the line of control at Strudbally at a good fifty miles an hour. At the American meeting the car was driven by C. G. Wridgway in two events, but without success.

THE PROGRAMME OF EVENTS

included open races of 5, 10 and 15 miles; matches of 5 and 10 miles; a three-cornered match of 15 miles; one mile trials against the clock; and Barney Oldfield's successful attempt to beat his own world's record over an oval one-mile track. The speed averages attained were good, without being remarkable; as, with the exception of Oldfield, who drove an 80 h.p. Ford-Cooper, none of the competitors averaged sixty miles an hour. In comparing these results, however, with the speed trials at Phœnix Park on July 4th last, it must be remembered that the American track was oval, and that its surface would not afford such good going for a heavy car as the Phœnix Park road.

Space will not permit of any detailed description of the various events, but the mile trial, in which Oldfield reduced his record of 56½ to 55⅘, seems to have aroused such intense excitement that we cannot refrain from quoting a few lines from the New York "Motor Age's" account:—

"Barney Oldfield came out for his trial hatless, and in his familiar red leather coat. . . . . Starting but 200 yards behind the tape, Oldfield seemed hardly under full headway when he struck the wire. Then his machine leaped forward like an unleashed hound, swept along to the outer rail, swung sharp at the turn to a convulsive wag that threatened to tear the crazy thing to pieces, turned up a cloud of dust that hid Oldfield from view and smothered the rail-birds (sic), went on its mad flight round the curve, dashed down the back stretch, swept around the lower turn, shook itself, and tossed high the dirt as it rounded into the straight, and in great leaps, with spurting flames and thunderous clamour, finished the mile in faster time than any motor-driven thing had ever before encircled a mile oval."

RESULTS.

Five Mile Open.—1, J. Wilkinson (10 h.p. Franklin); 2, L. O. Gitchell (16 h.p. Darracq); 3, G. Papillon (12 h.p. La Roche). Time, 6 mins. 54⅘ secs.

Ten Mile Open.—1, J. Sincholle (40 h.p. Darracq); 2, Henri Page (40 h.p. Decauville); 3, G. Papillon (35 h.p. Darracq). Time, 10 mins. 52⅘ secs.

Fifteen Mile Open.—1, Henri Page (40 h.p. Decauville); 2, G. Papillon (35 h.p. Darracq); 3, J. Sincholle (40 h.p. Darracq). Time, 16 mins. 39⅘ secs.

Five Mile Match.—Barney Oldfield (80 h.p. Ford-Cooper) beat F. A. La Roche (40 h.p. Darracq) in two successive heats. Times:—First heat, 5 mins. 9⅘ secs.; second heat, 4 mins. 55 secs.

Ten Mile Match.—John Wilkinson (10 h.p. Franklin) beat J. Tracy (10 h.p. Renault). Time, 15 mins. 15⅗ secs.

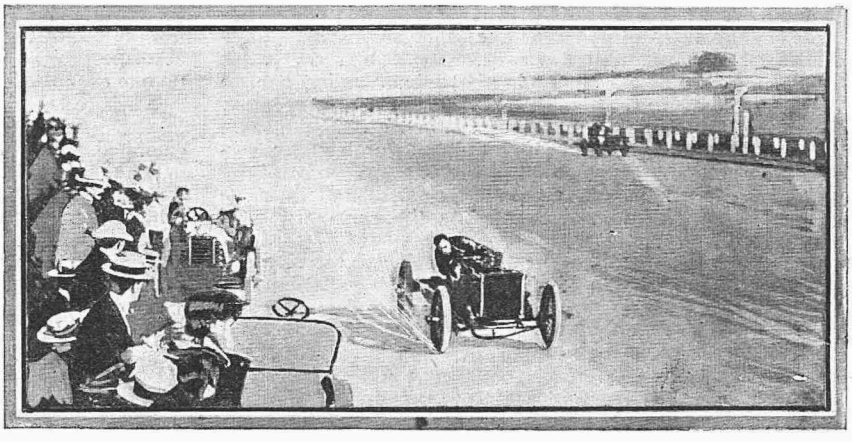
Fifteen Mile Match (three-cornered).—1, Laurent Grosso (60 h.p. Mercedes); 2, Henri Page (40 h.p. Decauville); 3, C. G. Wridgway (80 h.p. Peerless). Time, 16 mins. 10⅘ secs.

One Mile Time Trials.—Laurent Grosso (60 h.p. Mercedes), 1 min. 3⅘ secs.; M. C. Herman (70 h.p. Panhard), 1 min. 5⅖ secs.; Henri Page (40 h.p. Decauville), 1 min. 7⅗ secs.; C. G. Wridgway (80 h.p. Peerless), 1 min. 9⅘ secs.; J. Sincholle (40 h.p. Darracq), 1 min. 15⅘ secs.; J. Wilkinson (10 h.p. Franklin), 1 min. 20 secs.

One Mile Record Trial.—Barney Oldfield (80 h.p. Ford-Cooper), 55⅘ secs. Intermediate times: ¼ mile, 15 secs.; ½ mile, 28 secs.; ¾ mile, 41 secs. All world's records.

An American Competitor's Views on the Gordon-Bennett Race.

Louis P. Mooers, the well-known American racing motorist, whom the writer last saw on July 6th, on one of the Dublin quays, superintending the packing of his Gordon-Bennett racer, landed in New York at the end of last month, and gave the Yankee interviewers the benefit of a few first-hand opinions on the performances of the American cars in the Gordon-Bennett race, which will be of great interest to motorists in this country. Mooers absolutely scouts the idea that the Americans were supplied with inferior petrol, an impression which the two other American competitors, Winton and Owen, did much to foster by their irresponsible utterances. "All this talk about poor gasoline," said Mooers, "is worse than nonsense. All the racers used Pratt's motor spirit, which is an American gasoline, put up in sealed cans, and sold at two of the largest stations or garages in Dublin. Not only did the American team use Pratt's spirit, but the English team as well. If any competitor used poor gasoline it was his own fault, because good fuel was 'right there,' and could be purchased in almost any quantity." Mooers ascribes his indifferent performance curiously enough to a similar cause as that which robbed Edge of his chance of retaining the cup, viz., unsuitable tyres. He thinks American tyres unfitted for road racing. "American tyres are all right for ordinary road use, but they are not built to stand the terrific strain of rounding curves in such races. Our makers build the clinches of rubber; the Europeans of fabric. Theirs hold: ours don't."



From "The Automobile."

Barney Oldfield winning the Five Mile Match from La Roche in 4.55 at the Empire City Track, Yonkers, New York.

THE CRADLE OF THE MOTOR INDUSTRY.

The number of motorcar makers is increasing, a fact which is readily explained by the infatuation of the public for the new style of locomotion. At the present time there is not an engineer who does not consider himself capable of setting a car on its feet, or rather on its wheels. Everyone is a builder; for what is easier than to put together the various parts bought here and there? With a motor x, a change speed gear z, a frame from another firm, and a well-known carburetter, they build up a vehicle as easily as though they were laying a brick wall. The motor starts, the car runs, and—there is one more motorcar builder. Fortunately, the public are not deceived, and the connoisseur always knows where to go to get satisfaction. The old firms who established the automobile industry have alone had the necessary experience, the manual skill, and the technical knowledge requisite for good work. They continue to hold their rank, and will always remain undisputed masters.

We think it interesting at a time when this rage for overproduction is manifesting itself to narrate the history of one of the leading firms of motorcar manufacturers, that namely of Messrs. Panhard and Levassor. It will show what struggles had to be encountered, what labour undergone, to win a rank which very few motorcar builders dispute now. In 1897 the Panhard and Levassor Company were the heirs of an establishment already distinguished for brilliant services in mechanics. It was that of Périn, the inventor of the ribbon saw, founded about 1855, and now known all over the world. His workshop was devoted to the construction of wood-working machinery, and especially of the saw he invented. The name of the firm has been successively: in 1855, Périn; 1867, Périn Panhard; 1872, Périn Panhard et Cie.; 1886, Panhard et Levassor; 1897, Société Anonyme des anciens établissements Panhard et Levassor. After constructing wood-working machines the firm gave its attention to gas engines in 1873; and shortly afterwards it undertook the construction of oil engines, the patents for which were purchased from Mr. Daimler, of Kannstadt. In 1891 the first petroleum motorcar made its appearance from the hands of the lamented Emile Levassor. These works were the cradle of the automobile industry. Since the first car left the workshop of the Avenue d'Ivry, every year has been marked by further progress; the sum total of which, adopted by all builders, constitutes the type universally known as the French type after simply being the Panhard type. It is characterised by the following arrangements: Motor in front, wooden wheels, steering wheel, change of speed levers, position of radiator, general arrangement of the transmission gear, frame of armoured wood. Each improvement was marked by the great sporting trials in which the cars took part. 1895, Paris-Bordeaux-Paris; 1896, Paris-Madrid, endurance; 1897, Paris-Dieppe (radiator first employed); 1898. Paris-Amsterdam (irreversible wheel steering, equilibration of four-cylinder motors); 1899, Paris-Bordeaux (radiator in front); 1899, Tour of France (clamp brake on differential); 1900, Paris-Toulouse (change of direction without displacing bevel wheel); 1901, Paris-Berlin (motors without joints at breech, suspension of mechanism in three points); 1902. Paris-Vienna (extra light steel motor cylinders; employment of nickel steel, brake on wheels acting in front and rear); 1903, Paris-Madrid and Gordon-Bennett Cup.

It is to be noted that in all these trials the Panhard and Levassor Company endeavoured to maintain its superiority by excellency of workmanship. Amongst the improvements enumerated, attention should be given to the principal ones:

1. Irreversible steering, which has become so general that no car in France or elsewhere is without this system.
2. Equilibration of four and two-cylinder motors.
3. Suspension of mechanism in three points.
4. The clamp brake on the differential gear, which also marked an epoch.
5. Steel motor cylinders.
6. Automatic carburetter of Commandant Krebs.

Whilst the new devices were being invented improvements were made constantly in manufacture, choice of metals, excellency of workmanship, and general plan and details. The first cars were constructed according to the conditions then customary amongst engine builders. As the power of motors was not then great, there was no difficulty in transmission of motion; but when the power was made greater, metals capable of greater resistance had to be found. The Panhard and Levassor Company, after careful study of results given in tempering ordinary steel, were the first to adopt nickel steel for the speed wheels and cranks (the first order for nickel steel given to the firm of J. Holtzer dates back to June 30, 1901). Selection of steel and metals most suitable, generally speaking, for all parts of the car was made after numerous tests of strength, especially resistance to impact, conducted according to the latest methods. We think we may say that no one ever made such tests before to estimate the fragility of hard steels, at least in the automobile industry. In addition to the machine testing laboratory there is also one for chemical tests. As Messrs. Panhard and Levassor anticipated the adoption of a high power motor for a racing car, from the point of view of particular lightness, they were the first to employ forged steel cylinders with a brass water jacket. Thus motors were obtained of 60 h.p. (70 effective h.p.) which only weighed 4.5 kilogrammes per effective h.p.; and motors of 24 nominal h.p. (30 effective h.p.) weighing 5.25 per h.p.

As regards the various types of car, the Societé Panhard and Levassor did not shrink from dealing with an extremely difficult problem, viz., the construction by the aid of a few interchangeable parts, of a considerable number of types meeting all requirements. This problem they satisfactorily solved. The buyer can select from motors of eight different powers, varying from 5 to 60 h.p., and for each of the powers there are 40 styles, well defined and responding to every type of carriage. We emphasise this point, which is one of the main characteristics of the firm, only acquired by great order and method in work. Construction of the parts is not less satisfactory than the types of car, interchangeability being obtained by employment of improved machines furnished with carefully studied mountings, which assure good finish, irrespective of the skill of the workman.

Finally, the extensive manufacture (now 120 cars per month) is controlled by a special testing department, completely independent of the workshop, to which every part is sent. The home and foreign trade of the firm represents a sum of more than 14,000,000 francs (£558,000), one-third of which is foreign. The newly built repairing shops, adjoining the manufacturing shops, occupy an area of 7,000 square metres (8,330 square yards). Here, new designs are dealt with, and others frequently invented. The firm also build fixed motors for electric plant, as well as boats driven by these motors; and finally adapts its motors to light railway stock. Automobilism seems to occupy the only place in this establishment, which employs 1,400 workmen, but such is not the case. The industry of Périn yet flourishes by the side of its young and powerful ally. Although the manufacture of wood-working machines and saws is no longer the chief branch, it yet holds a rank which recalls the humble origin of the firm. The history of these works summarises that of the French automobile industry during the last ten years.—Translated from "Locomotion Automobile" of July 23, 1903.

The Motor
INCORPORATING Motor Cycling & Motoring

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

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OPINION

A Calmer View of the Future.

We are pleased to note that the "Automobile Club Journal" has regained its mental balance, and while it still displays what we regard as undue pessimism in regard to the new Bill, it proceeds to discuss the task of the future with less panic than was shown last week. We are glad this is so, and find ourselves in entire agreement with the general lines which are laid down for the future action of the Club. The Club recognises, as everyone must recognise, and as we stated last week, that the future of automobilism rests with automobilists themselves, and it is further most wisely suggested that thorough organisation is necessary on the part of the Club and its affiliated bodies, so that automobilists everywhere may be able to act in unison. The die is cast, and it is futile now to do otherwise than make ourselves amenable to the new conditions of things as they will exist next year. The Automobile Club, we are pleased to see, fully realises the need for prompt action, with the view of securing the adoption of practical and reasonable Local Government Board regulations in regard to the proper administration of the new Act. This is going to the heart of the whole matter; and, next to the insistence upon obedience to the law on the part of all users of motor vehicles, is the most important course to adopt, and the Club, with its great influence, should be able to bring about a fair and reasonable rendering of the Act. As we said last week, automobilists now hold their future in their own hands. We earnestly counsel an attitude of conciliation. To run counter to public opinion during the next three years will be a fatal error of policy, and those motorists who persist in pursuing an attitude of indifference to the law will be the worst enemies of automobilism; whilst those who show the restraint necessary under the new conditions will be its best friends. We cannot close this article without expressing great regret that some of our contemporaries, still full of bitter resentment at Mr. Long's action in submitting to the retention of a speed limit, are abusing the friends of automobilism in Parliament, some even going so far as to accuse them of treachery in having betrayed the motoring cause. One journal—happily not an influential one—in a laboured effort at smartness, is unnecessarily offensive in one of its references to Mr. Scott Montagu, and, altogether, we regard the line of criticism taken by some of the motor journals as extremely regrettable and unwise. We fear that some of the writers show themselves so lacking in breadth of view that it would bode ill for the future of automobilism if their following were not limited.

The Dangerous Speed Superstition.

The too commonly entertained idea that the speed of a vehicle gives an accurate indication of its danger was scouted by Mr. Balfour the other day in a reply to a correspondent from Dundee, who had written to protest against the danger of the new speed limit. Mr. Balfour reminded the timorous Scotchman that danger consists not so much in speed as in lack of controllability, and pointed out that a motorcar travelling at 20 miles an hour is more readily controlled than a heavy tramcar running at 16 or 17. We might go considerably farther than this, and reiterate the assertion which we have for so long been trying to drum into the head of the anti-motorist, viz., that a motorcar travelling at 20 miles an hour is far more easily controlled, and is, consequently, a source of far less danger on the road than any other of the various vehicles which are driven at speeds varying from six to sixteen miles an hour. That the dangers of the road are by no means confined to mere speed is also shown by a correspondent to a daily paper, who reports that he had a narrow escape of being run down at night by a horse and cart which carried a very dim light on one side and had no means whatever of seeing any obstacle in the road on the other side.

The Motorcycle Trials.

The great fortnight's test has come to an end, and the general feeling is that the motorcycles have made an astonishing display. The test had been made as complete and comprehensive as could possibly be done, the object which the organisers consistently kept in view being to instruct and inform the public so that when orders are placed in the autumn, buyers will have certain information before them, on the bona fides of which they could rely to help them in the choice of the machines which would suit their individual requirements. Any potential purchaser who has harboured the thought that the motorcycle has not yet been shorn of its crudities, or that it would be judicious to wait until the machine has been made more reliable, must dismiss all such ideas from his mind in the face of such evidence as is now placed before him. From the very first issue of this paper we urged the trade to go ahead and perfect the motorcycle—to develop it upon the lines of completeness and reliability, and to give the buying public the best bicycle at the lowest cost. We believe that the trade has risen to the task, and we now feel that machines of any of the makers which successfully underwent the arduous trial which has just come to an end would be good and splendid investments.

Absurd Suggestions.

We fear the passing of the Motor Cars Bill has seriously affected the minds of some of the writers on the motor Press. Certain it is that some of the suggestions, if carried out, would go a long way towards wrecking all chance of a better state of things prevailing at the end of three years, when the Bill lapses. What sense is there, for instance, in proposing a declaration of war against other road users, and a wholesale campaign of recriminatory action against those who commit minor technical offences against laws to which horse-drawn vehicles are supposed to be amenable? We see it is urged in more than one journal that automobilists should make it a practice to take out summonses against all such offenders, and we express our entire disagreement with such a policy. Granted that many offences are committed against the laws which govern ordinary traffic, that is no reason why motorists should constitute themselves a party of officious busybodies with a view to bringing petty and vexatious actions against the very people whose good will it should be their desire to gain. Really, we hope our contemporaries will soon settle down to a calm and sensible consideration of this question. It is serious enough that a few reckless and thoughtless drivers should have brought upon the whole motoring community the Act which comes into force next year. It is infinitely more serious to find writers on the motor Press inciting motorists to still further stir up enmity and ill-feeling amongst other road users. Such childish proceedings as are suggested could only have the result of alienating still further that sympathy and good feeling which it should be the future aim and endeavour of every true motorist to reclaim.

His Majesty the King has been indulging in some pleasant motor drives in the neighbourhood of Marienbad.

The motorcycle reliability trials were continued during the week, for the most part in wretched weather.

P.C. Stainer, who gained notoriety in the Kingston district as "the motor catcher," has just retired on his pension.

The thing to bear always in mind is how you may favourably impress the public, not how you may score a point against them.

An interesting winter programme is being fixed up by the Automobile Club. One feature will be the Gordon-Bennett race on the Biograph.

Amongst recently elected members of the Automobile Club are Baron de Reuter, the Hon. James Hozier, M.P., and Mr. Chas. T. Yerkes, of railway fame.

It has been suggested that one word sums up the hurried passage of the Motor Cars Bill through the House of Lords—grouse! It is one way of playing the "game."

The Automobile Club proposes to organise for the next Parliamentary and County Council elections, so as to secure the return of members favourable to automobilism.

Tessier, who did so well on the "Bat" during the first week of the trials, was unable to continue during the second week owing to the fall he sustained at Canning Town on Saturday week.

We understand from a reader that his application to the Adjutant for particulars about the Motor Volunteer Corps, which recently asked for more motorcyclist members, elicited the response that no more were wanted.

The Motor Garage on the London Road, Marlborough, ask us to mention that their garage and works are always open, Sundays and Bank Holidays included. Cars and motorcycles are generally available for hire, whilst any kind of repair is undertaken.

W. Pollin, of Chapel Lane, Spalding, is introducing a ¾in. three-ply belt, V shape in section, for the high-powered motors. It is hand made and double riveted, the outer ply being a tanned leather, and the two inner plies being of raw hide. It is being introduced at 1s. 6d. per foot, post free.

Mr. Charles J. Glidden, of Boston, U.S.A., has despatched from Haparanda a notable telegram to Mr. S. F. Edge, which begins:—"Crossed Arctic circle at 2 o'clock on Saturday." Mr. Glidden has, therefore, accomplished the object which he set out some time ago to perform, namely, to cross the Arctic Circle in a 16 h.p. Napier car.

D7

Coming Events.

Sept. 15. Cars to be in Crystal Palace at 12 o'clock.
,, 16 and 17. Brake, Dust, and Noise Trials.
,, 17. Press Luncheon.
,, 18. Commencement of 1,000 Miles Trial of Motorcars, organised by Automobile Club, Margate and back.
,, 19. Eastbourne and back (Westerham Hill).
,, 21. Worthing and back (Bury Hill).
,, 22. Folkestone and back.
,, 23. Southsea and back (Hindhead).
,, 24. Bexhill and back.
,, 25. Winchester and back.
,, 2[illegible]. Brighton and back (Handcross).
,, 28 and 29. Examination by Judges.

Mr. Long, in a letter to a correspondent, practically endorses the whole policy of "THE MOTOR."

The International Races at Frankfort-on-Main.

To the series of races at Frankfort-on-the-Main on August 30th the Frankfurter Automobil Club adds a ninth—a 10 mile race open to cars up to 60 h.p., those eligible being the first three in races 7 and 8, with the same drivers and assistants. The prize is offered by Herr Louis Peter (Peter's Union Pneumatic), and bears the name "Peter's Union Prize." It is worth 5,000 marks (£250), but does not become the property of the driver unless he has won it twice.

Motto for some contemporaries—Abuse is not argument.

The entries for the motorcar reliability trials number 130.

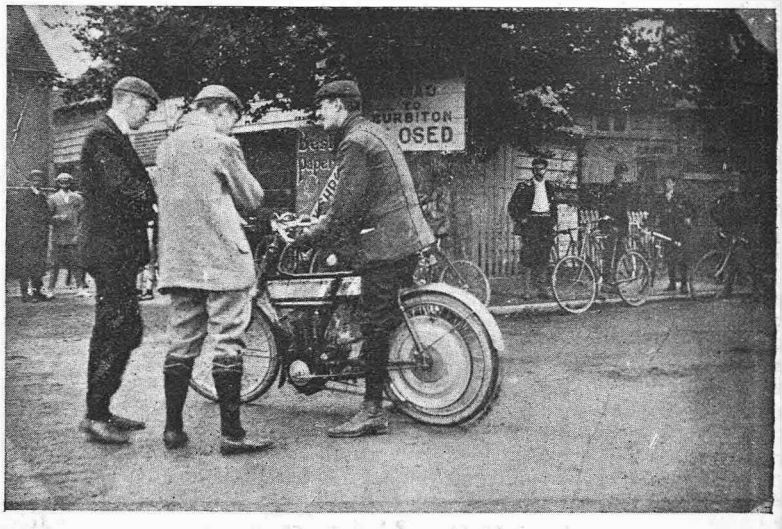
The 1,000 Reliability Trials of motorcars commence on September 15th

Mr. Moffat Ford has taken action against a driver of an electric tramcar for exceeding the limit of ten miles an hour.

Extraordinary suggestions are being made in some of our contemporaries for recriminatory action by motorists against other road users. We hope these will not be seriously regarded, for we can imagine no surer way of wrecking the chances of modifying the law three years hence.

In these days of "passive resisters" and "conscientious critics" it is becoming quite the fashion to go to gaol rather than submit to pecuniary penalty. In view of some of the clauses and penalties of the new Bill it may be that the prison cell will become even more fashionable in the near future.

We have received a letter from Messrs. J. A. Prestwich and Co., relating to the illustration which appeared last week, and which was described by us as "A Jap motor-bicycle about to be assisted up Westerham Hill." They think that this gives the impression that the Jap would not take Westerham, and state that a 13 stone rider went up Westerham by pedalling at the steepest parts before the trials on a machine identical with the one running in the trials.



THE ARRIVAL OF A SPEED MACHINE AT THE "ANGEL," DITTON.

The Ripley Road is well patronised by the motorcyclist, and during the course of any fine Sunday, motors of all shapes and sizes may be seen outside the "Angel" at Ditton. Our illustration depicts the arrival of a speedy-looking motorcycle, the photograph being taken just before the rider dismounted.

We are asked to state that the Motor Castings Company, 101 Gray's Inn Road, keep open for business till seven o'clock each evening, and till four o'clock on Saturdays.

The Parsons Non-skidding Device.

A question often asked when the Parsons non-skidding device for motor-bicycles is discussed is "Does it wear the tyres?" It seems self-evident that it should do so, but in practice just the reverse is the case. We have inspected a pair of tyres, fitted with the device, from time to time, during the past few months. They have been ridden over two thousand miles on the road, and the pattern on the tread is still in as good condition as when the non-skid was first put on. The invention is well worth the attention of motorcyclists who have much greasy ground to cover.

Southampton County Motor Club.

The above club held a reliability trial yesterday (Monday) for a five guinea vase, presented to the club by Messrs Humber, Ltd. As the name of the trial suggests, reliability rather than speed was the object in view. The result had not come to hand at the time of going to press, but the following members of the club entered for the run:—H. Yearsley, 2¾ h.p. Humber; F. P. Hill (captain, S.C.M.C.); W. P. Green (vice-captain), 2¾ h.p. Ormonde; F. B. Bridge, Jun., 2¾ h.p. Excelsior; W. E. Costen, 2¼ h.p. Kerry; R. Costen, [illegible] h.p. Bat; G. Shute, 1¾ h.p. Derby; E. T. Balne, 1¾ h.p. Excelsior; W. J. Smith, 2¾ h.p. Humber; P. F. Hendy, 2¾ h.p. Falcon; G. Webb, 2¾ Humber; E. B. Berthon, 2¾ h.p. Humber. Capt. Stringer and F. Galbraith acted as judges, and the timekeepers were Messrs. Sparrow, Dowdall and Davies.

The Motorcycle Tour of the Cyclists' Touring Club.

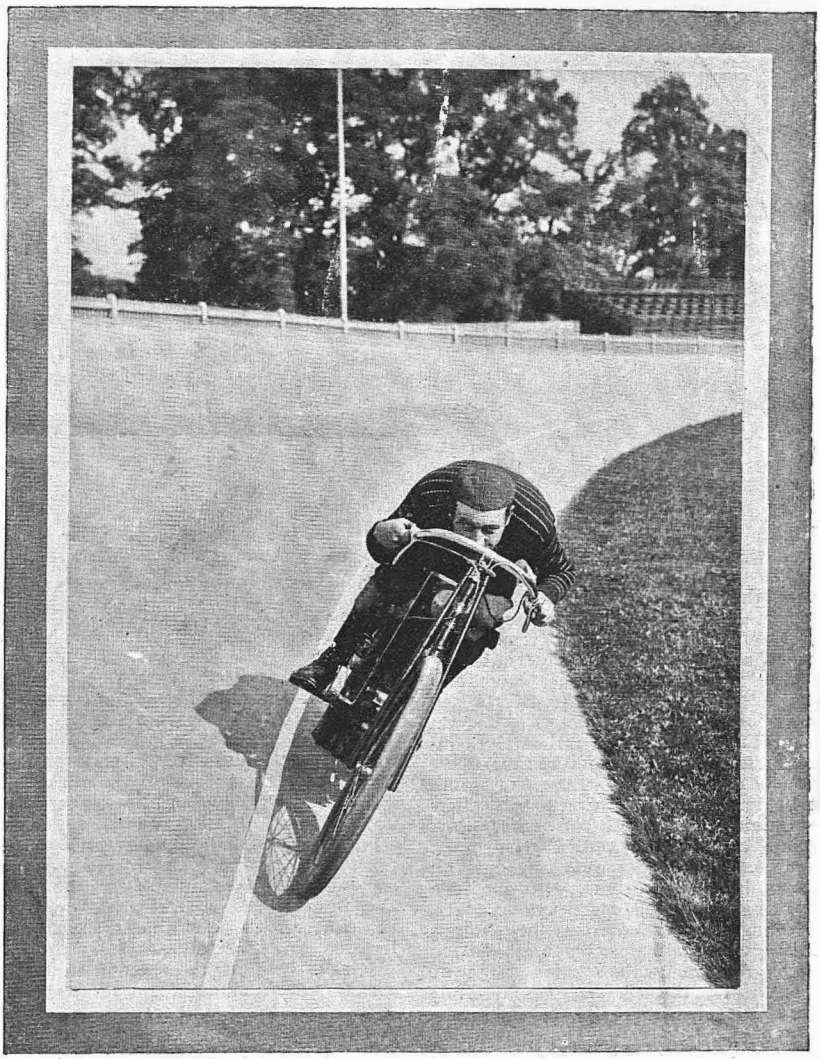
The following is the itinerary of the end to end tour which has been arranged by the Motorcycle Section of the C.T.C.:—

	Miles
Mon., 28 Sept.—Land's End to Exeter	120½
Tues., 29 Sept.—To Worcester ...	136½
Wed., 30 Sept.—To Preston	125
Thurs., 1 Oct.—To Hawick	130½
Fri., 2 Oct.—To Perth (via Edinboro)...	116
Sat., 3 Oct.—To Inverness	115¾
Sun., 4 Oct.—Rest	
Mon., 5 Oct.—To John o' Groats...	136½

Although the tour proper will commence at Land's End and finish at John o' Groats, an informal party will be made up to do the double journey thus:—

	Miles
Thurs., 24 Sept.—London to Yeovil	122½
Fri., 25 Sept.—To Okehampton (via Exeter)	69½
Sat., 26 Sept.—To Land's End... ...	100½
Wed., 7 Oct.—John o' Groats to Inverness	136½
Thurs., 8 Oct.—To Perth...	115¾
Fri., 9 Oct.—To Glasgow	50
Mon., 12 Oct.—Glasgow to London	about 410
Tues., 13 Oct.— ,, ,, ,,	
Wed., 14 Oct.— ,, ,, ,,	

Motorcyclists who wish to join in the tour should send in their names at once, either to the secretary of the C.T.C., or the chairman of the Motorcycle Section, A Chandler, 1, Lime Grove, Shepherd's Bush, W.



T. H. Tessier on the "Bat." He was unfortunately put out of the trials through a fall on the Canning Town track on Saturday week.

Cheap Cars Coming.

A New York paper is responsible for the statement that Mr. Edison is devoting his attention to popularising the motorcar; he proposes to erect a huge plant for the construction of electrically-driven cars at an average cost of less than £100 each. Specially light and durable batteries will be carried equal to the task of propelling the car for a hundred miles over any road. The cost of recharging these will amount only to 1s. 3d.

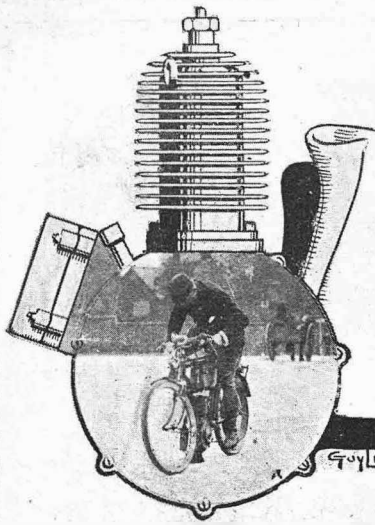
The Juryman's Comment.

After a prolonged inquest on the body of an old woman, who was knocked down by a motorcycle, in the course of which it was conclusively shown by witnesses on both sides that the motorist had taken every possible precaution to prevent the possibility of accident, and to avoid it after the action of the deceased had rendered it possible, a juryman expressed the opinion that "as long as motorcars are allowed in the streets there will be accidents." Most people will agree with him, but if he means to imply that street accidents are solely due to motor vehicles, and that their suppression will do away with accidents opinions may differ.

The new premises of Messrs. Keene's Automobile Company at Bath Road, Turnham Green Station, are very extensive. Large purchases of the latest American machinery are on the way, and as soon as this is installed the production of a light steam car will be commenced. It will be six h.p., of the flash boiler type, to carry two or four passengers.

Warning!

Of course every careful motorist carries at least one spare air tube, but not every one is careful enough to see that the valve on the spare tube is the same as that fitted to the tyres on the car. This remark is prompted by a little adventure which happened to one of ours recently. On the occurrence of the inevitable puncture, the spare air tube was produced, but was found to possess a valve of diameter so much larger that it would not pass through the hole in the rim. Neither would the pump connection which fitted the tyres in use fit the valve on the spare tube. Although the valves were of the same pattern, it was found that the tyre company had altered the size since the tyres on the car were made, and the spare tube, being of more recent make, had the larger valve.



THE MOTORCYCLE RELIABILITY TRIALS.

Second Week's Riding and Events at the Crystal Palace Described

Motorcycles have, with a vengeance, proved that they are reliable and, hereafter, no man will be justified in even hinting that the most economical power-vehicle in the world is any longer in its experimental stages. There has never been so severe a test imposed upon any machine as that which the motorcycles have undergone during the past fortnight, and it is not to be wondered at for an instant that those most intimately connected with the trials should at times have seriously doubted whether the end would not be ignominious. Prior to the trials the opinions were all the other way, officials and manufacturers being most sanguine. The former were inventing all sorts of harsh conditions, with the idea of "bringing out" some point or other, the thought never entering their minds that the test could possibly be made too severe. And as for the makers, they were as confident as the officials, and cheerfully agreed to each freshly imposed task.

"A THOUSAND MILES,"

thought each one. "Why any machine which cannot do that deserves all the odium that can be piled upon it!" But when the elements were turned on in battle array, when the rain poured down almost unceasingly, when the roads became vile and treacherous, and the winds piercingly cut into the skin and through the apertures in the clothing, then did matters take on a gloomy aspect, and the fear of failure was expressed on many a face. But, now that the trials are over, the thought which engrosses every mind is one of wonder that the machine failures should have been so few. Of these, the larger proportion consist of experimental machines, and of foreign made machines, which were incomplete in their equipment. Not unnaturally, these failed to outlive the test, and makers of them would be amongst the first to affirm that they have learnt something from the failures.

In our issue of last week we gave the details of the scheme upon which the trials have been organised, and we also described the first four runs, which extended from Tuesday morning to Friday evening.

Out of the entry of 48, there were four non-starters, three of these being private drivers. Some of the before-mentioned experimental machines had retired very early in the proceedings. The Trimo and the side-carriage also dropped out,

THE EXCEEDINGLY HILLY COUNTRY

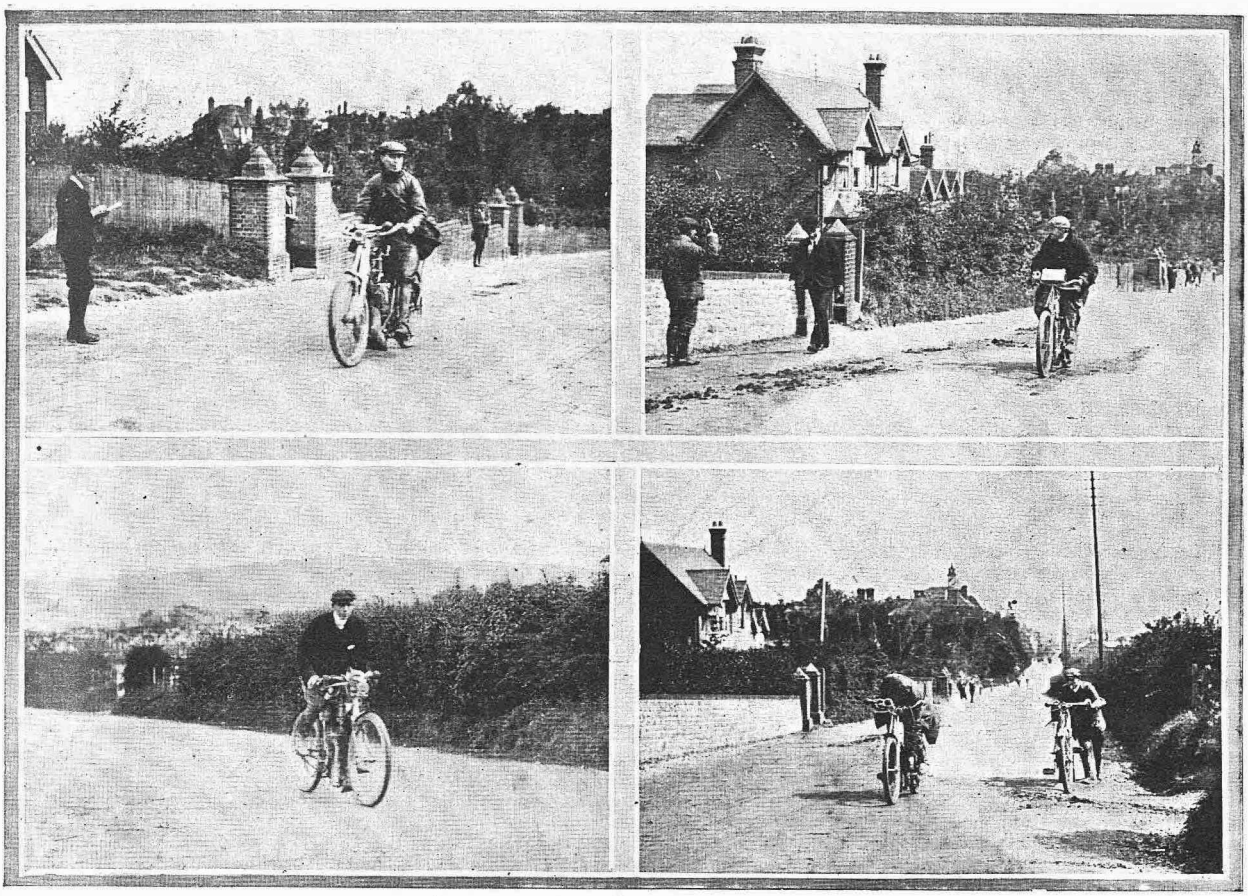
in which the trials were conducted proving too much for the weight. Thirty-three machines had thus survived up to the Friday night of the first week, that is after four days' riding, entailing a distance of 458½ miles. On the Saturday, Tessier, who had been riding a Bat through the trials, came to grief on Canning Town track—one of the disadvantages of interludes!—and the makers were unable to put up another man, which was a pity, for the machine had travelled well. So, on the Monday morning, 32 machines set out for the second week of the trials, and throughout the week rain has fallen at intervals, sometimes exceedingly heavily, and generally at such times as to leave the suburban roads in a very greasy state, making them more difficult to negotiate than if they had been really flooded. The Monday run was to Folkestone via Wrotham, Maidstone, Ashford and Hythe and, as the total distance for this day was no less than 134 miles, an early start was made, the word to go being given at eight o'clock. The run passed off with little or no incident, but one of the riders reported that at one part of the route he came across a line of bricks laid across the road. All who started finished in good time. This run was the longest in the whole trial, next to it in length being the two Eastbourne runs, which worked out at 125 miles. On the Tuesday the Brighton road via Redhill and Handcross was traversed for the first time, and the 32 riders reached the Old Ship Hotel in close order, and as this was a short journey—95 miles—the Palace was regained by the leaders just after four o'clock. The rider of the 2 h.p. Booth, which has a dropped or lady's pattern frame, was upset by a dog, and he decided to return by train, thus forfeiting the whole of a day's marks. The Evart-Hall also sustained a slight mishap, but both machines and riders were again in good order for the run on Wednesday to Basingstoke. There was every promise of a fine day when the whole 32 turned out to a man. But, of course,

THE CUSTOMARY SHOWERS FELL

—and fell heavily, too—before Guildford was reached, the road via Croydon, Epsom, and Leatherhead being taken. However, rain was being so looked upon as the usual thing that scarcely any notice was taken of it, and the only delay was that which ensued through the officials' vehicle, which was to lead the way to Guildford, but which jibbed on the way. Expert hands soon put matters to rights, however, and the journey was resumed. At Guildford the riders stopped at the Town Hall, and were dispatched singly down the High Street and round over the railway bridge to the Farnham Road, meeting the hill which carries the road up to the top of the Hog's Back. Notices had been issued the evening before, stating that this was to be the compulsory hill, and that every machine must climb it, with or without pedalling, the penalty for failure being the loss of 10 marks—rather a serious deduction from a possible total of 100 marks for the whole of the trials. However, every machine rode the hill, mostly without any pedal assistance whatever, the only variations being the Kerry and Ormonde, which stopped at the bottom to tighten their somewhat slack belts before breasting the hill, and the Jap, the belt of which broke when half-way up the hill. However, as this was a hill test and not one of belts, the last-named machine was given a second trial, when it acquitted itself well. So the result of the test on the compulsory hill was that no machine lost any marks. At the top of the hill, Mr. J. W. Orde, secretary of the Automobile Club, stopped the riders, who were then sent down the hill again, with instructions to pull up on their brakes whenever they heard a whistle blown. Two tests were given to each machine, but the results were by no means conclusive. There was

A DISTURBING ELEMENT

introduced by the uncertainty as to when the sound of the whistle would occur, and there was frequently hesitation in the application of the brake. Moreover, the riders were compelled by the judges to keep their engines running, and thus a most unnatural condition of affairs was introduced. The rider's instincts told him to shut off his power and to watch the road in front; official instructions compelled him to keep the engine going and to listen for some unfamiliar sound. The best stoppages were made within ten yards on the upper portion of the hill, but some riders took sixty yards to pull up in.



THE MOTORCYCLE TRIALS.

Fred Chase going up the Hog's Back. *The Griffon going up well.*

The Booth on the Hog's Back. *Two ways of getting up the hill.*

On the steeper portion the best result was a check in twenty-five yards, and the worst ran to a hundred yards. Seven machines secured full marks, and six only lost one mark. We should like to see a well planned brake test, where each machine was compelled to attain a certain pace, the rider to apply all brakes at a certain mark, and to come to a dead stop as expeditiously as he could. As it was, some riders were travelling fast and some slow when the whistle sounded on the Guildford Hill; some riders could stop the engine quickly, and some hesitated over the operation, and so the tests were, at the best, but a makeshift. After these tests the riders went off to Basingstoke and returned to the Palace. There were three mishaps on this day. Coles, on the Brown motorcycle, in some mysterious way fractured the frame of his machine and had to abandon the rest of the run at Guildford. He returned to the Palace and changed his engine gear over to another frame. The Evart-Hall, through a faulty dismount, bent its crank, and one rider broke the gudgeon pin and had to return by train. On the Thursday the long Eastbourne run, via Sevenoaks and Hailsham, was repeated, and for this thirty-one riders set out. On the return journey the rain, a heavy, saturating downpour, driven by a relentless south-west wind, was met as the Kentish hills were neared. At the foot of River Hill the officials were found, and with A. J. Wilson timing at the foot the men were dispatched for the climb up this famous gradient. The wind was favourable, but on the stiff portion of the hill the riders were sheltered from it by the trees.

THE FIRST TO APPEAR

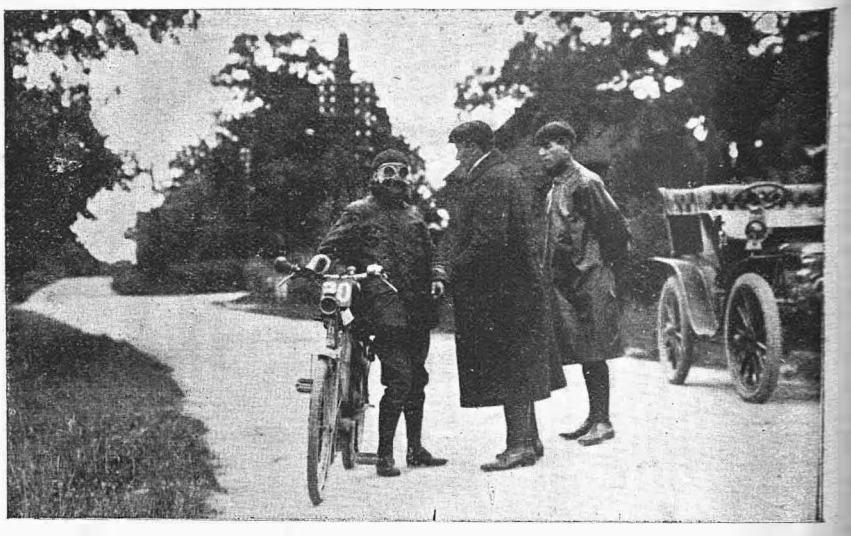
was Wright on his Ormonde. He came up with his usual smile, giving a few easy strokes of the pedals, at nearly twenty miles an hour. For nearly two hours the riders were coming up at intervals. The officials had been at their posts nearly an hour before the first arrived, and they waited for over an hour after the last had gone through, waiting for three others who did not turn up. And for the whole of those four hours they walked up and down in the incessant pouring rain with no shelter and nowhere to rest the weary limbs! Such are the pains and penalties for enthusiasm! The best performance was by the Jap, which came up the hill in 2 mins. 3⅘ secs., giving a speed of just about twenty miles an hour. The rider of this machine had started on the trials quite unfit, and the first day had punished him severely; so much so, in fact, that he could not push his machine up Westerham on the next day. But on River Hill he retrieved his reputation, for he rode splendidly, pedalling so as to get the best work out of his engine. F. W. Chase on a Chase motorcycle, did second best in 2 mins. 12⅘ secs., and Wright, on the Ormonde, was third, in 2 mins. 13 secs. One machine, the Evart-Hall, surmounted the hill without pedal assistance, and the Bradbury, Phœnix, Alldays, Castell, and Ormonde, got up with but the merest touch to the pedals, which may have been quite unnecessary. Some riders had to pedal furiously, and five machines had to be pushed over the worst section. The run through Sevenoaks and Green Street Green was through gradually slackening rain, and thence through Wickham some dry patches were met, so the day finished at least better than it at one time promised. The Jehu shed its clutch on the homeward journey, and was brought back by train. Tyre troubles delayed Aug. van Hooydonk and A. Hoffman. Both of these are in the Private Owners' class, and had gone through so far with scarcely any trouble, so it was rather hard to catch tyre trouble so near the close of the trial. D. Elyard Brown, another private owner riding an Ormonde, met with a nasty smash whilst travelling down Polhill. A miller's cart came out of a side road right across his path, the carman taking no step to see that his way was clear. Brown was suddenly confronted with the choice between three evils,

THE CART, A GROUP OF PEDESTRIANS, OR THE HEDGE.

He chose the latter, and then found that oaken posts and barbed wire were included in the hedge. The front of his machine was wrecked, but the rider for-

tunately got off with a few facial scratches. It was very hard lines, because he had done so well all through; he was riding purely for the fun of the thing, and he was so near the end of the trial. The last day dawned with no great promise, but it turned out very well. The run was to Worthing, but on the previous ride over this course, via Horsham, the police were about, and despite cautious riding in the "trappists'" district, names and addresses were taken, and it was reported that the police were all ready for a second haul. So, with the utmost secrecy, a new route was planned, via Brighton. Fresh maps were prepared and distributed just before the ride commenced. The Surrey police waited in the ditches, and were astonished that the motorcyclists did not come by. Then they received a telegram saying that the riders had reached Brighton via Crawley, so rapidly the telephones and watches and constables were bundled into carts and sent over to Crawley, where the trap was fixed up. But a friendly pedestrian stood and warned the riders, who crawled through the trap, whilst the twice-frustrated police fretted and fumed. What a pity they have nothing better to do with their time! Thirty men set out, and the first arrival reached the Palace very early in the evening and placed his cycle in the rack with a huge sigh of content. All but two of those who started completed the day's run, and then the machines were given their final cleansing preparatory to the work of Saturday.

It had been hoped that by Saturday morning, when the final inspection and the speed trials on the track were to take place, the number of marks gained by each machine for reliability on the road—which means punctuality on all the sections—would be available for publication. But numerous discrepancies were discovered, and more still have been pointed out by the riders themselves. It is curious to note the reason for some of these variations. The observers or timekeepers for the various controls were, as far as possible, appointed from the neighbourhood, so that they could reach their posts with the least amount of inconvenience, and for the purpose of timing the men, the observers were instructed to set their watches by the clock at the local post office. Whether the post office clocks—which, one would unhesitatingly say, would constitute about the nearest approach there is to a standard of time—were inaccurate, or the watches ran badly, remains to be found out. but it is an undoubted fact that the timetakers' watches often disagreed with the riders' own timepieces and, as the latter were usually set each morning by the official watch and compared again at night, it was obvious that the timekeepers' watches had gone astray. A good many instances of a variation of from two to three minutes were observed, but at two controls the error was seventeen minutes and twenty-two minutes respectively! The result of these errors is that many riders are debited with adverse marks for lack of punctuality, and protests innumerable are flying about. However, the club is anxious that no machine should be harshly dealt with, and so each complaint is being investigated, and the final awards on reliability will be arrived at on Thursday next, when the judges meet to go over the whole of the reports.



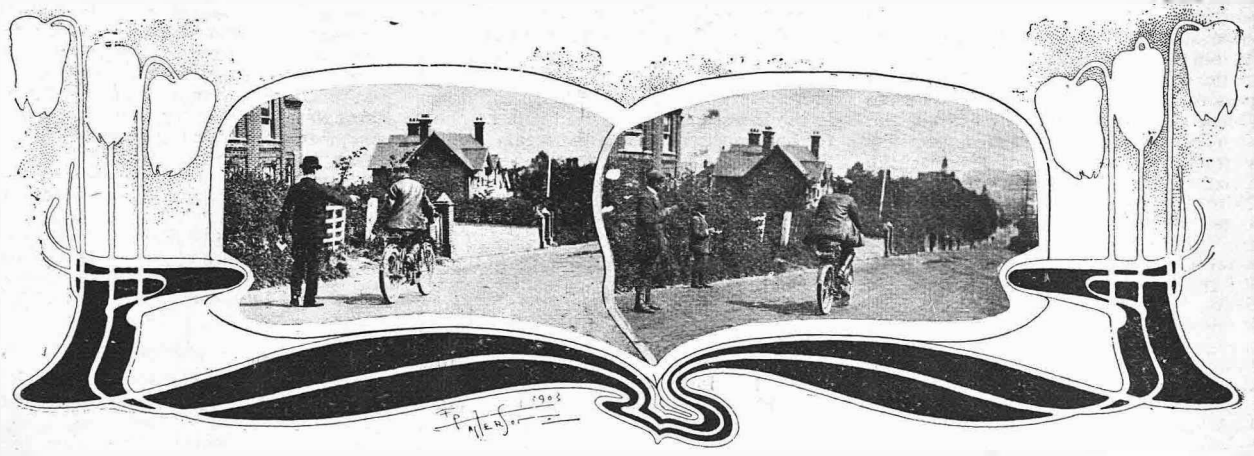
Wright and the Ormonde—the first motor-bicycle up River Hill.

ON SATURDAY MORNING

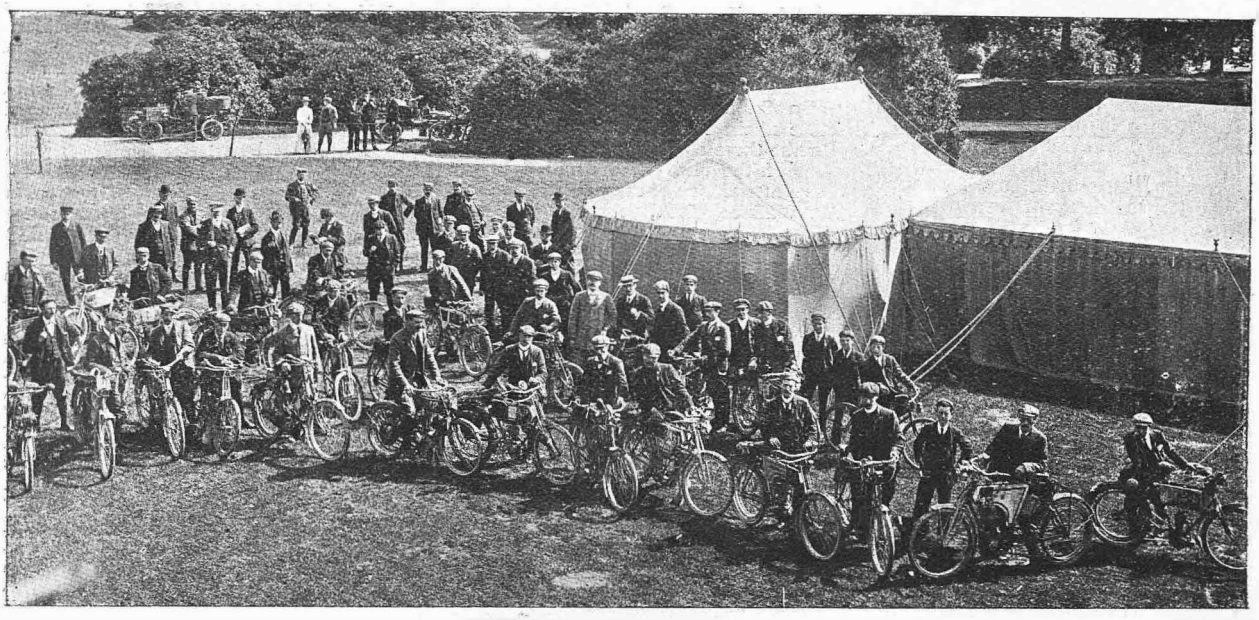
the judges were again at work, Capt. the Hon. W. H. Ruthven and Mr. G. F. Sharp minutely examining every machine and modifying and correcting the marks given under the head of "convenience." Each fitting was examined, and marks were deducted in cases where there was proof of the inability of the fitting for the work demanded of it. Such a minor point as the comparative cleanliness of the crank case was fully considered and, where it was evident that the engine was not cleanly in working, marks were deducted. Finish and style, accessibility of valves, convenience in the matter of lever position, oiling devices, portable stand, and so forth were all carefully weighed up and the marks given accordingly. Silence was judged during the speed trials by Mr. C. W. Brown, and in the end the machines which were placed at the head of the list on the score of "convenience" were the Chase, the Matchless, the Phœnix, the King, the Bradbury, the Ariel and the Jap. A few machines had weathered rather badly, but, on the whole, the appearance of the machines and the scantiness of any signs of wear noticeable were really remarkable. With a little more attention paid to some details by a few of the makers the impression made by the machines would be more than doubled.

THE MARKS FOR WEIGHT

are awarded on the basis of one mark for every twenty pounds saved. So, whilst a machine weighing 170 lbs. gets no marks, one weighing 150 lbs. or less gets one mark, and one weighing 130 lbs. gets two marks. The highest marks obtainable are five for a weight of 70 lbs. or less. It is a curious fact that the machines getting over three



Instructions from Mr. Cozens-Hardy for Brake Test. **One of the competitors pulling up in Brake Test.**



All the survivors of the Road Trials about to proceed to the Crystal Palace track for the speed tests last Saturday.

marks did not survive the trials, which fact suggests that the weight cannot be kept inside 110 lbs. when heavy tyres, sufficient brake power, large petrol capacity and the many little conveniences required by the rider are all provided. The machines which will appear to score a mark over their competitors on the matter of weight are the Jap, the Griffon, the R. and P., the Werner and the Alldays. They are run close by most of the others, including the Bradbury, the Peugeot, the Kerry, the Phœnix, the Ormonde, the Weller, the Werner, the Lagonda, the Castell, the Jehu, the Chase, the F.N., and the Ariel.

On the matter of price, marks could be gained for every substantial reduction on £70. A machine costing over that sum scored no marks, whilst one costing £35 scored full marks, namely, five. Two machines gained full marks, and of these only the Griffon got through the trials. This was run close by the 2 h.p. Werner, and that in turn led the Bradbury, the Peugeot, the Jap, the Kerry, the R. and P., the 2¾ h.p. Werner, the Castell, the Matchless, the Evart-Hall, the Alldays, the F.N., and the Ormonde.

The marks for convenience and brake efficiency are secrets with the judges, and no information is being published beyond the groupings already given. But the speed trials on the track enable us to again calculate the awards under this head. For the purpose of the trials, the machines were conveyed to the track under official observation, nothing being permitted to be done to them. During the week the pulleys had been secretly measured and the measurements recorded, and just before the speed trials they were checked over again, every one being found in order. The machines were sent on in batches of four or thereabouts, and set to do five miles at their best pace. Considerable variation in the speeds were at once apparent, F. W. Chase, on the new aspirant for public support, the 3 h.p. Chase motor-cycle, covering the distance in 8 mins. 8⅗ secs., or 37 miles per hour, thus gaining four marks out of a possible five. The next fastest was A. C. Wright on the 2¾ h.p. Ormonde, whose time was 8 mins. 27 secs., giving a speed of 35½ miles per hour. The Ormonde thus gained four marks. Other good performances were as follows: 2¾ h.p. Matchless, 9 mins. 18 secs., 32½ miles per hour, 3 marks; the 2¾ h.p. Bat, 9 mins. 20⅘ secs., 32½ miles per hour, 3 marks; the 3½ h.p. Booth, 9 mins. 25 secs., 32 miles per hour, 3 marks; the 2¾ h.p. King, 9 mins 25⅘ secs., 32 miles per hour, 3 marks. The average time was between 10 and 11 minutes, or just inside 30 miles per hour, and the majority did something around these figures. Only three machines exceeded 13 minutes. Professor C. V. Boys and Mr. J. Pennell were the technical judges overlooking the speed events. Mr. O'Gorman, who has worked like a Trojan at the judging, had gone off for his well-earned annual holiday, so was absent on the last day.

An Analysis.

It is both interesting and instructive to analyse the motor-bicycle, and to note the behaviour of each component part of the machine during the trial. Careful consideration of the following notes will give readers the best birdseye view of the trials which we could present. With the summary before them, makers will be able to devote particular attention to those details which are proven to be most in need of attention, and riders will be able to make a better choice when purchasing a machine if they know what to watch for. We will first of all state in a few words the behaviour of each essential part, and then amplify where necessary —

(1) Motor: Scarcely any troubles whatever.

(2) Carburetters: Not many difficulties.

(3) Ignition: Only minor troubles with the high tension (coil and accumulator) system.

(4) Silencers: Quite satisfactory in nearly all cases.

(5) Frame: Quite efficient.

(6) Tyres: Almost endless troubles in most cases.

(7) Belts: Seldom out of trouble.

(8) Clutches: Thoroughly useless and dangerous.

(9) Chains: No trouble.

(10) Brakes: Generally excellent.

(11) Lamps: Could be stronger.

(12) Lamp brackets: Too weak in many cases.

(13) Saddles: Unable to stand the wet.

(14) Portable stands: Invaluable.

(15) Gauges for oil or petrol: Most useful.

(16) Tanks, mudguards, pedals, footrests: No trouble.

The behaviour of the engine generally was remarkably good: we only heard of a two to one gear breaking, and the failure of a screw holding the gudgeon pin. Otherwise forty motors carried out their part of the work admirably.

The frame of the Brown motorcycle gave out on the run down the Hog's Back, and a new one had to be substituted to enable the machine to be ridden next day. The cause of the failure has not been made public. Otherwise frames behaved well, and there were no signs of weakness about forks or steering heads.

Tyres were the most unsatisfactory feature. On the flinty roads, saturated with water, punctures were often occurring. The bad fit of inner tubes also caused nipping and bursting. And yet we were told by the rider of one of the Bradbury machines that he had ridden his machine to London from Oldham and had gone right through the trials, covering altogether about 1,200 miles, and had not found it necessary to even inflate the tyres the whole time. They were Clinchers. Tyre makers must really endeavour to supply something good for next year.

Belts were the cause of endless trouble. Most riders carried spare ones, whilst one had quite a stock of them. Hoodonk on his Trimos had fitted double pulleys on the engine and on the rear wheel, using two

belts. The result was very good, because they would adjust themselves one to the other and then divide the driving strains. The chain-driven Jehu had few chain troubles, whilst the only other chain-driven machine in the trial withdrew because its engine was not powerful enough.

Clutches were abominations. Makers seem to forget that the clutch used for a free-wheel cycle is quite useless for a motorcycle. With the latter the clutch is running free nearly all the time; the pawls are depressed in their chambers and springs are under constant compression. The result is that when mud works in, as it must do with constant movement between the inner and outer members of the clutch, the pawls get glued down, and so a free-wheel both ways is provided. After the muddy rides the machines invariably arrived in such a state that the rider could give no pedal assistance. A liberal flooding with paraffin was the only preventive and cure. Stronger clutches and small guards to protect them are required.

Chains, having little work to do, give no trouble, whilst the other matters set out above are such as can easily be rectified.

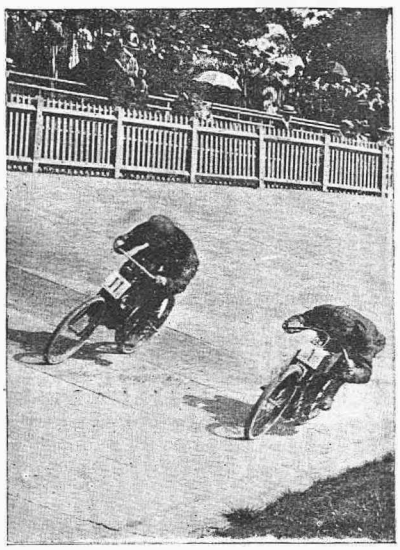
Gordon-Bennett Race

The Gordon-Bennett prize won by the Daimler Company in Ireland has reached Berlin and has been set up in one of the rooms of the German Automobile Club, which celebrated the victory on August 22nd with a banquet. For the race in 1904 no fewer than four German firms have signified their desire to enter: the Daimler Company, Benz and Company, of Mannheim, De Dietrich and Company, and the Neue Automobil-Gesellschaft of Berlin.

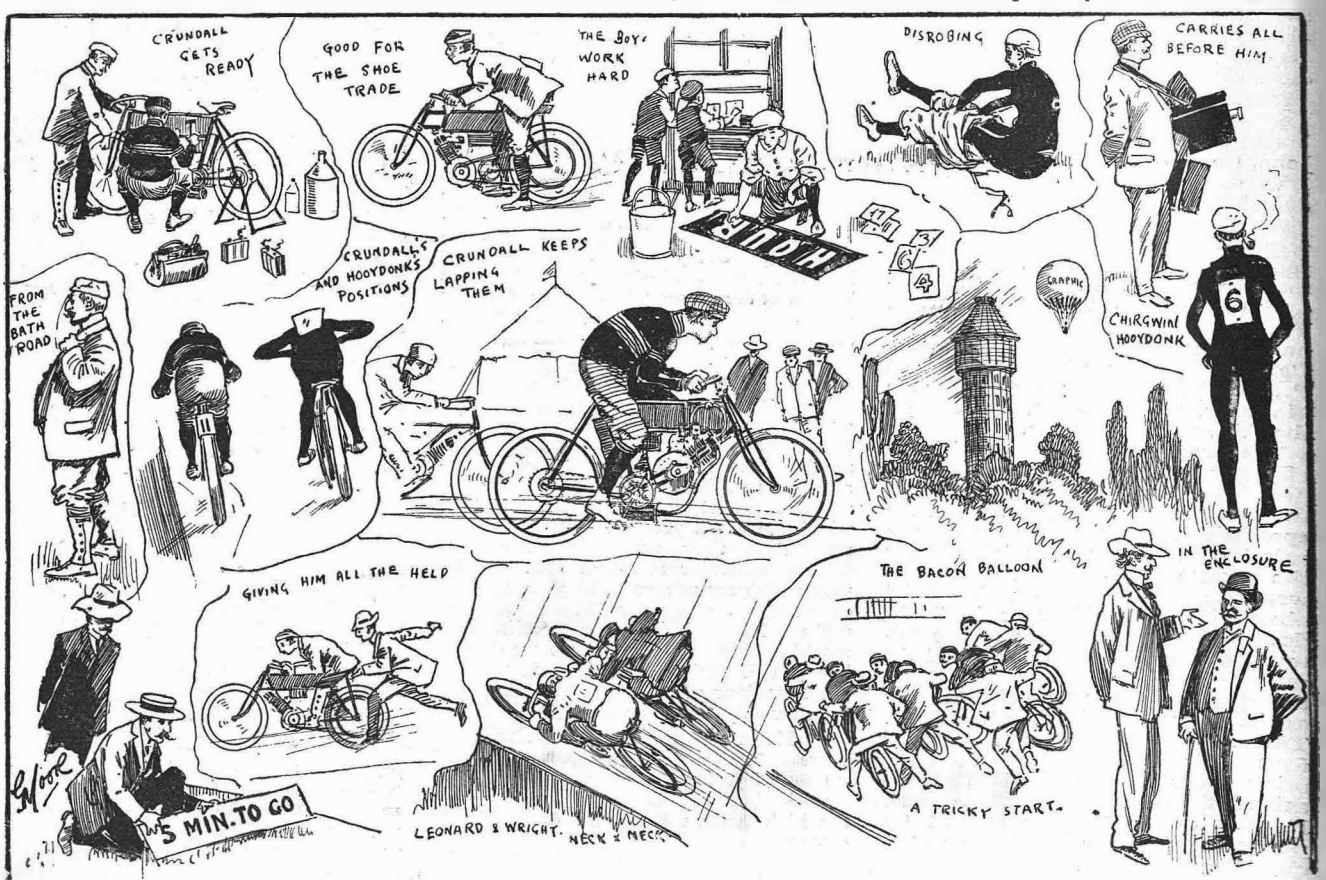
The Auto-Cycle Club's Race Meeting.

HUMBER'S "DAY OUT."

On Saturday afternoon, following the close of the reliability trials, the contests for the three challenge cups in the possession of the club were decided before a large attendance of the public. Mr. Roger W. Wallace, K.C., president of the club, was present, as well as a large number of the officials and members. Ernest Perman was judge, the technical judges being Messrs. C. V. Boys, Basil Joy and G. F. Sharp, the timekeepers being Messrs. G. P. Coleman and A. J. Wilson. The first event was the one-hour scratch race for the "Autocar" Challenge Cup. This was open to machines weighing 114 lbs. or less, driven by engines of not larger capacity than 70 × 70 mm. Seven out of nine entrants started, but the Weller failed to start. A great race between J. F. Crundall, on a Humber, and J. van Hooydonk, on a Phœnix, resulted, but after a few laps the former gradually got away, and finally won a splendid race, covering 42 miles 1,260 yards in the hour. Hooydonk was second, 4¼ miles behind, and S. C. Holloway, on a Minerva, third, nearly half a mile behind Hooydonk. The five miles handicap for the "Motor Car Journal" Cup brought into the final Hooydonk, on a 2¾ h.p. Phœnix, and J. F. Crundall, J. Leonard and B. Yates, all on 2¾ h.p. Humbers. A fine race resulted in a win by J. Leonard in 6 mins. 54⅘ secs., Hooydonk being second, 200 yards behind, and Yates third. For the "Automotor Journal" Cup separate time trials at one mile with flying start were conducted, and the fastest time was done by J. F. Crundall on his 2¾ h.p. Humber, his time being 1 min. 19⅘ secs., or 45¼ miles per hour. J. Hooydonk was but a fifth of a second longer, securing second place, and J. Leonard was third in 1 min. 24⅘ secs. The technical judges had the winning Humber in the hour race dismantled in order to verify the cylinder dimensions; these were found to be perfectly accurate.



Crundall (11) and S. C. Holloway (1), in the Hour speed-trial.



SKETCHED AT THE AUTO-CYCLE CLUB'S RACE MEET ON SATURDAY.

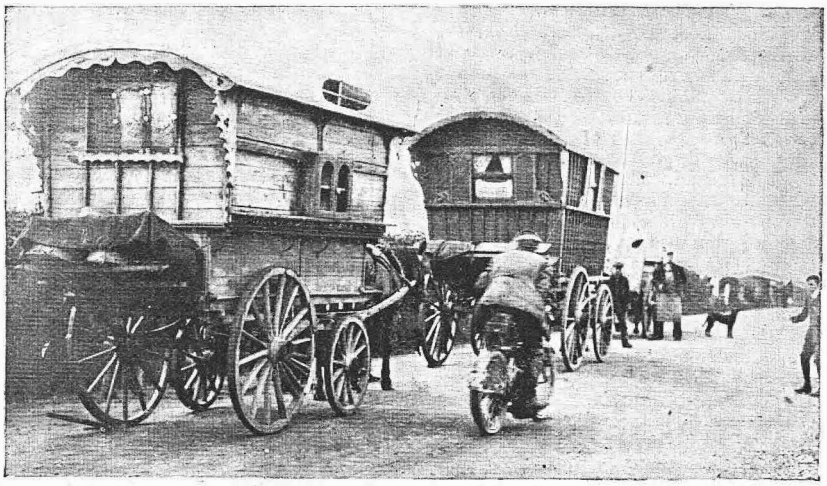
Surrey has to Pay for Persecution.

One halfpenny increase in the rate for the police of Surrey is not a large amount, still there must have been considerable extra expense in setting traps for motorists all round the country. Fees to surveyors for measuring a few hundred yards on the highway cost money. The ratepayers of Surrey must, of course, be pleased at this increased cost of the force! The time of a great many, like Inspector Marks, Sergeant Jarrett, etc., is almost entirely (vide local papers) taken up in the persecution of the automobilist. Presumably there are no other matters for the police to look to.

Endorses "The Motor" Policy.

In reply to a letter addressed to him by a member of the motor trade, Mr. Long has forwarded an interesting letter. The contents of this letter are so striking that we might almost be excused for thinking that Mr. Long is a diligent reader of "THE MOTOR." We quote the following passages, which support the policy of this journal:—"It is true that the Bill, if properly enforced, will discourage the demand for powerfully-engined motors intended to run at a high speed. But Mr. Long ventures to think that the employment of capital in the construction of this class of cars was at the best a hazardous enterprise, big with risks for the whole motor industry, apart altogether from any effect of the Bill. In the first place, the demand for these express highway engines was, by reason of the combined magnitude of the cost and the peril of them, bound to be restricted, and by reason of the proverbial transitoriness of fashion, likely also not only to diminish, but even to vanish altogether. . . . In the interests, therefore, alike of the public and of the industry, he hopes that the new legislation will effectually divert the attention of manufacturers from the construction of costly racing machines beyond the reach of all but millionaires, to what he ventures to think will, in the end, be a much more profitable and stable undertaking, viz., the construction of moderately-engined reliable cars to go at a moderate speed, and adapted to the purse of the man with moderate means."

This reads like an extract from one of THE MOTOR" editorials.



AN INCIDENT OF THE TRIALS.
Two ways of getting about the country.

The following table of speeds of the motorcycles up Westerham Hill is interesting: F. W. Applebee, 3 h.p. Rex, 14 miles per hour; A. Wright, 2¾ h.p. Ormonde, 13 miles per hour; W. Mills, 2½ h.p. Phœnix, 12 miles per hour; C. Simms, 2¼ h.p. Alldays, 11⅝ miles per hour; T. Hooydonk, 3 h.p. Ariel, 11¾ miles per hour; E. Hayes, 2½ h.p. Kerry, 8 miles per hour; F. E. Coles, 2¾ n.p. Brown, 6 miles per hour.

Hardly Convincing.

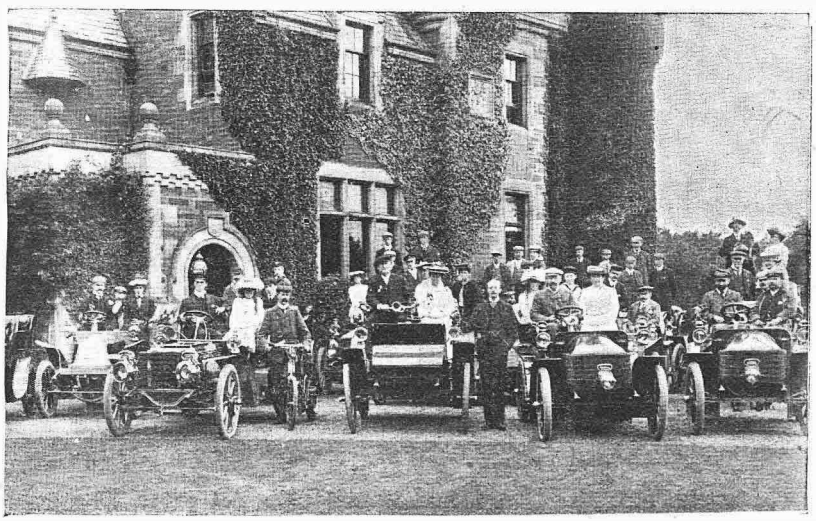
We fear we cannot congratulate the member of the motor industry upon the strength of the evidences of the wrecking of the motor industry which he forwarded with a letter to Mr. Long. One was a letter from a youth who went to prison rather than pay what he regarded as an exorbitant fine; and the other was a letter from a motorist stating his intention of selling all his cars. If his cars are speed monsters we hope they are not likely to be sold for use on the road at all. If they are moderate powered cars and, assuming for the sake of argument, he sold four to different people, then the ranks of moderate users have gained by three.

Politeness Pays!

A Yorkshire motorcyclist, who was fined ten shillings for furious riding (the rate being alleged to be between 15 and 16 miles an hour), pleaded that his machine was not in working order and could not go the speed; as a further indication of the moderateness of his speed he asserted that when he passed the policeman who summoned him, he could have shaken hands with him. It was, doubtless, due to the neglect of the act of politeness that he paid the penalty. Scorchers please note!

Scottish Automobile Club at Coll-Earn.

Coll-Earn, the summer residence of Sir J. H. A. Macdonald, the Lord Justice Clerk of Scotland, and the president of the Scottish Automobile Club, was on Saturday, 8th August, visited by the members of the club on the president's invitation. Rain fell heavily during the night and in the forenoon, and there was consequently not so large an attendance as had been hoped for by the eastern and western sections, to whom the president's invitation had been extended, as well as the nearer districts. Seventy cars were expected, but owing to the generally unpromising weather only thirty turned up at Coll-Earn, which is a charming place near Auchterarder. Among those present were Mr. George Macmillan, hon. sec. of the eastern section of the club, on his 16 h.p. De Detritch; Mr. John Adam, chairman of the western section on his Wolseley car; General and Mrs. Alexander, who came from the Bridge of Allan on an Oldsmobile; Mr. R. J. Smith, C.A., general secretary of the Scottish Automobile Club, on a Wolseley; Major and Mrs. Reid on a Renault; Major A. T. Reid, of Auchterarder, on a steam White car; Mr. Douglas Croath, Edinbro', on a Napier. The guests were cordially received by the president, Dr. Dawson Turner, and Mr. Norman Macdonald, the chairman of the Scottish Automobile Club. After luncheon, the Lord Justice Clerk made some interesting remarks. He characterised as absurd the fears of the public concerning the motorcar. Time was on the side of the automobilists, and there was no doubt that automobilism would prove of general benefit.



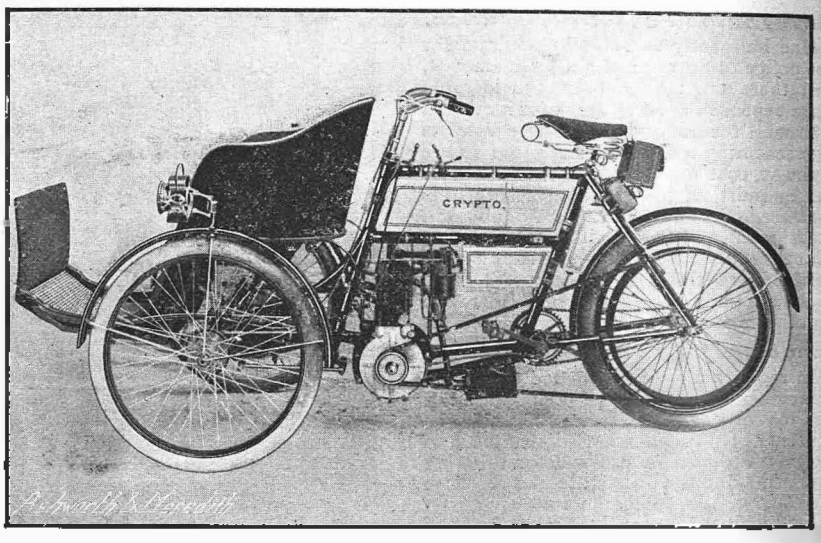
[Photo by Mrs. Norman Macdonald.
The Scottish Automobile Club at Auchterarder.

Testing Motors.

At John Street West, Blackfriars, the works of the Noble Motor Co., we have had the pleasure of witnessing the testing of a 2½ h.p. Noble engine before it is passed for fitting to a motor-bicycle. The test was thorough, and the engine satisfactory. An improvement in detail is being introduced. It is found that the commutator case is fitted so closely that sparking takes place between it and the springs of the present wipe contact; to do away with this it will shortly be replaced with an ingenious brush contact.

The Crypto Tandem Tricycle.

The illustration depicts the motor tandem tricycle just placed on the market by the Crypto Works Co., 29, Clerkenwell Road, London, E.C. The company were the original inventors of this type of tricycle, which has special features in the steering arrangement. A vertical 2¾ h.p. engine is used, driving the rear wheel by a long belt. The carburetter is a spray type, and ignition is high tension electric. There is a band brake on each front wheel, and a powerful rim brake on the back. The fore-carriage, it will be noticed, is of a specially neat design.



The Crypto Tandem Tricycle.

Long Non-stop Run on a 10 h.p. Gladiator.

Mr. Perman sends us an account of a successful 900 miles trip, which he made in company with two observers—one of whom was the Automobile Club's official timekeeper—on Tuesday, Wednesday, and Thursday of the week before last. During the trip a long non-stop run of 450 miles was accomplished, the car starting from the business premises of Messrs. S. F. Edge, Ltd., in Burlington Street, and travelling by way of Hatfield, Hitchin, Grantham, Doncaster, York, Newcastle-on-Tyne and Edinburgh to Glasgow. The car—a 10 h.p. 2-cylinder Gladiator—ran without a hitch, and was only brought to a stand on two or three occasions, on account of restive horses, to inflate a tyre, and to replace a tube, the engine being kept running on all these occasions. No high speeds were attempted, but a consistent average of 21 miles an hour was maintained. No tool of any description was used from start to finish, with the exception of the tyre levers used for the repair above-mentioned; and with the exception of refilling lubricators and tanks nothing was done to the car before its return. On the home journey the car was driven via Hamilton and Carlisle to Appleby without an engine stop, and thence on the following morning to London in one continuous run. 900 miles in three days in three successive runs, without a breakdown, is certainly good going.

More Street Dangers.

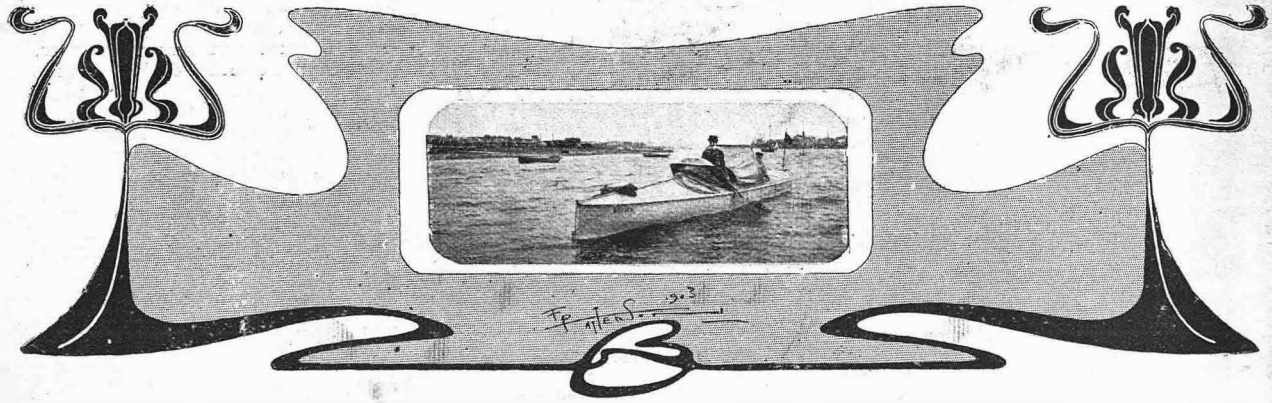
The petrol-driven motorcar is not the only modern vehicle which "scatters destruction and abomination in its path." A scene of considerable excitement was afforded to a few of the inhabitants of Streatham about ten o'clock one night last week. A large specimen of the traction engine order was heard rumbling through the village, and presently a kind of ground level firework display was observed to be issuing from beneath it; sparks and flames darted out, and a stream of white-hot cinders poured forth, occasioning not a little alarm to the few odd cyclists and horse traps which were returning home. An energetic policeman, noting the incident from a few hundred yards back, gave chase, and after an exciting pursuit overhauled and stopped the offending vehicle. Explanations followed, which showed that the car, a Thorneycroft steam wagon, had a defective firebox, which permitted all but the largest cinders to escape through the bottom. After the constable had prepared his report the wagon was allowed to proceed, still spitting coals of fire. The effect of one of these on a bicycle tyre or a horse's foot may be imagined.

Improved Oldsmobiles.

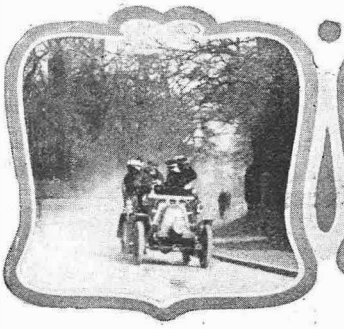
Several important improvements have been made in the Oldsmobiles recently, and buyers from now will receive cars embodying several new features. Improvement has been made in the cooling system by casting large flanges on the lower part of the cylinder, and putting flanges on the radiator pipes also. The water jacket construction has been changed by having it now cast with the cylinder, and a gear pump has been substituted for the hydraulic method formerly used.

A Paraffin Carburetter.

With the possibility before us that petrol will in the future deteriorate considerably, the attempt to solve the problem by providing a carburetter with which even paraffin may be used successfully will be watched with interest. In our advertisement columns this week appears an illustration of the "Trusty" carburetter, with which it is claimed to be quite possible to use petrol of any density, or even paraffin, with perfect success. It is said that no warming is required with this carburetter, which acts by atomisation instead of evaporation. The engine is started with petrol, naphtha or alcohol, and after getting going a twin tap is turned on, and the carburetter does its work equally well with paraffin. The sole agent for the article, which deserves the consideration of all motorists, is David J. Smith, Great Arthur Street, E.C.



Miss D. Levitt and the "Napier" Launch, which she drove before the King by special command.



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.

Police Traps.

Sir,—I wish to warn motorists, through the columns of "THE MOTOR," not to travel above the "legal limit" coming through Bagshot on the Camberley side. The trap starts at the top of the hill, and ends at the bend through the village. There are also traps at different places somewhere between the Windmill Inn and Sunningdale station. These traps are working from about 5 o'clock on Saturdays, and go on till Monday evening. I am glad to say that the police made no captures last Sunday.—Yours faithfully,

"SPEED LIMIT."

Flat Belt versus V Belt.

Sir,—I have read "Flat Belt's" letter in a recent issue (No. 76) of your valuable paper with considerable interest. My machine is fitted with a ¾in. flat belt, and I have now ridden some 4,000 miles. Only recently I experienced almost as much difficulty and trouble as "Flat Belt" has. I tried nearly every belt that I heard of, but with little, if any, improvement, until recently, when I purchased a rawhide belt from the British "Chicago Rawhide" Manufacturing Co., Ltd., of 6, Dowgate Hill, London, E.C. This has literally been a revelation to me, and I have ridden from 200 to 300 miles without touching the belt in any way. This belt is made of a peculiarly tough and supple leather, and practically, it does not stretch after the first fifty miles. It is run with the smooth side of the leather next the pulley, and this assists the gripping properties of the belt, as it does not allow the road grit to bed into the leather in the same way as if it were run on the other side. I have a belt, made in two pieces, joined by the ordinary Green's fasteners. This obviates a sewn joint, which I have always found to give trouble sooner or later by breaking away. I soak the belt in castor oil occasionally, and do not wish for better results. I am certain that a flat belt absorbs less power than a V belt, and it is interesting in this respect to notice that all the high speed foreign machines are fitted with flat belts. I should perhaps mention that I am in no way interested in the British "Chicago Rawhide" Manufacturing Co., Ltd.—Yours faithfully,

GUY H. HOWARD TRIPP.

Surface or Spray Carburetter?

Sir,—The question as to which is the better for the motor-bicycle has, I think, not been finally answered. Great as is the vogue of the spray at present, my own experience leads me to think that better results are obtained from the surface type, and I believe this opinion is held by some experts, Mr. Hooydonk amongst them. My last year's mount was a 1¾ h.p. Phœnix motor-bicycle, fitted with a surface carburetter, and I believe on this make of machine the pattern of surface carburetter is recognised as being of a particularly efficient type; at any rate, I only had one fault to find with it, and that a minor one, namely, that when riding over especially rough surfaces misfiring sometimes occurred. Finding the mixture was a very easy matter, and that anyone should revile the surface carburetter because of the difficulty of finding and keeping a correct mixture certainly astonishes me, though whether the case is altered in these days of .700 petrol I am unable to say. This year I have a 2¾ h.p. Humber motor-bicycle, with Longuemare spray carburetter, and so far have covered about 800 miles. I notice several defects, which I believe are peculiar to the spray system, and I will classify them as follows:—(1) Starting difficulties: not so much the starting at the actual commencement of a ride, peculiar, I take it, to all types of the spray, as the re-starting after switching off the current, perhaps in traffic, when one has to alter not only the lever, which serves the double purpose of retarding the spark and relieving the compression, but also to open the throttle, and perhaps, though not always, shut the extra air inlet. Of course, some of these procedures are peculiar to the Humber type of engine gearing, but if the carburetter had been of the surface pattern the alteration, at any rate, of the air inlet lever would not be necessary. (2) Alteration of the air inlet lever is required whenever the spark is retarded, or, in other words, different engine speeds entail different positions of the air lever. Here, again, inasmuch as retarding the spark on a Humber also lifts the exhaust valve to relieve compression, air sucked in at the slightly opened exhaust valve on the induction stroke of the piston dilutes the mixture to such an extent that the gas supplied, via the induction pipe, must be extra rich to meet the deficiency. In this case, then, it is not the carburetter but the short circuiting, so to speak, of the mixture at the engine which necessitates the alteration of the extra air inlet lever. But I am not so sure that the above is the correct explanation, owing to the fact that I have had fitted to my machine an extra exhaust lift, actuated from the handlebar, for relieving the compression of the engine when it is running with the spark advanced. With the spark in this position, one can run the engine at "half compression," without any alteration of the air lever, and so moderate one's speed very easily. My impression, therefore, is that with a surface carburetter fitted to the Humber machine the engine would run at half compression with spark retarded, as well as it does with the same amount of compression with spark advanced, because less suction being required to get the charge of gas through the inlet valve, the vacuum created by the induction stroke would draw more gas through the inlet and less air through the artificial leak created at the exhaust valve, and the proper function of this leak would be more likely to be obtained, that is, not so much to act as a means of diluting the mixture on the induction stroke as to relieve the compression on the combustion stroke. (3) There is a liability to choking up of the fine orifices through which the petrol has to find its way from the storage tank to the induction pipe. (4) Apart from dust getting into the interior, it certainly collects on the outside of a spray carburetter, which offers more surface for collecting dust than does the more uniform exterior of the surface carburetter, and adds to the time required to clean the machine. For these reasons I feel much inclined to replace the spray by a surface carburetter, but before doing so I should be glad to know (a) if any reader has had the double experience of the Humber motor-bicycle, that is, fitted with the surface and the spray, and if one is an improvement on the other. I particularise this make of motor-bicycle as it differs so essentially from other makes, and has peculiar idiosyncracies apart from the carburetter question. (b) Is there any form of spray carburetter which automatically regulates the air entry for the different engine speeds?—Yours faithfully,

E.T.

DIS

Paraffin Motor Launches.

Sir,—I gather from recent correspondence a good many of your readers seem interested in motor launches. I would like to point out, as they have not been mentioned so far, that there are several English-built paraffin motor launches on the market. Of course, the paraffin launch motor has tube ignition, but it has the advantage over the petrol launch motor of cheapness of running and simplicity, while paraffin can be obtained anywhere. Whatever may be thought of paraffin for motorcars, that the paraffin motor is suitable for launch work is proved by the fact that several firms, as Seal, of Chiswick, Vosper, and Hillier, of Romsey, build paraffin motors and launches, while several other British firms build paraffin launch motors, though I only know of one British paraffin motorcar.—Yours faithfully,

F. HYDE MABERLY.

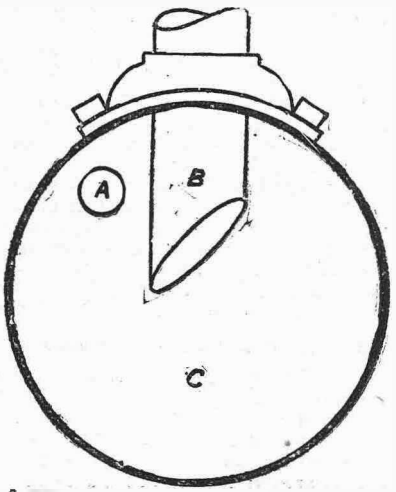
Petrol in France.

Sir,—I think I saw one of your correspondents stating that "Moto-Naphtha" is the word for petrol or motor spirit in France. Well, I have motored in France for seven years or more and this is certainly not the case. You might as well tell a French motorist coming over to this country to ask for "carburine," that being the English word for motor spirit. People following your correspondent's advice would ask for "Moto-Naphtha" in places where there was not any, and go away under the delusion that there was no petrol to be had; whereas had they used the proper word for motor spirit they would have been instantly supplied. "Moto-Naphtha" is only one of the numerous brands of petrol in France, and though a lot of it is made, there are districts where it is not to be found, and other makes are kept instead. France is undoubtedly the country best supplied with motor spirit, and there is hardly a hamlet in which it is not kept, only the proper word to use when asking for motor spirit, the word that is universally recognised from one end of the country to the other, is "Essence," the simple and plain word "Essence," pronounced "Essahns," which always means motor spirit. Motor spirit in France is very good, and there is really very little difference between the numerous makes. The principle brands, all of which I have used, are Motricine, Stelline, Automobiline, Moto-Naphtha, Naphtha Cycle, Benzo-Moteur, and Moto-Gaz. "Stelline" is the oldest make, and most reliable. "Moto-Naphtha" and "Automobiline" are not quite so good, while "Motricine" and "Naphtha-Cycle" are about the best. There are also several brands like "Alcoho-stellane," which have alcohol introduced in greater or lesser quantities. These I have tried, but they are not successful. They leave deposits in the engine and foul the carburetter and valves. The engine heats far more, consumes an immense quantity to get along with at all, will take little or no air, and there is a sad loss of power. The alcohol motor races that the French Government promote are a failure. The manufacturers fetch out their racing cars with much pleasure, and both they and the public enjoy themselves thoroughly, but they curse the stuff, and it does not lead to the sale of an additional pint.—Yours faithfully, LEOPOLD CANNING.

D15

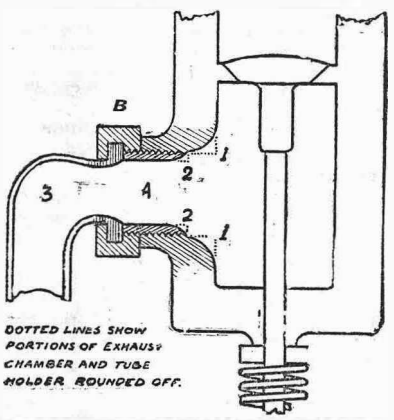
Silencing Experiments.

Sir,—Permit me to supplement "Magneto's" excellent article with a few remarks concerning my own experiences and experiments with silencers for motor-bicycles. I now possess no less than eighteen different models, French, German, English, and American, and possibly the results of trying and comparing these exhaust boxes may interest those of your readers who, like myself, believe in a silent running machine. The Dunlop silencer is certainly the most efficient of all the models which I have tried. Indeed, the noise of the exhaust, except when running with throttle wide open, can scarcely be heard, even by the rider, and

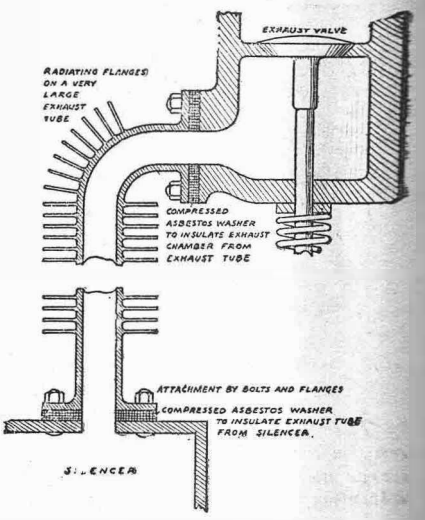


A EXIT TUBE OF SILENCER
B PROLONGATION OF EXHAUST TUBE
C EXPANSION CHAMBER OF SILENCER

the only noticeable noises of a motor-bicycle fitted with a Dunlop silencer are those clicking sounds arising from the inlet and exhaust valves. But the models sold by Mr. Dunlop are decidedly too small in proportion to the power for which they are intended, and if they are applied as directed by the makers, decided evi-



DOTTED LINES SHOW PORTIONS OF EXHAUST CHAMBER AND TUBE HOLDER ROUNDED OFF.



dence of overheating and back pressure will result. Thus I was forced to remove the silencer made for a 2¾ h.p. motor from my Paris-Vienna Werner motocyclette on account of constant overheating, which could only be traced to the exhaust box. I then had a special large exhaust tube with an easy bend fitted to my 1¾ h.p. Werner, Model 1902, and when the so-called 2¾ h.p. size silencer was fitted to this machine it gave highly satisfactory results. Thus the Dunlop silencer is capable of rendering the exhaust most inaudible, but the silencers are made decidedly too small for the motors for which they are recommended. The Fairfax silencer is certainly not quite so quiet as the Dunlop, but it possesses several decided advantages over the latter. In the Fairfax box the exhaust is not only not "choked back," but has a large chamber (about equal to the cylinder capacity of the motor for which it is intended) in which to expand. In addition to this, the silencer can be opened by a lever on top bar, so as to allow an almost absolutely free escape of the exhaust. This is of great value (1) in climbing long hills; (2) in permitting cool air to reach the motor combustion chamber and exhaust valve when valve lifter is raised; (3) in night riding the ability to produce a series of reports like a Hotchkiss gun by merely depressing a little lever and opening box constitutes a means of signalling one's approach infinitely more effective than even the largest horn. To obtain the best results from a Fairfax silencer the exhaust tube from the motor should be as large in diameter as possible, and as thin in gauge as is consistent with strength. It should also project into the silencer, so as to carry the gases beyond the small perforated exit tube, and thus prevent the "shot" from the exhaust striking the perforated tube and producing a whistling "swish" following each explosion. I may add that, when thus applied, and when riding with the throttle half closed, the Fairfax silencer is so quiet that the clicking of the valves becomes the only source of annoyance from noise. "Magneto," in his most acceptable and timely paper, made many useful suggestions, but he did not go deeply enough into the causes of noise and overheating. When I first received my 2¾ h.p. 1903 Werner I found that the motor would overheat upon the slightest provocation, in spite of the most

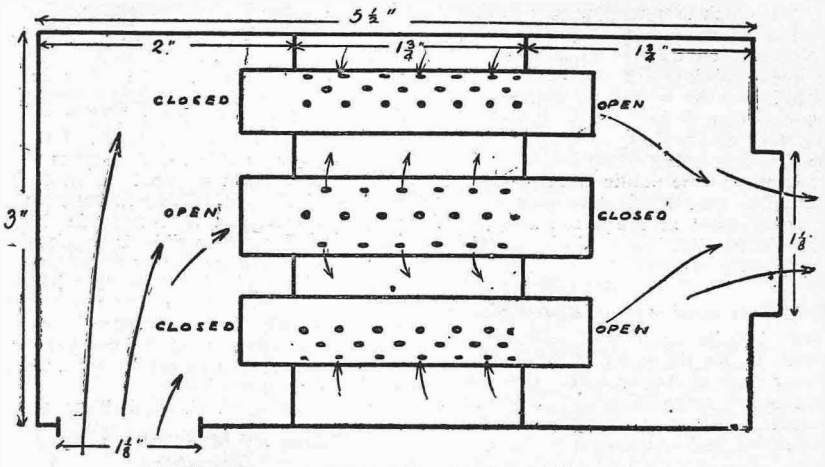
careful regulation of carburation, igni tion, admission, and lubrication. After some reflection upon the subject, I made the following changes: (1) Rounded off sharp edges of exhaust chamber outlet; (2) rounded off sharp edges of (a) hollow bolt which holds exhaust tube and silencer; (3) I had a very large exhaust tube made, with combustion chamber end hammered down and levelled for nut (b). As both the exhaust tube and silencer of the Werner machine are too small for the work they have to do, I fitted a very large size (3 h.p.) Fairfax silencer to the large new exhaust tube (3). The results of these changes are highly satisfactory. While I cannot claim that the engine is more powerful than before, it is now certainly remarkable in one most important respect, i.e., the absence of all tendency to overheating, even on long steep hills. "Magneto" proposed that silencers be fitted with flanges which would act as radiators. This is a move in the right direction, but it is not enough. Begin by shaping the exhaust chamber so that the gases pass into exhaust tube with the least possible friction and resistance. In other words, round off all corners and make opening as large as possible. (2) Insulate exhaust tube from exhaust chamber, so as to prevent the former from heating the latter. (3) Fit exhaust tube with radiating flanges. This would result in gases reaching silencer more thoroughly cooled. Insulate (again by means of a wide washer of compressed asbestos) silencer from exhaust tube, so as to prevent latter from heating the former. The advantages of this would be: (1) Increase in force of motor through (a) less resistance to escape of burnt gases and more thoroughly emptying of products of combustion, (b) greatly lessened tendency to overheating, (c) as exhaust valve and spring would be kept much cooler, better compression would result; (2) increase in reliability of motor for touring; (3) greatly lessened noise of exhaust on account of gases reaching silencer in a much less heated state.—Yours faithfully,

CHARLES WOOD MCMURTRY.

Sir,—I have just finished making a 2½ h.p. motor, and am pleased to say I have got it to go, chiefly through the help of the instructions and hints given in "THE MOTOR." I send sketch of a silencer which I have designed for it, and should like to hear your readers' opinions on it. The gases enter into a fairly large chamber, from which they pass into another chamber, slightly smaller; they pass out of this latter chamber through holes possessing the same total area as the holes through which they enter, but double their number. The gases are thus well split up, and as far as I can see no back pressure is put on the motor.—Yours faithfully,

E. PERCY CHARLES.

Sir,—Referring to "Magneto's" recent article on silencers, he makes the statement that the report is "caused mainly by the impact of the high pressure streams of gas against the atmosphere." In my opinion, this statement is open to criticism. Did space permit, a very simple experiment could be described which would go to prove that it is the back rush of the air into the partial vacuum produced by the exploded gases, as in the case of a gun or cannon being fired. If



Illustrating letter from E. Percy Charles.

the analogy is correct, it seems to me that the line for a patent lies in having thin steel plates fastened at one end to a round or rectangular exhaust box, and just closed by touching at the loose tips like a pigeon's tail; or by a coil spring in a cylinder, with a flat valve piece over the mouth of the exhaust, not too strong to resist the force of the exhaust, but enough to press the valve back on the opening of the exhaust. What have your readers to say to this?—Yours faithfully,

"BACK LASH."

Sir,—Your article on silencers was most interesting, and I venture to suggest that a series of similar articles, each treating of the several varieties of some accessory of the motor, would be most useful, not merely to dwellers in the country, whose opportunities of judging of such things are limited, but to the would-be inventor. As a member of both classes I should like to submit particulars of a silencer which, naturally, seems to me to have some good points. A number of discs of thin metal of as large a diameter as is convenient are dished to a concavity of half an inch or so, and have a central hole by which they are threaded in pairs (i.e., with two concavities facing) on a preferably enlarged prolongation of the exhaust pipe, which is thus surrounded by a series of lenticular chambers. Into these chambers the exhaust gases escape through a ring of small holes in the pipe (or, perhaps better, through two rings, one close to each disc), and emerge into the air as a thin film between the edges of the pairs of discs. Probably the rough edges left by stamping out the discs would ensure sufficient crevice for the gas to escape: but, if not, a few strokes of a flat file applied at intervals to the edge of one disc of each pair would do so. The points of the design are that it would be very simple to manufacture, and to take to pieces if necessary; that it exposes a large cooling surface to the air, yet one that would not, I think, give any resonance as a hollow drum does; and that the gas would escape in all directions, and after considerable expansion as a film of considerable length, instead of through a limited number of holes, each of which makes its own little report. The discs would be secured on the pipe by screwing up a nut thereon.—Yours faithfully,

"FABER."

The Motor Cars Bill.

Sir,—A very natural irritation has prevailed in the automobile world at the result of the debate on the Motor Cars Bill recently brought forward by the Government and passed through Parliament. Some automobilists seem under the impression (1) that I am the author of the Bill; (2) that the Parliamentary motorist party had it in their power at any time to stop its passage or alter it in any way they chose. Both these ideas are erroneous. The Bill was brought in by the Government on their own initiative, in consequence of a peremptory demand from the general public for more protection, which produced a feeling in the House of Commons so strong that neither this nor any other Government could have resisted it. The measure, though admittedly far from satisfactory from a motorist's point of view, is much better than might have been anticipated a fortnight ago. The Government, instead of being abused, ought to be thanked for having endeavoured, to the best of their ability, to hold the balance fairly, and having resisted as far as they could the strong unreasoning anti-motorist prejudice shown by the majority of members of Parliament, irrespective of party. If some Bill had not been passed this Session the Government intended carrying through a Two Clause Bill early next year, solely providing identification and increased penalties, without any alteration of the speed limit at all, a proceeding which would have been very disastrous from a motorist point of view. Those who were not in the House of Commons can hardly realise the violent feeling existing against motorcars, and, on behalf of the Automobile Parliamentary Committee, I may say that if every point worth fighting had not been fought for and the most strenuous opposition offered to many deleterious amendments moved from the other side, the measure would be far worse than it is. It matters little to me how much my actions during this crisis may be either unintentionally or intentionally distorted, but in justice to the 45 members of Parliament who did their best to protect the interests of automobilism against overwhelming odds, I think that, instead of abuse, they should receive the thanks of the motoring community. For nealy 24 hours of Parliamentary time they fought hard to improve a

measure which they were unable to throw out, and the number and value of amendments accepted testifies to their labours. My own opinion (for what it may be worth) is that the Act will not turn out to be as bad as many think, and if all motorists —amateur and professional—show proper consideration and courtesy during the next three years to the public and road user it is possible that Parliament may modify the meagreness of the speed limit, and diminish the harshness of the penalties in 1907.—Yours faithfully,

J. S. MONTAGU.

Motorists and other Road Users.

Sir,—I quite agree with and am very pleased to see the letter of "Fair Play" in your issue of August 12th. If a motor-car requires more than half of the road to travel safely on, it cannot be under proper control and is a danger to other road users. If a car with four wheels is unsafe at the side of the road a motorcycle is more so when driven there by the car which wants more than its share of the road. As to the yarns we read about the motorcycle not being more liable to skid than the ordinary safety, it is all nonsense; ride as carefully as you will near the gutter even without power, down you go. In riding 4,688 miles, I have been off with skid fifteen times, and in each case the crank on that side required straightening; only one out of the fifteen did I deserve (viz., the first). I have ridden cycles now for over twenty years, and have only had one skid, and that was off an old, tall cycle. If I may be allowed to introduce another subject, I should like to remark that I think "Police Trap" notices in your paper are a mistake, as the only people who require them are motor cads and law breakers, who bring motoring into disrepute, and, therefore, should be caught and punished.—Yours faithfully,

ALFRED MEIGH.

The Suggested Alcohol Race.

Sir,—I see in your issue of 12th inst. that a proposal has been made by Mr. Mecredy to have an "alcohol race" next year in Ireland, and the wish is also expressed that extended facilities for the manufacture of the spirit may be obtained. The idea is a very laudable one. There are many reasons, however, which I think will militate against alcohol becoming generally used for motors. The difficulties arise from the duty on that commodity (11s. per proof gallon). At present, methylated spirit is not taxed on account of its having been rendered unpotable, but I doubt whether methylated spirit is suitable for motor work, on account of the wood and mineral naphthas which it contains. At all events, this can better be settled by experts. Arrangements have recently been made by the Inland Revenue authorities whereby more spirit may be obtained for use in chemical research. This favour, however, can hardly be extended to every owner or user of a motor. If it were, the door would be at once opened to huge frauds on the revenue. The crux of the whole matter lies in the fact of the spirit being potable or unpotable. If it be potable, then I cannot possibly see how "all restrictions" can be removed. On the other hand, if an unpotable spirit can be found useful, then I believe it is possible to modify the existing regulations so as to allow of alcohol becoming generally used.—Yours faithfully, P.B.S.

C10

The Tyre Problem.

Sir,—It may interest your correspondent "Photo-Motorist" to know that I have ridden a distance of 1,650 miles in six weeks on my 3 h.p. Quadrant motor-bicycle, fitted with Clincher A Won motorcycle tyres, without a puncture. I rode a 2 h.p. Quadrant with the same tyres about 500 miles without a puncture, so that I have ridden 2,100 miles without a puncture on these tyres. I do not ride slowly, however. I recently rode from Hereford to Stroud, a distance of 45 miles, in two hours. Those who know the long hill out of Hereford, the hilly country round Ross, and the hill between Gloucester and Stroud (the steepest hill I have yet met), will be able to appreciate my average speed.—Yours faithfully,

G. P. H. de TREVILLE.

Cause of Mysterious Tyre Troubles.

Sir,—Having noticed a letter from "Constant Reader" in a recent issue of your valuable paper, on "Mysterious Tyre Troubles" in "O.P.V," I may say that I have experienced the same trouble with inner tubes, a small slit occurring alongside the valve patch; this has occurred in

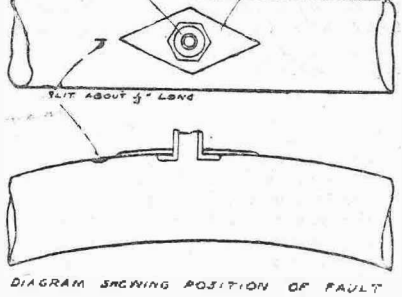


DIAGRAM SHOWING POSITION OF FAULT

four different inner tubes, all well-known makes. I have attributed the troubles to the same cause as "Constant Reader"; so much so that on buying a new tube I at once round off the points of the patch, and since doing this I have had no further trouble. I should be glad to hear of any other readers having experienced the same trouble.—Yours faithfully,

H. PARTRIDGE.

Condensers on the High Tension Circuit.

Sir,—I noticed a letter in a recent issue of "THE MOTOR" referring to the use of condensers on the high tension side of the spark coil. The effect, when properly gauged, would be to increase the capacity of the H.T. coil, and thus set up surging effects. No doubt this of itself is an advantage, but the danger of breakdown with H.T. condensers—even when carefully made and handled—is great, and naturally this would be aggravated in the case of motorcars, seeing further that a properly adjusted spark gap device, acting almost as a tuned relay, would give somewhat similar results; the condenser appears, indeed, of more than doubtful utility under motor working conditions. The practical value of combining the two devices is still more doubtful. It is very amusing, though misleading, that the "Electrical Review" should be quoted. The subsequent article referred to happens to be written by the patentee of the condenser, and in it were portrayed in truly awful form the dangers of lead-covered plug connection cable, while in the comparative calm of the closing paragraphs the public were modestly advised to use the author's patented article, in order to be secured from trouble and danger. Now — though otherwise it would seem to be inferred by your correspondent—in an editorial footnote the "Review" referred to the statements as "grossly exaggerated," and doubted the validity of any patent. It transpired that this was not one of design, but one of application, and since Mr. Tesla has used condensers for the very purpose of increasing the intensity of sparks, the bare application of this idea for motor ignition purposes could never be held valid if questioned. Should the demand arise, there are many firms who can turn out well-made condensers of suitable capacity, and yet not be accused of copying, without the public having to pay for doubtful patents.—Yours faithfully, NORMAN WELLS, B.Sc. Hon.

The M.C.C. Trials.

Sir,—Perhaps you will allow me to reply to the letter signed by Mr. Hawler, on the S. F. Edge 200 miles trial. Mr. Hawler's suggestion is a very good one from one point of view, but he has evidently overlooked the fact, as others do sometimes, that neither the trial nor the club are for trade purposes and trade advertisement; I mean to say, makes of machines are not being tested, but merely riders' capabilities to drive and keep their machines in order. Mr. Hawler's suggestion, however, would not have the effect he wishes, as a week would elapse between each run, and the engine could, if necessary, be rebuilt in that time, the tyres repaired or changed, etc., etc. The final of the S. F. Edge Trophy will be settled in a manner satisfactory to, and after consultation with, all the so far successful competitors. The main point of my letter, however, is a reminder that the club is a purely social and sporting one, and competitions promoted by the club will in all cases be personal ones.—Yours faithfully,

ERNEST H. ARNOTT.
Motor Cycling Club.

The State of Public Feeling.

Sir,—My own experience and, I have no doubt, the experiences of most motorists would coincide with yours as to the attitude of the public towards us, and as you mention in the last paragraph of page 9 of Aug. 12 issue, no one can point to such eruption of public wroth against us as some M.P.'s affect to believe might occur. On the contrary, my experience and the experience of my friends is that the public now view motors with the most kindly eye. This year I have not had a single instance of an unpleasant incident with a member of the public on the road, and I have done more motoring this year than I have ever done before. I find drivers of vehicles very reasonable, foot passengers the same, and I have never had the slightest friction with any member of the public, only with the police. I have been frequently warned of police traps, not only by automobilists, but by pedestrians, cyclists, carmen and gentlemen driving traps. As far as my own experience goes, the alleged ill-feeling between the public and automobilists is a fiction created possibly in the interest of the promotion-seeking constable.—Yours faithfully,

London, W. G. H. SMITH.

OUR INFORMATION BUREAU.

SPECIAL NOTICE.

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

1. Plain writing. Type writing for preference.

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

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

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

G.T.M. (Rochester) would be obliged if readers would recount their methods of fitting a cyclometer for use on a motor-cycle with fore-carriage attached.

"Perplexed" (Tamworth).—You would have to alter timing gear, valve lifting cams, and ignition apparatus. You would have to consider the effect of reversing the movement upon all the screws and threads, and perhaps it would be necessary to put locking nuts on some of the parts. And in the end the scheme might be a failure. Our advice is, make the new connecting levers, and turn the engine round.

Buying a Front Driver.

E. Bull (London).—If you could obtain a 1¾ h.p. front driver in really good running order at the price you mention we should say invest in it. They steer well and are fair hill climbers, and a 1¾ h.p. would be quite equal to pulling a light trailer and passenger. The disadvantages of these machines are the rapid wear of front tyre and tendency to slip on greasy roads. The wick carburetter, generally fitted, is apt to be troublesome.

Sparking Plug Parts and Platinum.

"Cycle" (Sunderland) writes:—(1) Where can I obtain new porcelains for "Castle" plugs? (2) What is the cement used for fixing the end on with, and where shall I get it? (3) Where can platinum tips or wire be purchased for contact screws and blades? Will silver answer the same purpose?—(1) If replacement parts are supplied for the "Castle" plug, the United Motor Industries Co., Ltd., 45, Great Marlborough Street, London, W., would supply them; (2) also cement. We believe it would be better to get a new plug. (3) We can recommend Derby and Co., 44, Clerkenwell Road, London, for platinum rivets. We know them to be genuine. Do not use silver under any circumstances; it is useless for contacts.

Leaving Cells for a Period Unchanged.

C. L. Stephenson (Stirling) writes:—I notice the following under "Hints and Wrinkles" in your issue of July 22nd. "It is a mistake to let an accumulator stand for more than a month without recharging, no matter how little it may have been used. Sulphating is likely to set in." I am sending a motor-bicycle out to India in the autumn, and it will take probably five weeks to get there. Should I fully charge accumulators before despatching, or run them out? They are two 2-volt accumulators, as supplied with the 1¾ h.p. Clement-Garrard machine.—In this case it would be safe to give the cells a very good charge first, and then have them touched up immediately they arrive.

Changing the Carburetter.

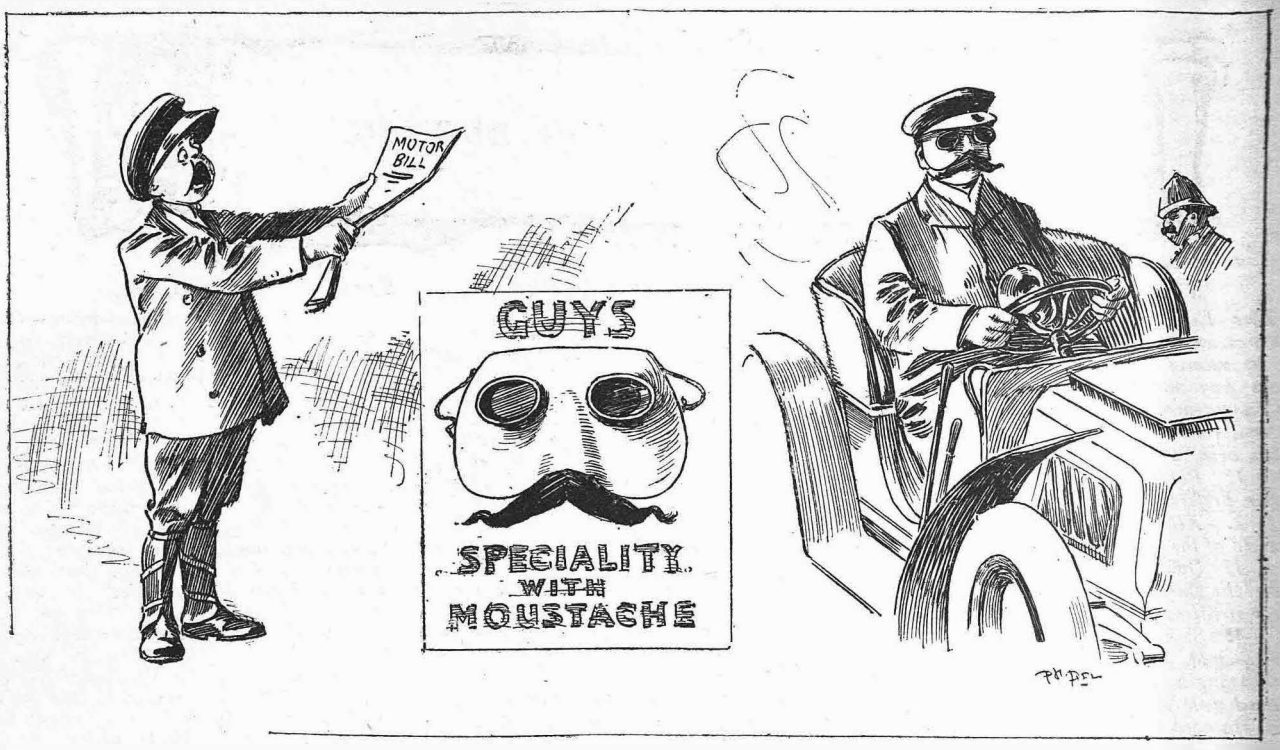
T. Gosnold (Folkestone) writes:—I have only just started using the heavier grade petrol now only obtainable, and find my 1¾ h.p. Royal machine will not run at all with it: everything else is all right, and I feel sure it is only the petrol at fault. I have a surface carburetter fitted to the machine. (1) Would it be within the scope of an amateur mechanic to fix a spray carburetter to present tank, or is it a job for an expert? (2) Would you advise a F.N. make of carburetter? (3) I presume no alteration to present tank would be necessary, other than to connect a pipe from the spray carburetter to petrol supply, and another pipe to engine head. (4) Would soldering the pipe to tank be sufficient, or would it be best brazed?—We certainly think you could fit the F.N. carburetter as long as you have some mechanical knowledge. Arrange it well below tank. A soldered connection will be quite good enough if really well done. To get very best results you should have a throttle on supply pipe, and also air pipe.

Trembler Queries, etc.

Enquirer (Beckenham) writes:—Will you kindly let me have answers to the following? (1) In your issue of the 29th ult., Mr. T. E. Wilson mentions the "Trusty" carburetter as suitable to run on paraffin. Can you give me any particulars of this carburetter? Where can it be obtained, and would it be suitable for a motor-bicycle? (2) What benefit is derived in any form of engine by inserting a trembler in addition to the mechanical contact made by the rotating cam? It means one more contact (and that a comparatively delicate one) to keep in order and adjustment. If there is a benefit, is it felt more in low speed engines than high?—(1) The "Trusty" can be had of David J. Smith, Great Arthur Street, E.C. We hear a good number are used on motor-bicycles. (2) We presume you refer to an "Auto trembler" device, which you place in the primary circuit. It is claimed that this gives more certain ignition owing to the instantaneous stream of sparks produced at the plug instead of a single spark. Another claim is, that better firing is obtained at slow speeds.

Concerning Fuses and Wire Thickness.

H.H.D. Harrison (Malpas) writes:—Please give me a definite answer to the following question. Is it or is it not injurious to accumulators to couple up the cells with thick wire? I have a Humber machine, and when it arrived the accumulator cells were coupled with very fine lead wire. This wire broke every time from vibration. An electrician then told me it did not matter what thickness of wire was used, and he put me in some copper wire. I had occasion to return the machine to the makers at Coventry, and they told me that they feared I might have ruined my accumulator, and they again put on thin wire, which broke the first trip I took on the machine. Recently I met the makers' traveller, and he told me the thin wire was quite unnecessary, and substituted some thick lead wire for the thin. After these conflicting opinions I feel rather at sea, and should be glad of some information from you.—The idea of placing fine lead wire across the terminals is simply to safeguard the cells from an accidental short circuit and consequent injury to them. If you put on a rather thick wire the machine will work perfectly, but you run the risk—really slight if you are careful—of short circuiting your cells. A very large number of motor-bicycle accumulators are *not* provided with fuses. The best thing to do is to place the thinnest wire across that will stand the vibration. It does not affect the sparking, whether thick or thin wire be used, so long as the thin wire will not melt with the normal current.



ONE RESTRICTION REMOVED.

According to the new Bill infants under 17 may not drive motorcars. Guy and Co., the celebrated wig and mask makers, prove equal to the occasion, and the motor mask with moustache attached renders the veriest babe safely over the legal (age) limit in appearance if not in fact.

Wrong Connections.

A. G. Waghorn (Boro' Green) writes: Please assist me in the following. My machine is an old pattern, but I have fitted a new accumulator coil and re-wired it. I get an excellent spark at the contact points, but not at the plug. I have tried two new plugs. I can't even get a good spark from the wire to frame. I have wired positive of accumulator to positive of coil, T on coil to trembler, thence through plug switch (I have done away with handle switch, and have used wire here, not the frame) to negative of accumulator, M of coil to frame, and the other end of coil through H.T. wire to plug.—You have made the mistake of joining the T terminal to the trembler blade. It must go to the screw instead. The negative of accumulator goes to plug switch, and thence to handlebar switch; or, if no switch is used, one wire of plug switch must go to trembler blade.

Piston Works Stiffly.

J.E.P. (Hove) wishes to be enlightened on the following: (1) Is there any particular reason why a motor-bicycle should invariably be hard to pedal when restarting after a stop of a few minutes? As it is now, paraffin has to be injected every time. (2) Occasionally a puff of smoke comes from the air inlet of the carburetter (which is a spray). Does this indicate a back-fire, and is there any risk of the carburetter exploding? (3) Is an acetylene or oil lamp considered to be the best for a motorcycle, and what firms supply good types of each? (4) How hard should the tyres be pumped up, compared with those of an ordinary roadster bicycle?—(1) It sometimes happens that when a motor is new and the piston rings not fairly bedded down the piston works stiffly for a time, and will get easier after a few hundred miles running. The quality of the lubricating oil used sometimes makes a difference. Some kinds set or thicken much more readily than others as soon as the cylinder gets cool. It would be worth while to try another brand of oil. (2) The smoke coming through air inlet is most likely due to the inlet valve spring being rather weak. Better have this seen to, as it is rather risky, especially if there is no wire gauze in the pipe. (3) Acetylene gives the best light, but is more trouble and expense than oil. Lucas's and Salsbury's make good lamps of both types. The 20th Century acetylene lamp is also good. (4) Tyres should be pumped considerably harder, say, 45 lbs. for back tyre and 30 lbs. for the front tyre.

Constructing a Chain Drive.

E.B.S. (Bradford, Yorks) is making a machine with a chain drive, and wishes to know (1) if there is any real advantage in having the chain wheels large in diameter? Thus, instead of using a five-tooth wheel on the motor and 36 on the back wheel, to use 10 teeth on the motor and 72 on the driving wheel, thus keeping the gearing constant. (2) Would it be advisable to have the driving chain wheel stayed to the spokes in addition to being screwed on at the hub? (3) What is the minimum length of bearing that should be used for the pulley side of motor?—(1) We should say the larger the chain wheels the better, as the strain on the chain becomes less in proportion, although the same power is transmitted. There is also less pull on the motor and driving wheel bearings. (2) Yes, by all means stay the wheel to the spokes; this will take off the torsional stress from the hub, and keep the chain wheel in plane or flat. (3) The least length of axle bearing that is permissible from the point of view of wear and durability is 1¼ inches on the pulley side; 1½ inch is better. Some motors on the market have this important feature sacrificed so as to get the full crank case width in a narrow crank tread. Some bearings have been made as narrow as ⅝ inch; needless to say, the motors have soon gone to pieces.

Simple Defect Causes Trouble.

E.F.R. (London, W.) sends along the following experience he had with his motor, and which he thinks we might publish for the benefit of other readers, as showing how an extremely simple thing may prevent the motor from starting, and be a source of worry till it is found out. He had chanced to put a new sparking plug in to replace one that had a crack in the porcelain insulation. He set the sparking points to within 1·25th inch, and screwed the plug in position. After much labour in attempting to start he took the wire from off the plug terminal and tried it for a spark to the frame, and found he got a perfect one. Then removing the plug and trying it with the wire attached, it appeared to spark all right, but on screwing in and trying to start once more he could not get a solitary explosion. The carburetter had never previously gone wrong, so he did not think the fault lay there. After much searching he found that the real cause of the trouble lay in the plug. A close examination of the thread showed that the wire had not been firmly secured in the metal shell; in fact, the hole cut through the thread, with the result that each time it was screwed in the wire was sprung into close contact with the wire that came through the porcelain and thus prevented a spark occurring. This is one of those simple defects which worry so many readers.

Peculiar Behaviour of Motor-Bicycle.

C. Clegg (Liverpool) complains that his motor-bicycle goes well on the stand, and for a time will run well on the road and respond to the spark well. After a short time it begins to miss, but fires regularly as soon as the spark is retarded. Then it begins to miss again, necessitating the spark being put further back; and finally it slows down and stops altogether. He then lets the machine have a rest for twenty minutes, when it will start away again in fine style, but soon repeats the former difficulty. What is our opinion of the cause of this?—The symptoms look very much like those resulting from a run-down accumulator. It has been explained in previous articles why an accumulator will recover itself after a short rest. If the ignition is not at fault perhaps overheating takes place, due to running with too much gas.

Uncertain Firing.

"Two Enthusiasts" (Hanwell) write:—My friend rides a 2¼ h.p. Standard motor-bicycle, with spray carburetter, and I a 2 h.p. Standard make, surface carburetter; and we are both worried with the same bother, viz., intermittent firing. We cannot detect short circuiting, in fact, the wirings appear perfect. Compression good; plenty of petrol; carburetters not flooded; sparking-plugs clean; trembler blades also clean. In both cases the firing is the same on the stands as on the road, so it cannot well be the rough roads. Please help us out through the medium of your most excellent weekly, "THE MOTOR."—We should advise the following:—(1) Make sure the battery is well charged; if in doubt, have it re-charged. (2) If firing still intermittent, look to the contact; if the tips look black and pitted they are probably not genuine platinum—this is a very common fault. Get a new guaranteed screw and blade. The only other point is to look for a loose connection.

Treatment of Chains.

"Medicus" (Bath) wishes to know: (1) Which is the simplest method to test whether a quantity of motor spirit has become stale or not? (2) Which is the best way to treat the chain of a motor-bicycle for bad weather riding?—To prove whether a supply of motor spirit has become too dense to give good results in the carburetter a little glass instrument known as a "densimeter" or "specific gravity tester" should be obtained from one of the motor accessory depots. This is graduated, and the figure to which it sinks is a measure of the density of the spirit. This figure can then be compared with a set of tables (such as can be found in the "Motor Manual"), because the reading varies with the temperature. (2) The following method can be recommended to keep the chain in good order. First thoroughly clean the chain by soaking in waste petrol till all the grit has been washed out. Then prepare a bath of the best Russian tallow, and when melted add an ounce or so of the finest powdered blacklead (the household article is no use): stir this up with the tallow, and then immerse the chain in it. Before the mixture gets thick remove the chain and hang up by a piece of wire till cold. Then wipe off the surplus, and the chain will keep in excellent running condition for hundred of miles.

Trailer Query, etc.

W. G. Walker (Aberdeen) writes:—(1) Is it possible to take a trailer with a motorcycle of 1¾ h.p.? (2) What make would be best? I should like a light one. (3) How can I prevent the oil coming out between the crank case and the cylinder? I find it gets on to the belt, and all over the motor. (4) The compression of motor is not very good; the inlet valves seem all right, and do not require grinding. What is likely to be the cause?—(1) A 1¾ h.p. machine will draw a trailer on fairly level roads, but for hills above 1 in 15 gradient a good deal of pedalling help is required. (2) See our advertisement pages for trailers. (3) Probably the joint requires repairing with some sheet asbestos. (4) If the valves are in good condition, the leakage will doubtless be at a joint between head and cylinder or sparking plug. If these points are good it may be that new piston rings are required, or that the slots of present ones are not properly spaced out.

Car Driving Queries.

H.C.T. (London, S.E.).—(1) You can keep a stock of petrol for your private use without a license. If kept on insured premises, however, the insurance company require to be informed about it. (2) The maximum distance the spark plug points should be adjusted is barely 1-16th inch. About 1-25th is the best distance for the average coil. (3) It is very important to slacken speed when changing from high to low gear, otherwise there is considerable risk of damaging the gear wheel teeth. (4) The reason your motor fails to pick up speed after slowing for traffic is probably because you do not manipulate your clutch pedal properly. The engine slows down to a point where it is giving very little power, and it is important to keep the engine going above this critical speed by letting the clutch slip a little. With a small engine, and running on a high gear, putting the clutch in too suddenly is very likely to stop it altogether. (5) There should be no risk of overheating providing the water is circulating well. (6) You would get good results by fitting a throttle governor. It is not usual to govern on the exhaust nowadays.

Free Engine Clutch v. Fixed Engine.

A. Speight (Standish) writes:—I shall be obliged for your opinion on the following: (1) Is there any material difference from the point of view of reliability between magneto electric ignition and high tension electric ignition? Which is the least likely to get out of order? (2) Is a free engine clutch better for coasting down hill, or supposing I lift the exhaust valve and close throttle, would this save the engine almost as much?—(1) It is entirely a matter of individual opinion. If you are not prepared to give the little attention necessary to keep the high tension system in order, then the magneto would be best. No system, however, can be more efficient than the high tension when kept in order. This has advantages on certain points over the magneto. The pros and cons of the two systems have been exhaustively discussed in back issues, and it would take up too much space to go into them again. (2) One of the chief advantages claimed for a free engine clutch is that it can be thrown out of gear in traffic, and the machine can be easily started again without having to pedal the engine up to speed. It is also possible for the machine to run freely down slight hills with the engine out of gear. With the engine in gear, it may be necessary to keep the ignition on, as the friction of the motor may be sufficient to prevent the machine running free. As far as cooling is concerned we consider best results are obtained by having engine in gear, with exhaust up and throttle closed.

Building Light Car.

"Light Carist" (Wood Green) writes: I should be glad if you would give me some assistance on the following points: I am building a small two-seated car, and intend fitting a belt drive. (1) Would a jockey pulley be an advantage and, if so, which is the best position to fit it? (2) What class of belt is most suitable to ensure a good drive in wet weather? (3) Can I fit anything over the face of the pulley to prevent slip? (4) The motor is air-cooled and fitted in such a position that it gets a good draught of air. Could a fan be fitted with advantage to accelerate the cooling?—(1) An adjustable jockey pulley running on ball bearings will be a necessity; fit it close up to the driven pulley, so as to get greatest possible amount of lap. (2) We hear very good accounts of the "Dick's" Balata belt. (3) You could cover the pulley faces with raw hide or vulcanised fibre, but it is not easy to secure it to the metal. If the belt is a good width and kept in good condition, it should not be necessary to cover the pulleys. (4) You might rig up a rotary fan in front of engine with advantage. This principle, in fact, is coming into considerable favour to assist cooling.

Lubrication and Silencer Queries.

R. H. Sharp (London, N.) writes:—I have a motorcycle fitted with 1½ h.p. Minerva engine, and should be greatly obliged if you can help me on the following points. (1) I empty the crank case after a ride, and insert two pumps full of oil before starting out again. But for the first ten or twelve miles the oil blows out copiously from the air valve, making a terrible mess over the side of case. Am I using too much oil? I have not noticed that any smoke comes through the exhaust, or that the plug gets fouled. (2) Although the liquid in the accumulator is above the plates there are still undissolved crystals. Will these do any harm? Am I right in supposing that this accumulator (30 ampere hours) should run the machine about 1,000 miles after being fully charged? (3) The silencer I find to be very inefficient, and am making one myself. The pipe from exhaust valve chamber is drilled with fifty holes, 1-16th in. diameter; the baffle partition is drilled with thirty holes the same size; and the three outlet pipes (⅛ gas piping), passing through the top and bottom of the box, are each drilled with ten holes same size. The box is lined with asbestos. The idea is to give more room to expand, and also break up the gas before passing it into the air. Do you think there will be any more back pressure than in the old silencer (ordinary Minerva pattern)? (4) I have had to twist the belt so much that there is quite a ridge where the edges press against each other. Would it be advisable to cut the belt shorter to avoid the necessity of twisting so tight? (5) I notice phosphor bronze bearings are often recommended, but I am told that

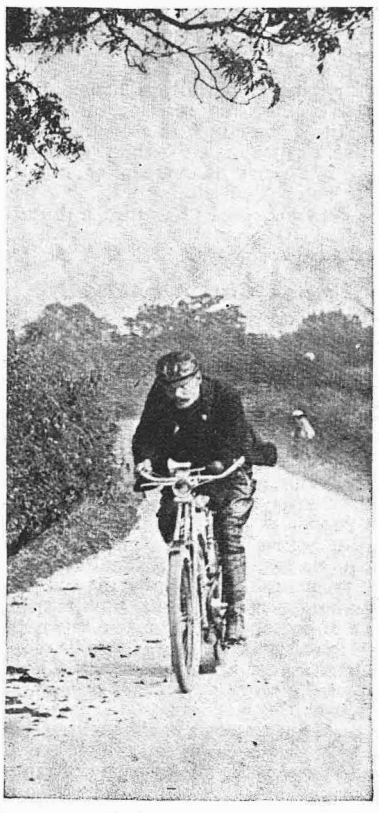
the Minerva people—who should know—always fit steel bushes. Is this correct?—I have been running this machine for some time, and have never had the slightest trouble with the engine. I have been using Pratt's B spirit, and have had no difficulty with carburation. This has been a pleasant surprise to me, because, after reading the various troubles of readers of "THE MOTOR," I anticipated many for myself. Probably I have escaped them by also carefully reading your replies and advice to others.—(1) Undoubtedly you are using too much oil; one charge should be ample. Better have a look at the air release valve to see that the ball has not got stuck. It is a sign your piston rings are good if you get no oil into the combustion chamber. (2) The fact of some of the sodium silicate being undissolved is immaterial. (3) Silencer idea should give good results, but we should dispense with the asbestos lining. It should have very little back pressure. (4) The ridge on the belt is not of much moment. We should prefer leaving the belt as it is to shortening it. (5) It is a matter of opinion; providing the steel bushes have plenty of lubrication, and the axle is case hardened, we think them better than bronze. But should the lubrication fail, steel bearings will seize, whereas bronze would not.

Length of Wheel Base, etc.

E. Laval (Bristol) writes:—As a constant reader of "THE MOTOR," a paper from which I have picked up a great deal of useful information, may I ask your opinion on several matters? (1) Does a long wheel base machine have a lesser tendency to side-slip than a short one? (2) What are the disadvantages of too long a wheel base? Mine is 58½in. from centre of back hub to centre of front one. Is it too long? (3) Is there really any advantage gained in fitting on a metallic non-slipping tread to the tyre? Can one venture out in all weathers with them? Is it necessary to have both tyres fitted with the tread, or will the back be sufficient? (4) I have trouble with my belt slipping. Could you recommend a good non-slipping pulley? My engine is Minerva 2¼ h.p., and I have a V belt. (5) Is a rim back brake or band brake most suitable? Which band brake do you recommend? (6) About V belts, which do you recommend? I have a V belt—I don't know the name—which I dressed with castor oil, and it did fairly well for about 300 miles, but I had to ride one whole day in pouring rain, and when I got back it was shapeless and almost all in pieces. (7) With a spray carburetter, what are the symptoms that the air supply is too abundant? (1) There is no doubt that a long wheel based machine slips less than a short based one. (2) If the lengthening of the wheel base is carried to extremes the lateral stability of the machine may be sacrificed, unless extra stout tubes are used. The reach is also uncomfortable, and appearance of the machine is unsymmetrical. The distance you mention is not abnormal. (3) These treads we know are very effective non-slippers, while they last. Some riders, however, consider the life of them too short, and that they slow the tyre considerably. On the other hand, some riders also claim to have got a great deal of wear out of them. The back tyre tread is considered sufficient. (4) There are several of these advertised in our pages. We find a plain pulley gives good results with a really flexible belt. (5) We consider the rim brake the most suitable for a motor-bicycle. (6) There are several good V belts made, such as Lycett's, the Elswick chrome leather, Lincona, and others. The belt you have been using is probably a cemented one. To apply castor oil to this type is very detrimental, as it dissolves the cement. You should use only the maker's dressing. (7) The chief symptom you will note is the difficulty in getting the motor to start except with brisk pedalling.

Requires a New Ignition Outfit.

G. Liddell (Allahabad, India) writes:—My ignition coil has come to pieces, and I am anxious to get the best substitute for it which is made. I ride a Minerva motor, 1902 pattern, 1¾ h.p., built on to a chain-driven (Bowden) machine. The magneto system seems most attractive, but I want the best outfit. I have found the old wiring and trembler very troublesome indeed, and very flimsily made.—If you fancy magneto electric ignition you would certainly find the "Eiseman" set supplied by Messrs. G. T. Riches, 4, Gray's Inn Road, London, E.C., the best to adopt. This requires the least amount of fitting, and works the ordinary high tension sparking-plug; whereas if you adopt a low tension magneto you have to fit a special type of make-and-break spark-plug. Should you decide to have a coil, we do not think you could improve on a Bassee and Michel make (best quality), preferably a trembler pattern if you can fit a brush contact on the motor. If you retain the present make-and-break, you will, of course, require a plain coil of the same make. This can be obtained from the United Motor Industries, 45, Great Marlborough Street, London, W., who would also supply a couple of their "Castle" accumulators, which we have found stand very well.



Collier getting his mixture right at Westerham Hill.

ANSWERS BY POST.

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

Thursday, August 13th (contd.)—Dr. C. H. Roberts (London, W.), Hugh Clifford, C.M.G., of the Malay Peninsula (Dorking), G. C. Grover (Cliddesden), F. F. Eggleton (Southgate), A. Reiner and Co. (London, E.C.)

Saturday, August 15th.—D. S. Cox (West Norwood), F. C. Evans (Southsea), F. Thomas (Loughborough), E. Stapleton (Hendon), H. Abraham (London, W.C.), H. G. Moyes (Ramsgate), Capt. F. S. N. Macrory (Londonderry), F. P. Longmire (Distington).

Monday, August 17th.—Matthews, Wrightson and Co. (London, E.C.), J. S. Mayner (Aylesbury), W. H. Foyster (Manchester), J. Horswill, Jun. (Chester), J. Blanchard (Camberwell), E. A. Taplin (West Green, N.), S. Ticely (London, W.C.), E. Byrne (Slane, Co. Meath), R. Brown (Peckham), J. Thain (Redditch), H. Walmesley-Cotham (St. Helens), F. Mather (Nuneaton), E. P. Groves (Ipswich), C. Marsh (Deptford), H. W. Eastcott (Gateshead), N. Furney (Goodmayes), "Inquirer" (Maida Vale, W.), Dr. C. F. White (Templecombe), J. Penman (Mullthair), F. R. Wheatley (Lewisham), J. Palmer (Salford), Owen Carter (Poole), W. Jones (Camberwell), E. Deprez (Bristol), A. W. Wells (Walthamstow), Dr. J. F. Wolfe (Exeter), B. Bolt (Birmingham), R. H. Sharp (Hornsey), D. Best (Holt Castle), Dr. C. H. Roberts (London, W.), W. Scott (Penrith), A. R. White (Canterbury), W. B. Mathias (Maryport), A. H. Ryles (Burslem), W. Adams (Bath), A. C. de Bourbel (Canterbury), J. Hirst (Southport), A. F. Heron (Guildford), W. C. K. Sylvester (Godford), E. Bull (London, S.E.), W. P. Wright, F.R.H.S. (Hythe).

Tuesday, August 18th.—J. L. Brown, (Stechford), A. H. Baimbridge (Crawley), P. Einhauser (Ilford), L. M. Lapierre (Oldham), A. Rigby, F. J. Rendell (Devizes), C. Middleton (Glasgow).

Wednesday, August 19th.—O. V. Flather (Bexley Heath), C. H. Archer (Chorlton-cum-Hardy), H. Lewis (Sunderland), W. Cobbett (Fareham), W. Holloway (Hammersmith), C. J. Turton (Nottingham), T. H. Dunlop (Belfast).

**** We are sorry to have to inform readers that we cannot possibly reply to queries by telephone. A staff of experts are constantly replying to letters by post and through the paper, and it is unfair to delay replies to those who are conforming to such regulations as we have laid down, by detaching any member of the staff to reply to those privileged to use the telephone. We feel sure our readers will realise that our decision in this matter is prompted by a desire to be fair all round.*—EDITOR.