The Motor
INCORPORATING Motor Cycling & Motoring
Vol. 6, No. 139,
September 27th, 1904.

# MOTORING EXPERIENCES IN WEST AUSTRALIA.

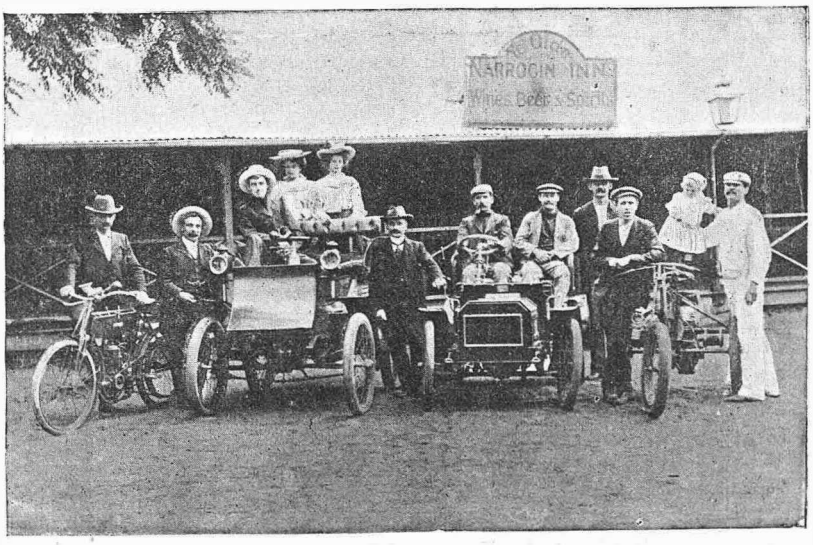
By "CATO."

The motorist in the Mother Country has little idea of what his brother in the Colonies has to put up with. If you start out for a day's run in Australia, you must make up your mind for a bout of real hard work before you get home again. I do not mean to say that this is the case all over, but in a scattered colony like Western Australia the roads are left to take care of themselves, and the motorist suffers the inevitable consequence. The Colonial motorcyclist laughs when he reads of an English motorcyclist who has climbed a hill of 1 in 6, and wonders what he would say if he had to get off and push before he had gone 50 yards up a 1 in 3½ grade, and before he had gone another 50 yards, take the belt off to make the work lighter. This is what the Colonial has to do. The reader may feel inclined to doubt the statement, but I think the following experience should convince him of its truth, and prove interesting to all motorcycling readers.

A friend and myself started on our motorcycles at 8 a.m. on Easter Monday of 1904 for a 90-mile ride from Perth to a small town called Northam. After leaving Perth 20 miles behind, and bidding adieu to the good roads, we made the acquaintance of the hills. The first resulted in our getting about 100 yards out of the two miles before our engines stopped, and we had a pleasant (?) half-hour getting to the top. I was fortunate in having a light 2-h.p. machine, weighing 90 lb. all on, but my friend was quite exhausted with a 2¾ machine scaling 135 lb. After a little refreshment and a short rest we resumed our journey. As we should not see another house for 56 miles, we made the best of our time, and with a clear bit of road we "opened out," and very nearly brought our ride and our lives to a simultaneous conclusion, for as we rounded a sharp curve, we pulled up on the edge of a burnt-out culvert, about 9 ft. across and 6 ft. deep, stretching right across the road. A bush fire had passed over the forest and burnt out all the culverts. Needless to say, we proceeded more carefully until we reached the good road again (though I hardly suppose it would have been called "good" in England). Here again we opened out, and had our first enjoyable spin since we left home five hours before. Again we struck those beautiful hills—this time to get down, and I do not know which was the worst, going up or down! It was like crawling down the face of a cliff, with the brakes hard on. We had literally to hold the machines back. The surface of the road reminded us of a quarry, and we had to wheel our machines round big stones, while we ourselves crawled over them. Thankful indeed were we when we came to our first stopping-place after such hard work. But a wash and a good dinner made us feel more like ourselves again, and equal to starting on the last stage of our ride. After fighting our way to our machines through the crowd of country children who were amusing themselves by blowing the horns, we made another start. We reeled off 27 miles in 48 minutes, which I am afraid, if you reduce it to figures, exceeds the legal limit, but we have no Surrey police out in the back blocks, so with a good level road before us, we soon came to our journey's end, and were not sorry to get to bed. The 90 miles had taken us just 12¾ hours to do. Our machines behaved splendidly, but the riders were not so fortunate on the return journey. When about 35 miles on our way the fun started. We had been delayed in the town, and did not make a start until 1 o'clock the next day, and it was getting dark when my friend's machine started misfiring badly after a half-hour's work. We

HAD TO PUT IN A NEW TREMBLER AND SCREW,

and by the time we started again it was quite dark. After doing another 25 miles our lamps went out. Of course we had no more carbide just when we wanted it, too, as we were getting near the burnt-out culverts, so the only alternative was to walk and push the machines. I will leave the reader to imagine our feelings. We had not touched a bite of food for seven hours, and it was five hours since we had had a drink. We had struck all our matches looking for water in the bush, so we could not console ourselves with a smoke. We tried to light our pipes from the high tension wire, but got more shocks than lights. Finally we reached home at




A Sunday run of the Perth Motor Club (W.A.).

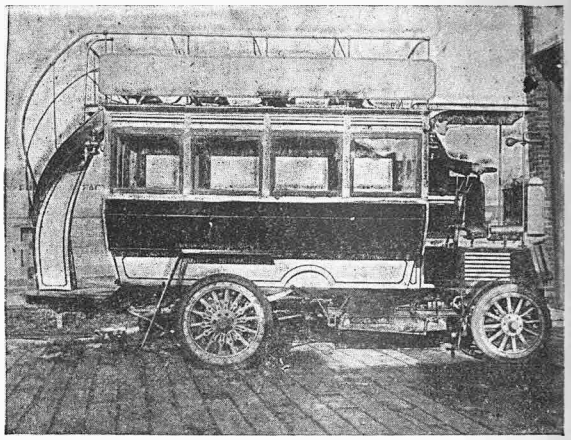
## Motoring Experiences in West Australia.—Conta.

5 o'clock the next morning after 16 hours' hard work and misery. I had asked a friend of mine just out from the Old Country to come with us, but he said we were mad to tackle such a ride, and I am bound to admit that he was not so far out of his reckoning. As the result of my Colonial experience I have come to the conclusion that the ideal motorcycle for the Colonies is either a light 2-h.p. machine (not more than 100 lb.), or else a 5-h.p. water-cooled bicycle after the Iris twin-cylinder pattern. The 2¾-h.p. motor is not sufficient, in my experience, for most of the hills, and is too heavy to push up a long hill. A two-speed gear would be a big advantage in the cool weather, but it would be useless for such summers as we get here (100 deg. in the shade, and the wind like the blast of a furnace), unless water-cooling was resorted to. Spring saddle-pillars and large tyres are almost a necessity.

MOTORCARS IN WESTERN AUSTRALIA

are mostly of the runabout and light car types, including Oldsmobiles, 6-hp. De Dion cars, and Humberettes. Of the larger cars, there are only two or three up to about 16 h.p. The Oldsmobiles and the De Dion seem to be much favoured by the "man of moderate means"; they sell respectively at £200 and £250. The light car is used largely by estate agents to run customers out to the various districts where they have land for sale. Several medical men have taken to motors, and use them for both business and pleasure. One of the large brewing firms has invested in several motor wagons to deliver goods to the hotels, and find them cheaper than horses. A motor 'bus service has been running in Perth for some time with great success. The 'buses are fitted with a 24-h.p. twin-cylinder engine and tube ignition, as well as the electric—which is a good idea, as it often saves delay occasioned by overhauling the mechanism in the event of defective sparking. The condition of the roads is against them, however, as a set of solid tyres only lasts a few months. It is interesting to note, in conclusion, that they are British built. Among a few novelties to be seen around Perth is an F.D. Werner converted to a rear-driver. The work was carried out by Mr. H. V. Sampson, a well-known cycle-builder of Perth. Another "curio" is a racing freak built by Alec Juvell, a racing cyclist who has now taken up motorcycling. It is fitted with a 3½-h.p. M.M.C. engine, and driven by a 2-in. flat belt, and is built low and of great length to minimise the bumping of the front wheel on rough Colonial tracks. The weight comes out at about 220 lb., and the machine attains a speed of 45 to 50 miles an hour. A De Dion tricycle has the honour of being the pioneer of motoring in West Australia; it has been running for close on five years, and is still in splendid condition. It is fitted with a 2¼-h.p. engine, surface carburetter, and 3½-in. tyres, and which, as the writer knows, are just the thing on our rough roads, as they can be left slack so that no vibration is felt by the rider. The owner, who does 25 miles a day regularly, says he would not exchange it for any of the latest improved machines. A light car, which is really a converted quad, causes a good deal of amusement amongst the more fortunate car owners. It is fitted with a 2¾-h.p. water-cooled De Dion engine and 2-speed gear. An amusing incident occurred with this little car some time back, which, I think, will prove interesting to the English reader. We had had a good day's run, and when about five miles from home we ran out of petrol, and to our disgust could not obtain any. One kind publican offered us a gallon of whisky which he could not sell, but we refused it, so we had to leave the car and come home in a coach that we had passed at the rate of 15 miles an hour, and not only did we have to put up with the speed of the coach (about four miles an hour), but also with the jeers of the driver and passengers. Moral: Where you cannot obtain petrol at every small township take enough with you. A 60-h.p. Mercédès, which will arrive in Perth shortly, will be the talk of the town for some time to come, and will give us Colonials some idea of what a G.B. racer is like.

**As Hotels are scarce the motorist has to provide his own refreshment.**



**One of the motor 'buses now running in Perth, W.A.**

### An Automobile Club for Bristol.

At a meeting of motor vehicle owners in Bristol and district, held at Bristol, it was decided to form an automobile club for Bristol and the West. The meeting was well attended by representative motorists, and considerable enthusiasm was evinced. Mr. Robert Stotesbury, who was temporarily elected to the chair, spoke of the necessity for unity and combination in automobile circles and said he felt sure that Bristol motorists, having once taken up the matter, would see that their organisation rapidly became one of the foremost in the United Kingdom. A strong provisional committee was elected.

### Capacity Tests of Accumulators.

In "O.P.V.," September 13th issue, "Dublinite" gives details of a series of tests to determine the capacity of accumulators. Our contributor, "Magneto," notices that he places the P. and R. cell as fifth in order of merit on his list. "Magneto" writes that he does not think "Dublinite" does this cell justice, inasmuch as he took for the purpose of the test one of the P. and R. *armoured* batteries. Now for a *continuous* discharge the armoured plate will give slightly less capacity than an unarmoured plate, although in actual practice giving an intermittent discharge working an ignition coil. He believes he would find the armoured cell would give equal results to the unarmoured type. To make the test fair "Magneto" recommends "Dublinite" to use the P. and R. No 7Q battery. If he does this he is sure our correspondent would find the P. and R. cell occupy a more favourable position in his list.

# MAGNETO'S POINT OF VIEW

### *A Word About the Brake.*

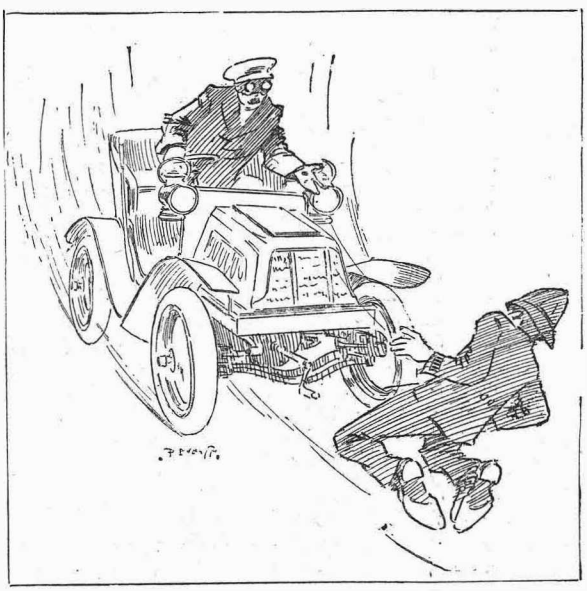
I witnessed a rather serious accident to a motorcyclist near the foot of Harrow Hill on a recent Saturday afternoon. That he was a comparative novice was evident from the careless fashion in which he rushed the beginning of the hill. I should not consider Harrow Hill a dangerously steep gradient. I question if it exceeds 1 in 9 anywhere, but there is an acute turn about two-thirds of the way down, and it is here the danger really lies. Unless a rider has his machine thoroughly well in hand right from the commencement of the hill he cannot negotiate the turn. This happened to the young rider in question. He tore down the hill, gaining impetus every second, and in attempting to take the turn as wide as possible he shot into the hedge and over a ditch. His machine was simply wrecked, and his personal injuries consisted of severe cuts about the hands and face. Now the point I wish to emphasise is that it is never wise to withhold the application of the brake on a hill till one recognises that the machine is getting out of hand. Put it on right at the beginning, and do not let the machine increase its pace perceptibly. If a sudden pull up is necessary, it can then be effected without having to strain the whole machine and pull the brakes to pieces. The effort required to pull up a 180 lb. machine at 25 to 30 miles an hour down hill is enormous; in fact, nothing short of locking the two wheels is of any use. The ruinous effect this has on the tyres is, of course, pretty well known. There will never be any necessity for this if, as I have just mentioned, the machine is kept in hand from the beginning. I was impressing this fact on a novice rider the other day, and he put forward the question: "Supposing that in descending a hill which I do not know, and the bottom of which I cannot see ahead, it should happen that the brakes will not hold the machine and prevent it gathering speed, what is the best course to adopt?" Well, personally, I should take no risks. I should slip out of the saddle backwards and hold the machine up by the saddle till I could stop it. I had an actual experience of this sort on Westerham a few seasons ago, and I reckon I only avoided a smash by a sudden backward dismount. I nearly had to let the machine go, but by a supreme effort and strained wrist I saved it. Of course, in an exceptional emergency, where one's life might be at stake, I should say let the machine go. The moral is keep your brakes in first-rate order, and apply them *soon* enough.

### *Spring Front Forks.*

I hope motor-bicycle manufacturers will not overlook the claims of the spring fork when designing their 1905 machines. I made a point of asking the opinion of those riders I have met who had Quadrant machines fitted with the spring fork if they really found them an unmistakable advantage, and in every instance they were enthusiastic in its praises, and would not revert to rigid forks again on any account. There are one or two other makes of spring fork machines I have seen on the road, and although I did not consider the principle on which they worked as correct as the Quadrant, the riders of them told me they found them add greatly to the general comfort of the running. Now, I think a good spring fork is a strong selling point in a machine, and makers will do well to keep this fact in view in their own interests. What is wanted is something neat, simple in construction, and such that it will not diminish the lateral rigidity of the machine. There must be any number of ways of making a spring fork, and yet we see so very few of them adopted. In any case, it seems to me that there are numerous riders who would welcome the spring fork machine.

### *Piston Ring Troubles.*

As many motorcycling correspondents state that they experience want of power through loss of compression past the piston rings, and yet on inspection of the piston and rings these appear to be in first-rate condition and the compression in the cylinder as good as ever, the matter, it seems to me, requires some explanation. In the first place, it does not follow by any means that because the actual compression appears good when the pulley is turned round that the piston and rings are in good enough condition to prevent a partial leak of the exploded charge. It must be remembered that the explosion pressure is very much greater than the compression. Neither is it a conclusive proof that because the rings are bright all over, and show no trace of gas leakage, that this is actually the case. The leak need not necessarily be past the face of the ring; if it was so, it would invariably blacken the surface of the ring. The escape could just as easily occur between the ring and the groove if the ring is too slack in the groove. The slit in the ring may not shut close enough, and the charge can get through at this point, and if another ring slit happens to be near, it will facilitate the escape.



**Jones demonstrating to P.C. Brown the ease with which his engine can be started.**

### *A Hot Crank Case Proves there is an Escape.*

What I want to lay special stress on is the fact that when a crank case does heat up abnormally it proves conclusively that exploded gas gets into it. Of course, a crank case will become perceptibly warm through conduction of the heat from the cylinder, but the mass of metal and surface is so considerable that it could never become so hot as to prevent the hand easily being kept on it if it was not receiving heat direct from the exploded gas.

BQ

# DESIRABLE FEATURES IN THE DESIGN OF MOTORCYCLES, LIGHT AND OTHERWISE.

BY FRANCIS L. BELL.

One hears so very much nowadays regarding the 3 or 3½ and even 4 h.p. single track machine that it seems to me a marvel why machines of any less power should be able to hold their own at all. That these light (?) and often inefficient motors should go out of fashion in so short a time is not to be wondered at, seeing that they were, so to speak, merely in the experimental stage, and directly this stage was passed—that is as soon as the petrol motor could be termed a reliable engine—then up went the size and likewise the power, most of the makers never dreaming that the time would come when the events would so work round that the public would demand nearly twice the power from the same small motor by means of better design and workmanship and weight reduction.

The first point to be considered is the design of the cycle frame. Is it suitable, or rather is the present light-weight motorcycle frame suitable for the work it has to do? Before answering this question I would give an experience of the early Minarvas. On these machines it was not to be expected that hills could be tackled by the motor alone. Pedal assistance had to be given, and the point is, could this be given without fatigue? Most emphatically no. Why? Because the frame was not built for assisting, it was built to enable the rider to be seated very comfortable and low down, so that when the motor did require assisting, a position for pedalling was assumed under the most tiring and torturesome conditions, with the result that the motor absolutely refused to go up hill on account of insufficient assistance, and disgust reigned supreme with the poor little motor which was the only engine made to withstand the strains of road riding at that time, and also up to the present.

You could obtain absolutely no leverage to keep the perspiring motor on its way, with the result that both motor and man generally became exceedingly warm, and the language was sultry also at times.

A SPECIFICATION FOR A FRAME FOR A LIGHT MACHINE

would be as follows:—28in. wheels, 16-gauge spokes, 14-gauge on back, Duplex forks, 1¾in. tyres (Clincher or Palmer), stiff section rims, 20-gauge top tube, 16-gauge down tubes, extra stiff back forks, three-speed gear (extra strong), 7 or 7½in. cranks, gear 76, 90, 100 to 110, according to taste, non-slipping treads on tyres, the back forks set out to clear the belt rim. Extra wide mudguards and front guard extension. Back pedal and front rim brake. This machine will be considerably lighter and handier than the heavier machines which the 1½ h.p. Minerva in the earlier days was called upon to pull in addition to its rider.

So much for the frame. Next comes the motor, and I may be accused of biased judgment when I say that the outside fly-wheel with balanced crank shaft is a step in the right direction if sufficiently long bearings are provided. The valves should be accessible for removal and well placed for cooling, and I would prefer one more valve case. Seats removed bodily by means of a set-screw obviate the fiddling job, when grinding does want doing, of taking the exhaust and inlet valves from the motor and dabbling with a grinding material near the piston, which would prove very detrimental to that sliding mechanism should the grinding material not be thoroughly eradicated.

Thus the advantage of the detachable valve seat is at once apparent. The whole valve in its entirety can be unscrewed without the painful necessity of using a special lever to lift up the spring, while the friend, or perchance another finger, or pair of pliers, grips the cotter pin to remove it. Some inlet valve seats used to be made detachable, but this is hardly so important as the exhaust valve, seeing that the inlet valve compared with the exhaust is easy to remove, but undoubtedly this is a step in the right direction. In many machines I have come across lately, the sparking plug would be considerably improved by being placed some few inches either off the tank or a distance away from some other member of the machine, or at any rate insulated with fibre or asbestos at the terminal. Whilst on the subject of sparking plugs a little experience of another motorcyclist may be of sufficient interest to act as a warning to other users of this particular type of plug. The engine was a 2¼ h.p. machine, with M.O. valves, the sparking plug being in the combustion head, vertically placed. On the end of the plug was, I presume to prevent fouling, a perforated brass cup fixed permanently (?) to the plug body. Owing to the jolting the machine received over the vile roads to be found round Bradford, the permanency of the cap resolved itself into a vacancy, and it came off inside the cylinder, and somehow wedged itself between the inlet valve and the seat, or perhaps above the valve. Anyhow, the valve declined, being an M.O.V., to put up with such treatment, and broke off at the head. The valves being the same size, an exhaust valve was brought out of the bag, but it proved that the stem was ¼in. lower than its mate. Filing was resorted to. A long piece of work (per roadside in rain) and eventually the motor resumed operations.

ACCESSIBILITY OF THE SPARKING PLUG IS AN IMPORTANT FEATURE,

which should not be overlooked. One point I should like to mention before dealing with accessories is the crank case. Why in nine cases out of ten is this part made of aluminium? I have known three instances of broken lugs, and cases of fracture at the lug owing to vibration when the case has been made of aluminium. It may be light, but a more peculiar-natured metal it would be difficult to find, and for the sake of a small fraction of that weight sheet steel pressed into and bolted or screwed to a suitable casting at the base of the cylinder would be all right. Right angled bends are used on one or two machines for conveying the exhaust gases. This must cause a certain amount of back pressure which is at all times to be avoided. The same effect must throttle the inlet of the gas when used at that juncture, although not to such a detrimental effect. Some experiments I have made with a motor having the bends referred to show that when the exhaust outlet is doubled in area an increase of power results, therefore, in the efficient light-weight engine as large an opening in order to sweep out the burnt gas is advisable as far as the design and circumstances will allow. The question of variable inlet to automatic valves is of great importance for the efficient running of the high-speed engine, and having tried it experimentally, I am convinced that a lift achieved by a screw or a finely divided ratchet lever is a great advance on the ordinary valve. When the exhaust valve is warm—or perhaps very hot is the word—expansion takes place, which lengthens the rod inasmuch that the valve will not sit properly on the seat, and filing has to be resorted to, a pleasant prospect on a rainy day by the roadside. A screwed sleeve securely locked could be easily provided. Not having tried the vertical light-weight motor on the road, I cannot speak from experience regarding vibration, but judging by the average machine with vertical engine I should imagine that the inclined position is the best, and should even welcome the horizontal cylinder engine as being the desired anti-vibration device so longed for by the fraternity. The only objection I have to the partially vertical engine is the tendency for excess of oil to cake on the cylinder

## *Desirable Features, etc.—Contd.*

head and valves, and necessitates taking the engine to pieces to clean and *actually chip* the burnt deposit off. How those motors with the head made in one piece with the barrel fare internally lined with charred oil I don't know, but should imagine the engine will get over-heated. In the former case it is a fairly easy matter to take off the head, by means of which greater efficiency can be obtained and sweeter running of the engine ensured. The one bugbear I have always experienced is lubrication, and it is a constant source of worry and irritation to know if the motor needs it or not. If one could arrange and rely on

A SIMPLE AUTOMATIC PUMP

to inject so much oil per revolution, what a temper saver it would be. Some machines have excellent devices, but all depend on a partial vacuum created in crank case during the compression stroke or some similar condition, and somehow the old two-way pump arrangement holds its own even with its constant source of irritation and mess. If you put too much oil in, the valves and plug will be certain to foul, which will mean hours chipping off burnt oil, and if too little oil is used, seizing or worn bearings will be certain to follow in the wake. "Once in 25 miles," "half a pump full in 12 miles," "lubricate freely," "we should think 1½ ounces for 30 miles would be sufficient," "it depends on the district," "give a charge before hill climbing," etc., etc., is the advice the poor man has so kindly given him, with the result that the combustion head is full of oil, or the crank case is dry. I heard of a rider up in Kendal pedalling a 150 lb. machine eight miles and training home 70 miles simply for want of a charge of oil and a little paraffin to ease the piston. I do not think the Auto-Cycle Club could do better than offer a substantial prize for the best automatic pump which could be used independently of the driver. As it is now, the mechanical world laughs at us when we are advised that half a charge is better than a charge or no charge at all, depending on the nature and conditions appertaining, etc. When the oil is in the crank case it pays to let it stop there until used up, and not to let it drip owing to leaking drain taps, all for the want of a leather washer. Petrol-tight taps are a desideratum which I have yet to find, having taken three out, which had a decided tendency to waste the precious fluid. But apart from the waste (the expense is not counted) it is the danger one has to consider of always having vapour of an inflammable nature about.

One of the hitherto unconsidered problems in motorcycle construction is the reduction of vibration. When I say unconsidered, I mean in a general sense. Anti-vibration devices are only placed on the market in exceedingly small quantities. True "Knights of the Motor" have been vigorous and very enthusiastic, like Mr. Mervyn O'Gorman, in prosecuting enquiries respecting spring frames and the possibility of their being adopted by one or two firms, but makers, as a whole, have ignored his advice. As I have advocated 1¾in. tyres as being light and speedy, a spring frame would be very much sought after and desired if of sufficient lateral stability to ensure rigidness when being propelled, because a spring frame always on the "dither" is rather more disagreeable than relying solely on tyres to minimise road shocks.

I also advocate 1¾in. tyres for the light motor on account of their ability to cut through grease instead of floating about from vertical, semi-vertical, or horizontal positions, as is the case with 2in. tyres if insufficient weight rests on them.

Resilient forks back and front seem to get over the difficulty of shock to the rider, but what is wanted (to economise weight) is a suitable cushion to ensure complete absence of shock to the machine itself, then parts made of great weight "to withstand vibration," as the stock phrase goes,

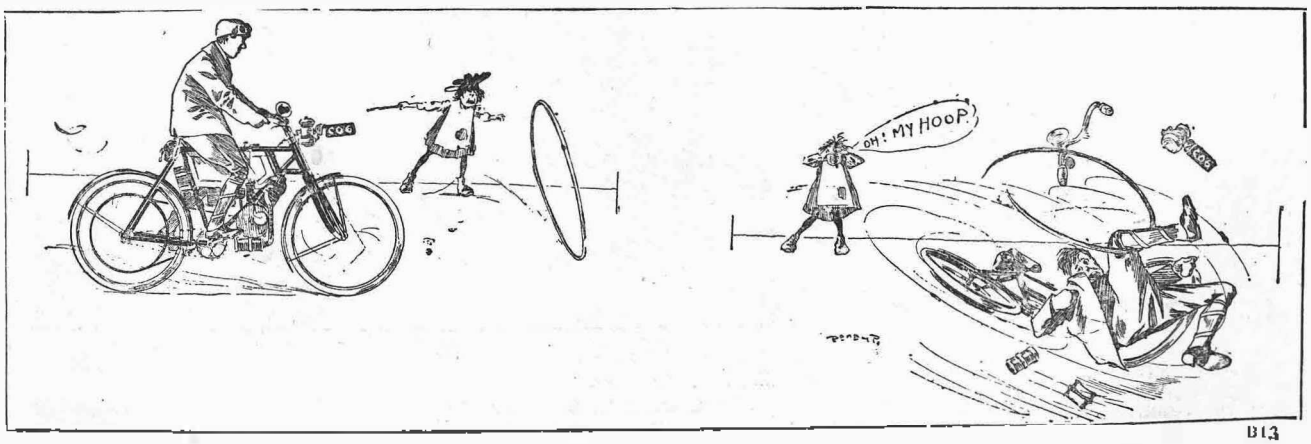
COULD BE MATERIALLY CUT DOWN

to enable lighter materials and designs to be used, minus fear of breakage. It may be all very well and quite satisfactory to the rider to know, and to feel himself quite comfortable, but to know that the frame is near to fracturing at a vital spot, or that the petrol tap has become loose, and the liquid is ebbing away, is hardly conducive to improving one's temper. If, therefore, the motor and gear are not insulated as well as the rider from road shocks, my advice is don't insulate any part, and so save a possible smash-up. Another feature not much thought about relating to motorcycles is the ability of certain cycles for dust raising. One class of chain-driven motorcycle is notorious in this respect, and an engineer of my acquaintance has had to change round the silencer (the always offending member), a surely very simple operation, and one which should certainly have been effected by the manufacturers themselves. I noticed that the exhaust simply blew the dust to the right and to the left, to the front and to the back, the latter dust being again stirred up by the back wheel again, taking minutes (depending on the road condition) to settle, causing annoyance and danger compared not unequally to a car.

THE USE OF ALUMINIUM FOR SILENCERS

is not to be recommended altogether, owing to the nature of the metal when heated. A friend of mine was recently riding with an aluminium silencer on his machine when an unexploded charge was admitted inadvertently into the exhaust box itself, a sudden switching on to frighten a dog resulting in blowing it to little pieces. Sheet iron, either black or galvanised, is the material to be used, and it should be, if of turned over metal, riveted up for strength.

Carburetters have been often discussed, but whether they should be warmed or not constitutes a point to be thought upon, and with experiments made with a tap in the warming circuit, I find that for prompt starting and hill-climbing to commence with the tap open, and gradually closing it, is conducive to the best results, especially if the weather be at all chilly. The object in admitting cool gas is palpable

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## Desirable Features, etc.—Contd.

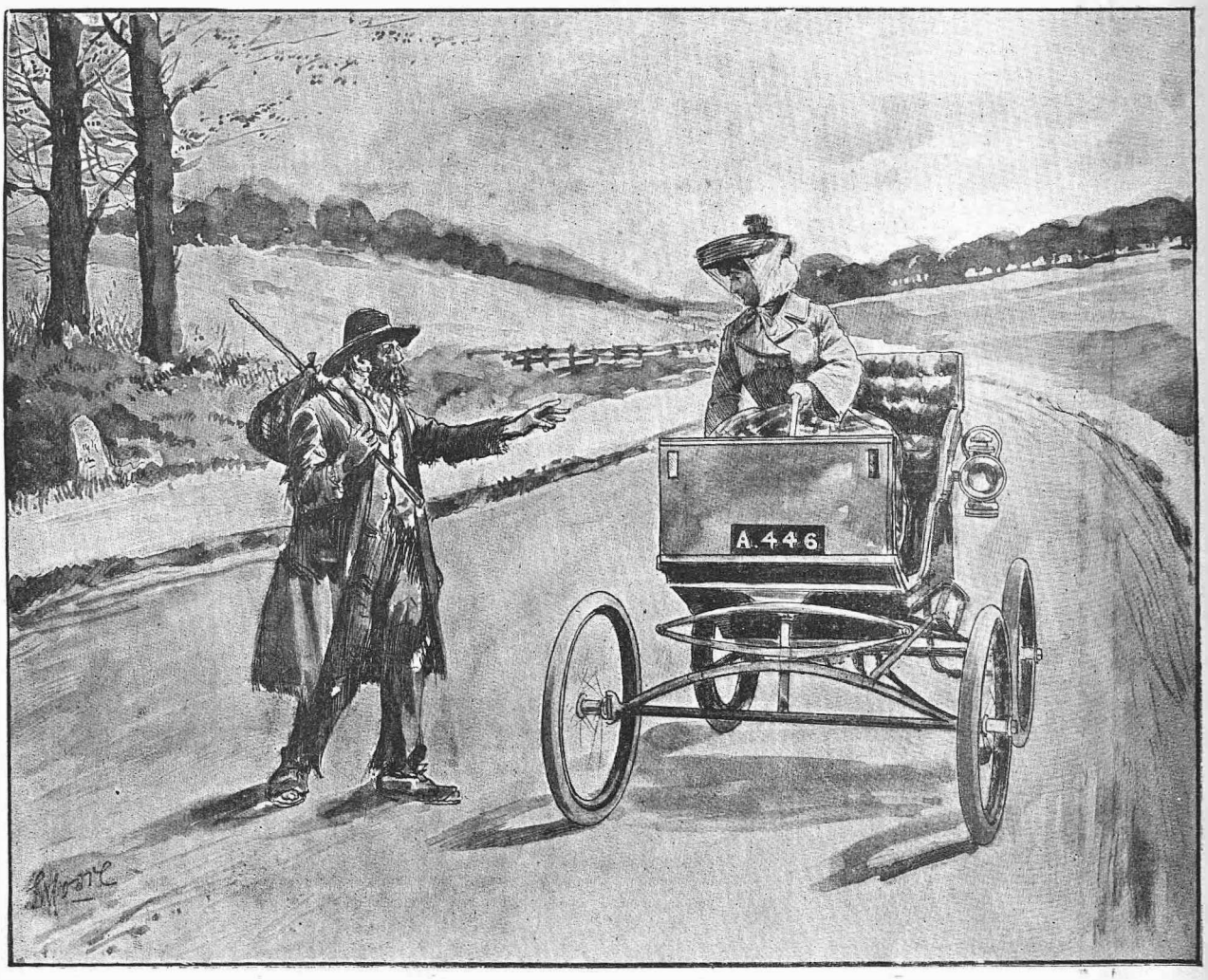
to a good driver, but on cold days a little allowance must be made for efficient combustion. An extra air inlet is well worth a trial, and so is the exhaust cut out, not so much for freeing the back pressure, but to enable the air to be taken straight into the cylinder instead of turning through numerous holes and past hot baffle plates.

Aluminium for the carburetter I have always found a satisfactory metal, but the form of the needle valves shows room for improvement, for instead of a cone and seat, in nine cases out of ten the seat and valve just show a round, bright ring just where they fit into the other, instead of having a nice bearing surface all the way round. Facilities for getting at the carburetter deserve attention also, so that for cleaning purposes it may not be necessary to dismantle the whole apparatus.

In the matter of levers, aluminium is all in order, but, personally, I would consign all top tube levers to the scrap heap. Last year I had the usual array, but this year I went in for handlebar control just as an experiment, and although the arrangement is not quite so finished as it should be, I am thoroughly well satisfied with it. I rode 71 miles on one occasion through the most awful slime, which if one hand only had been available for steering, it would have been almost impossible to keep on the machine. Regarding control, I am distinctly in favour of

THE COMBINED EXHAUST VALVE LIFTER AND SPARK ADVANCE,

because of it being impossible to have a back-fire with this arrangement, thus saving a great amount of wear and tear in the engine. Regarding accessories, the tank claims our attention as being a heavy, cumbersome article, seeing that it is made of sheet brass or iron, 5 or 7 lb. is a trifle for this to weigh. I plump for an aluminium tank, capacity, say 120 to 150 miles; it could be constructed on similar lines to "Magneto's" design, and all supports should be suitably stiffened at the lugs, etc. The oil tank should be able to contain a large quantity, for in most places where petrol can be obtained, it does not follow that it will be possible to obtain oil of sufficient viscidity to withstand heat. Contact breakers constitute an important factor in the manufacture of the present-day motorcycle, and I am not so sure that the trembler method, with wipe contact, is a distinct advance on some of the really good quick make and breaks at present procurable. It was boomed, like the M.O.V., as a panacea for all motor ills, but with a plunger form of make and break ignition apparatus I have been using for the last two seasons, one adjustment is all the attention it has received from me. Gudgeon pin troubles I have never known, not having had a gudgeon screw in the engine.




**VERY WILLING.**

**LADY PETROL: "Can you direct me to Studington, my man?"**

**GENTLEMAN OF THE ROAD: "Yes, mum. It's a roundabout way, and yer'l never find it. I knows every inch of the road. Shall I jump up and show yer?"**

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The Motor
INCORPORATING Motor Cycling & Motoring

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TEMPLE PRESS LIMITED.
7, 9, 11, 13, 15, Rosebery Avenue, London, E.C.

# OPINION.

## *The Light-weight Motor-bicycle and the Future.*

In our last issue we gave practical evidence of the fact that we are not sitting still in our crusade against unnecessary weight in the motor-bicycle. The second motor-bicycle which we have had built weighs but 74½ lb., and we can see yet further opportunities for lightening it, and also for improving upon its present appearance, neat as it is. The point at which we are aiming, we need scarcely mention, is not the production ourselves of motorcycles, but to prove to makers that it is quite possible to bring the weight of a motor-bicycle down to 70 lb., and at the same time to produce a thoroughly efficient machine. Up to the present the attitude of many makers has been one of doubt. They have questioned the possibility of saving materially upon present-day weights, and, again, finding that nobody walks into their shops and asks if they make a light-weight motor-bicycle, they question whether the public really wants anything different to the ordinary pattern. Whilst the enthusiastic expert, who up to now has created most of the business in motor-bicycles, may be content to handle a machine of unlimited weight, provided he obtains a powerful and speedy machine, we do think that the production of this type only has frightened away the man with modest ideas. This class of individual does not airily walk into depot after depot until he finds what he wants. Rather does he mix amongst motorcyclists, and note that they have to indulge in athletic feats of which he considers himself incapable, and instead of enquiring further he condemns the motorcycle as being too heavy for him, and dismisses the idea of a purchase from his mind, which means the loss to the industry of a valuable outlet. It must be remembered that there is an immense field to be drawn upon amongst those who fall short, in smaller or greater measure, of that amount of pluck required to drive the big and heavy machine, and we put it to the trade that it does not matter what machine they themselves prefer to drive; all that they have to do is to cater for potential purchasers, and the light-weight motor-bicycle, we contend, will be the most useful agent for converting them. The manufacture of the high-powered weighty machine can still be proceeded with, and a sale will be found for them amongst a certain class, but the machine which is light in weight will be the one chosen by the vast majority of riders, particularly when the latter are able to prove for themselves that the little machine is practically as fast as its more cumbersome brother. Perhaps upon hills of the Westerham type a small amount of pedalling would be necessary, but the individual who objected to even this light work could have a two-speed gear at the cost of an extra six pounds weight.

## *A Suggested Trial for Light-weights.*

In order to encourage the production of light-weight efficient motor-bicycles we should be glad to see a series of trials conducted by the Auto-Cycle Club early next year (say in March), in order that next season's trade may be saved. Competing machines should be fully equipped for touring, and should weigh not more than 100 lb. without petrol, oil, or accumulators. The trials should extend over a week, and should be completely observed from start to finish; the element of ill-luck should be eliminated, and the aim of the trials should be to find out the lightest, most efficient, and most durable machine. Marks should be given under these various heads on a basis to be worked out, the factor of greatest determining value to be lightness of weight. If the Auto-Cycle Club will promote some such trial as this we are prepared to offer a valuable trophy to be won outright by the machine which the judges consider to be the most efficient for its weight.

## *The Evil of the Unauthorised Trial.*

We should be very sorry indeed if, following the recent trials of the Automobile Club, an epidemic of trade-promoted events should set in. The aim and object of these individual runs is publicity, but, as we have contended on more than one occasion, if the creation of a certain impression on the public is desired, the public in its turn has the right to demand that its interests shall be guarded, and that it shall be told the true facts rather than those selected for it by the biassed manufacturer and vouched for by a complacent observer. But it is precisely because the public have no safeguard whatever, and because it can never hope to learn the whole truth about everything that happens in the endeavour to get a car through its "test," and also because of the extreme ease with which vital defects and replacements may be concealed from the public, that we urge the Automobile Club to hesitate no longer, but to take steps to put an end to the state of affairs that exists to-day. In the past rides have been reported in the daily Press as having been "absolutely non-stop," whereas in the inner circles of motoring some very curious whispers have gone around, and it has been generally known that some practice has had to be resorted to which is being concealed from the public. In one instance a few months ago a lengthy ride was announced broadcast as having been a "non-stop," but it is known to those on the car and to ourselves that a bad collision with a bassinette caused a big delay. In fact, during a lengthy perambulating tour it would be quite possible for an enormous amount of work to be done on a car in the course of the night—even the engine or the gear-box could be replaced—thus showing that there are few matters which the term "non-stop" does not cover. It must be remembered that the result of any admission of failure of a largely advertised "trial" would be most damaging to the organisers. A course which the Automobile Club might take is to announce that any firm of makers or dealers indulging in these unauthorised runs for the sake of publicity shall in future be debarred from participating in any event promoted by the Club or the bodies affiliated to it. With such a penalty hanging over their heads, no firm of any standing would thereafter countenance the unauthorised trial, and a great evil would thus be checked. As to whether the Club should supervise such trials, or in any way be associated with them, is another question, and one that is not easy to answer.

## *MOTOR BOAT CONSTRUCTION.*

*Great interest is being evinced in motor boat construction, which is, beyond doubt, one of the subjects of the hour. The first instalment of a most interesting and instructive series of articles couched in non-technical language, and dealing exhaustively with power craft construction appears in the current issue of "The Motor Boat" from the pen of Mr. Linton Hope, the great authority in this branch of marine work. No reader, if he wishes to be abreast with the times, should neglect to peruse these valuable articles.*

# NEWS

"The Motor Boat."

Grows in interest.

"The Construction of Motor Boats," by Linton Hope, should not be missed.

The great motor boat authority has commenced a valuable series of articles under the above title in the current issue of our sister publication.

During the first six months of 1904 the exports of motorcycles from Germany increased to 2,236 machines, as against 900 machines in the corresponding period of 1903.

Gabriel, the famous French chauffeur, has just sailed for New York, en route for Long Island, where he will drive one of the two De Dietrich cars entered for the Vanderbilt cup. Two other well-known French racing motorists, Teste and Tarte, accompanied him.

Mr. J. W. Orde, the secretary of the Automobile Club, has been seriously ill with an internal complaint for some weeks, but happily he is now on the mend. We wish him a speedy recovery. His illness prevented him from going to St. Arnoult to represent the Auto-Cycle Club in connection with the International Race, and his place was taken by Mr. Mervyn O'Gorman.

As an instance of the remarkably economical results which can be obtained with the modern self-propelled vehicle, it is interesting to learn that Mr. E. Walford, driving a 4½ h.p. Riley tri-car, with a passenger, in the petrol consumption trials instituted by the Coventry Motorcycle Club, covered 25½ miles on the one quart of petrol served out to him. This means a distance of 102 miles per gallon for two people—less than 6d. per 100 miles per passenger.

An advantage of membership in the Auto-Cycle Club was brought home to a gentleman the other day. He had been mulcted in a heavy fine because his motor vehicle had frightened a horse ridden by a prominent titled person, and he was desirous of securing the assistance of the Motor Union in prosecuting an appeal. This gentleman was driving a car at the time, and his only claim upon the assistance and resources of the Union lay in the fact that he was a member of the Auto-Cycle Club. The committee of the latter considered his application and has recommended the Union to give him all the assistance in their power, and this may mean a lot to him. Drivers of motor vehicles are so much at the mercy of mischance that it is an exceedingly useful thing to belong to a powerful and wealthy institution which is always willing to come to the assistance of anybody who may be labouring under some such injustice (real or considered) as the one mentioned above.

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## *Coming Events.*

*Sept.* 30. Gaillon Speed Trials.
*Oct.* 1. Auto-Cycle Club's Consumption Trials (members only).
,, 3. French War Office Automobile Trials.
,, 5. Dourdan Kilometre Trials.
,, 8 Vanderbilt Cup (America)
,, 9. Gaillon Hill Climb.
,, 10. Power Transmission Tests (Paris).
,, 14. Leipzig Motor Show.
,, 14, 15. Motor Racing at Blackpool.
,, 23. Annual Hill Climbing Competition at Chateau Thierry (organised by "L'Auto.")
,, —. Paris Industrial Vehicles Trials (A. C France)
*Nov.* 18 *to* 26. Stanley Cycle and Motor Show (Agricultural Hall, London),
,, 20. 100 Kilometres Trial (A.C. Algeria.)
*Dec.* 9 *to* 26 French Automobile Salon (Grand Palais, Paris.)

The annual dinner of the Motor C.C. will be held at Frascati's on Saturday, December 17th. Mr. S. F. Edge has promised to take the chair.

The Manchester A.C. had a run to the historic Lawton Hall in Cheshire on Sept. 17th. Charles II. is said to have been hidden here during the Interregnum, and a portrait of the gay monarch by Sir Peter Lely still hangs on the walls of the dining room. About 70 members of the club turned up and had tea in the hall.

"The Motor" light motor-bicycle is creating a vast amount of interest.

A large number of congratulatory letters reached us during last week.

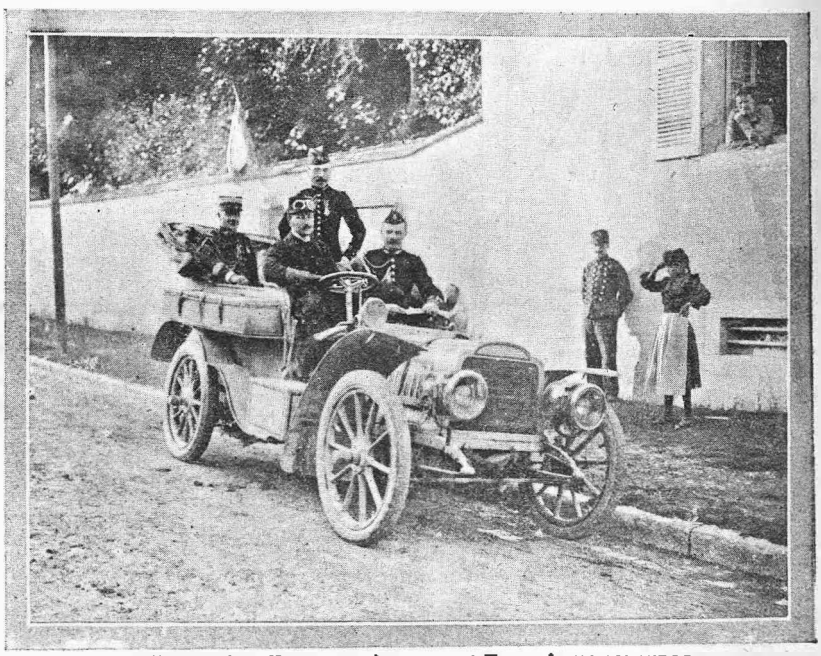
A selection will be published in our next issue. They make interesting reading.

Space at Olympia for the Automobile Exhibition next spring is in great demand. The floor area has been increased by 40,000 square feet.

The Kent A.C. held their last meet of the season on Sept. 17th. The run was to East Grinstead, when the East Surrey A.C. entertained them at the Dorset Arms.

Several readers have sent us orders for "The Motor" motor-bicycle. We must point out that the machine was only made with the view of demonstrating to the trade and public what can be done in the matter of lightness, and that orders cannot be entertained by us. Any enterprising manufacturer, however, would build to the specification published.

The Lincolnshire A.C. held a most successful and enjoyable meet at Boothby Hall the week before last. The feature of the day was a race over a prepared course which included a "police trap," a "baby sprawling on the road," and a "water jump." Much amusement was caused by the various incidents in the race, which called for careful and skilful driving. Captain Cole proved to be the winner



**Military chauffeurs at the recent French manœuvres.**

# NEWS.

In the recent competition for the "Albert Brown" Trophy the first three machines to finish were fitted with the E.I.C. trembler coil, wipe contact breaker, and sparking plug, which worked most satisfactorily. Indeed, the majority of the competitors used E.I.C. details in some form or other—a high testimony to the efficiency of these British-made articles.

On the invitation of the Motor Union, the Auto-Cycle Club is producing evidence at the enquiries which are being held this week in connection with the applications of the City of London and the Borough of Kingston for the reduced speed limit for motors in their areas. Mr. W. H. Wells, who rides a Vindec motorcycle, and who is constantly riding in the midst of the City traffic, will give evidence at the Guildhall on Thursday, whilst Mr. C. A. Smith, of Cobham, will render the same service at Kingston on Friday.

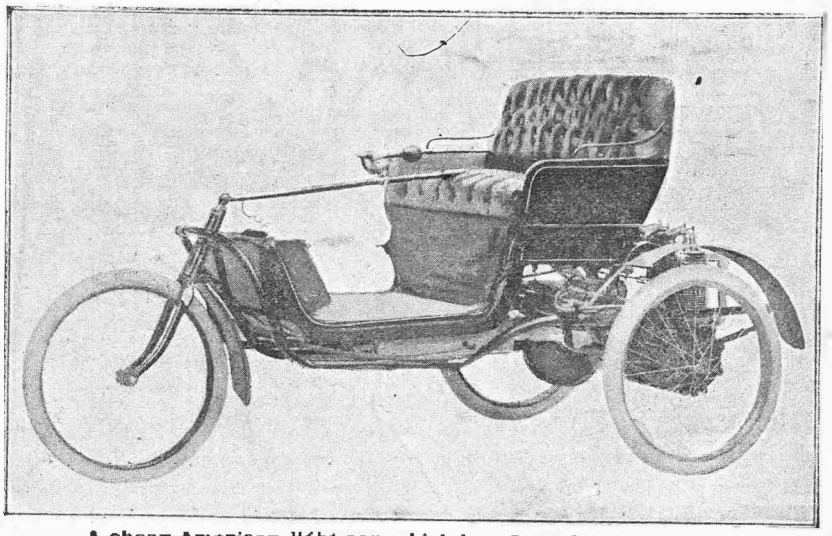
Mr. A. C. Stretton, 4, Worcester Street, Gloucester, informs us that a gentleman with a Phœnix Trimo called on him on the 31st inst., but after having his battery charged and new glass and burner fitted to his lamp and several minor repairs done, he went away—unwittingly no doubt—without paying. In the event of this paragraph meeting the eye of the gentleman in question, Mr. Stretton will be glad if he will kindly remit him 3s. 6d., the amount of his charges. The number of the Trimo is known to Mr. Stretton

### Another French Scorcher.

In the interests of motorists, Mr. John Stewart gave evidence, last Thursday, at Kingston, against a French chauffeur, Henri Boyer, who was charged with furiously driving a car on the Portsmouth road. Mr. Stewart, who is himself a motorist, estimated Boyer's speed at 55 miles an hour, which he considered "terribly dangerous," and calculated to create thousands of enemies for motorists. Several cyclists and pedestrians also complained of Boyer's dangerous driving, and a salutary fine of £10 and costs was imposed.

### England Catching Up.

A French expert who has just returned from a tour of observation has something to say, observes a writer in "Commercial Intelligence," on the motor industry of England in general, and of that of the once great ribbon manufacturing town in particular, which I think is worth reproducing. Referring to the motor industry of Coventry as being in a healthy condition, the French expert states that the makers of large and expensive autos seem to be doing well, as are also those who are turning out small two-seated vehicles. "It is evident," the critic declares, in concluding his report, "that there is life in the motor industry of England, and we must not only expect to see our exports to that country considerably diminish in the near future, but be prepared for a smaller number of orders from the British Colonies. If French makers wish to retain their present acknowledged preponderance, they must seek to reduce their prices and to improve still further their vehicles, for the motor industry has caught on in England. Formerly, we had but one rival. Now, we have two—Germany and England."



**A cheap American light car which is referred to on this page.**

### An American made Three-wheeled Car at £85.

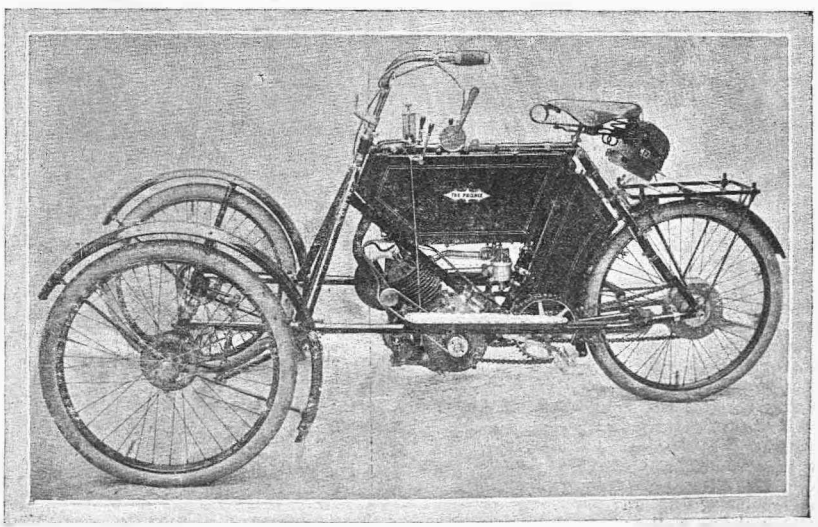
The light three-wheeled car illustrated is made by H. Pokorney, Pike Street, Indianapolis, U.S.A. It is fitted with a two-cylinder engine, 3 by 3¼, air-cooled, developing 4½ h.p. It is mounted at the rear part of the car, and has a two-speed gear fitted, but no reverse. The frame is constructed of 1¼ inch tubing strongly reinforced. The transmission is direct by spur wheels. There are special springs fitted. Steering is by hand lever. The wheel base is 66 inches and width 52 inches. The petrol tank holds four gallons. As can be seen, the car is very smartly designed, and it should appeal to many who have a preference for the runabout type of automobile.

### Phœnix Trimo with Magneto Ignition.

We illustrate on this page a 2½ h.p. Phœnix Trimo, which has just been delivered to one of the makers' customers. It will be noticed that the machine is fitted with magneto ignition, and the manufacturers inform us that it has given the most satisfactory results during very stringent tests, both on the road for pace and for hill climbing. Without a doubt there is a growing demand for a really good and efficient light three-wheeler which can be started by the hand in accordance with car practice, as is the case with this machine, which is fitted with a two-speed gear, clutch, and free engine. Phœnix Motors, Ltd., have decided to supply their 1905 productions with the magneto ignition, if ordered, and will run both this and the high tension make and break as two different standards.

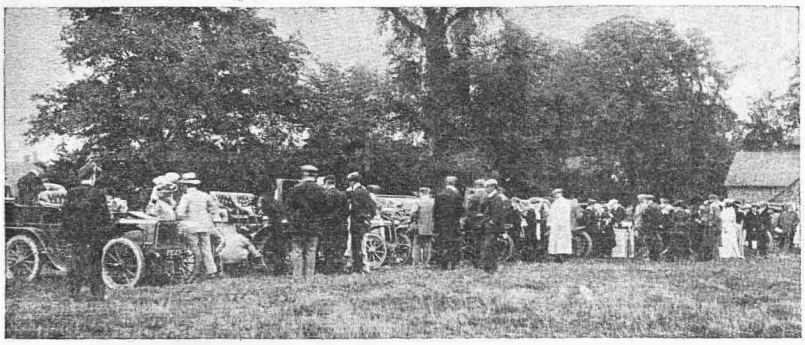
### The Auto-Cycle Club's Consumption Trials.

The Auto-Cycle Club's Consumption Trials take place on Saturday, October 1st. The route is from the Angel, Thames Ditton, to Milford, by Guildford and Godalming. Competitors will start with full tanks, and after the completion of the course of 44 miles the tanks will be re-filled, the amount required to fill up being measured, and thus giving the amount consumed. A uniform speed, set by a motorcar, will be observed by all competing machines.



**A 2½ h.p. Phœnix Trimo fitted with magneto ignition.**

## NEWS.



**The Lincoln A.C. meet at Boothby: the judges examining the cars in a competition.**

### *The Manchester Motor Club.*

The final test ride to decide the prize winners in the 100 miles non-stop reliability trial of the above club was held on Monday of last week. In our issue of a fortnight ago the final 100 miles non-stop run was reported, which resulted in Messrs. Brown, Bullock, and Leech having done non-stop runs and being declared the three prize winners. The rules of the contest (which originally had 28 competitors) stated that if any tie between two or more riders resulted, a mile test of start-and-stop at each 220 yards, in 10 yard length controls, should be held to decide the winner within one hour from the completion of the 100 miles run, but as darkness was setting in on that occasion, the three competitors waived the matter and agreed between themselves to divide the three prizes equally. This arrangement, however, was subsequently over-ruled at a committee meeting, it being held that the contest should be finished as originally arranged. This was therefore held last week on the Brooklands Road, between Brooklands and Baguley railway stations, six miles from Manchester. A course was marked between two half-mile stones, with ten yard controls each 220 yards, the men to stop and start in each, and ride the fastest mile, half a mile out-and-home. The date being inconvenient for Leech, only F. Bullock and G. Brown competed. Bullock rode a 2 h.p. Clement-Garrard with two-speed gear, chain-driven, and as he had a spare petrol tank on the luggage carrier, this necessitated his mounting by the kerb at each control, thus losing him a lot of time; in fact, he took 5 mins. 11 secs. to complete the mile. G. Brown rode a machine of his own make, fitted with a 2¾ h.p. Lloyd engine and fitting. He accomplished a very smart performance, stopping and starting his engine in each control, running with his machine and mounting by the pedal—in this way covering the mile, after stopping and starting seven times, in the good time of 3 mins. 39 secs. He was, therefore, declared the winner. The three prizes were thus won by first, G. Brown; second, F. Bullock; third, J. W. Leech; and the contest is now finished. Next month the club will hold an important hill-climbing competition, for which a large entry is anticipated. The club present gold, silver, and bronze medals, and one well-known member also offers the winner the best make of acetylene lamp. The club also intend to hold "social" gatherings during the winter months, the first to take place a few days after the hill-climbing competition.

### *Novel Automobile Contest in Lincolnshire.*

The members of the Lincolnshire Automobile Club were invited by the Hon. Maurice and Mrs. Gifford to Boothby on Thursday week last, to witness an amusing motor competition. Between 20 and 30 cars, carrying between them about a hundred passengers, drove over to the meet, and the outing was immensely enjoyed. On reaching the rendezvous it was at once evident that the promoters had been at some trouble in making arrangements for the event. A tortuous course had been prepared in a field just wide enough to enable a car to travel comfortably along. En route a mock police trap was arranged, and a mechanical gentleman in blue appeared from behind his shelter every time a car approached. Just beyond this a huge doll representing a baby, obstructed the course. The idea was both novel and amusing. The contest took the form of a race, the conditions being that, on reaching the police trap, the competitors should use their best efforts to dodge the redoubtable officer of the law, and then come to a dead stop to avoid collision with a child. The competition was judged by marks. Those who were successful in getting past the police officer without being touched, and who pulled up and eventually succeeded in passing the prone body of the baby without disaster, accomplished a pretty smart performance, as they also did in negotiating the winding course without contact with the pegs, which "stringed" out the way. The times were of course taken into consideration as well as the wheel base of the cars. The competition was, in reality, a test of the capabilities of the drivers. It should be mentioned that the small cars had an infinitely better chance of negotiating the course in consequence of their being more easily manipulated at the difficult turning points. Eight motorists took part in the competition, and when the deductions and allowances had been adjusted it transpired that the following was the order of merit: Capt. J. A. Cole, J.P., 12 h.p. Durkopp, 17½ marks; Major Goddard, 12 h.p. Richardson, 22; Mr. C. Holland, Baby Peugeot, 26½; Mr. R. M. Wright, 8½ h.p. De Dion, 42½; Dr. Hancock-Steel, 7½ h.p. Wolseley, 43; Capt. Lyall, 7 h.p. Panhard, 48½; Dr. Mason, Baby Peugeot, 49½; Mr. C. Nelson, 4½ h.p. De Dion, 62½. The winner received a set of silver Apostle tea-spoons and sugar tongs as a prize. Dr. Gilpin officiated as starter and timekeeper, Capt. Cole and Mr. Cyril Greenall judged, and Dr. Miller manipulated the policeman.

[The above report and accompanying illustrations were unavoidably crowded out of our last issue owing to lack of space.—Ed.]

### *The Indian Trials.*

The itinerary for the Indian Trials from Delhi to Bombay for the Gaikwar of Baroda's motor cup is—Delhi to Agra, 128 miles; Agra to Gwalior, 71; Gwalior to Goona, 127; Goona to Sarangpoor, 94; Sarangpoor to Indore, 74; Indore to Dhulia, 145; Dhulia to Nassick, 97; Nassick to Bombay, 147—a total of 883 miles. The competition takes place from December 26th to January 2nd, and has been organised with a view to discovering the best type of car for use in India.

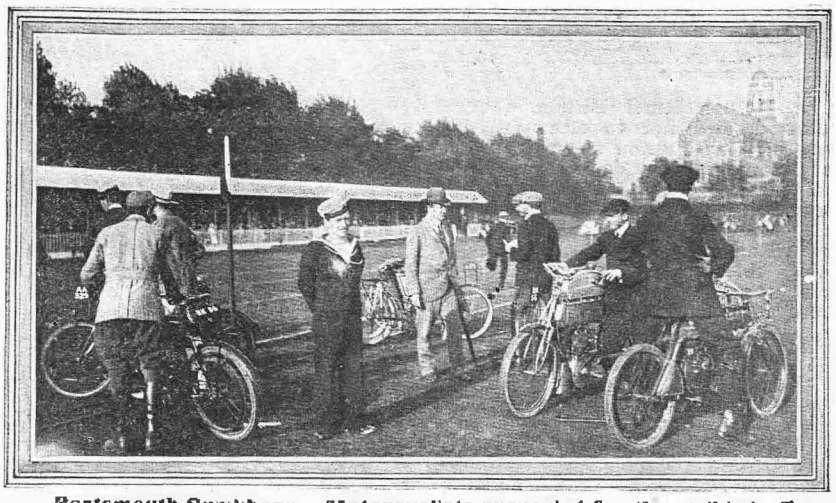

**The Lincoln A.C. meet at Boothby. Mr. R. M. Wright pulling his De Dion car up promptly in front of a dummy representing a child. The screen in the rear represents a police trap.**

## NEWS.

Mr. C. H. Pugh, of Clapham, who at the Southern Motor Club's hill climb on September 10th won the first place for the gold medal, rode a 3½ h.p. Trimo (Minerva engine). Mr. Pugh put a 1¾ h.p Minerva into service three years ago, changing it afterwards for a 2½ h.p. He reports enthusiastically upon the satisfactory conduct of his mount.

### *Naval and Military Motor Sports at Portsmouth.*

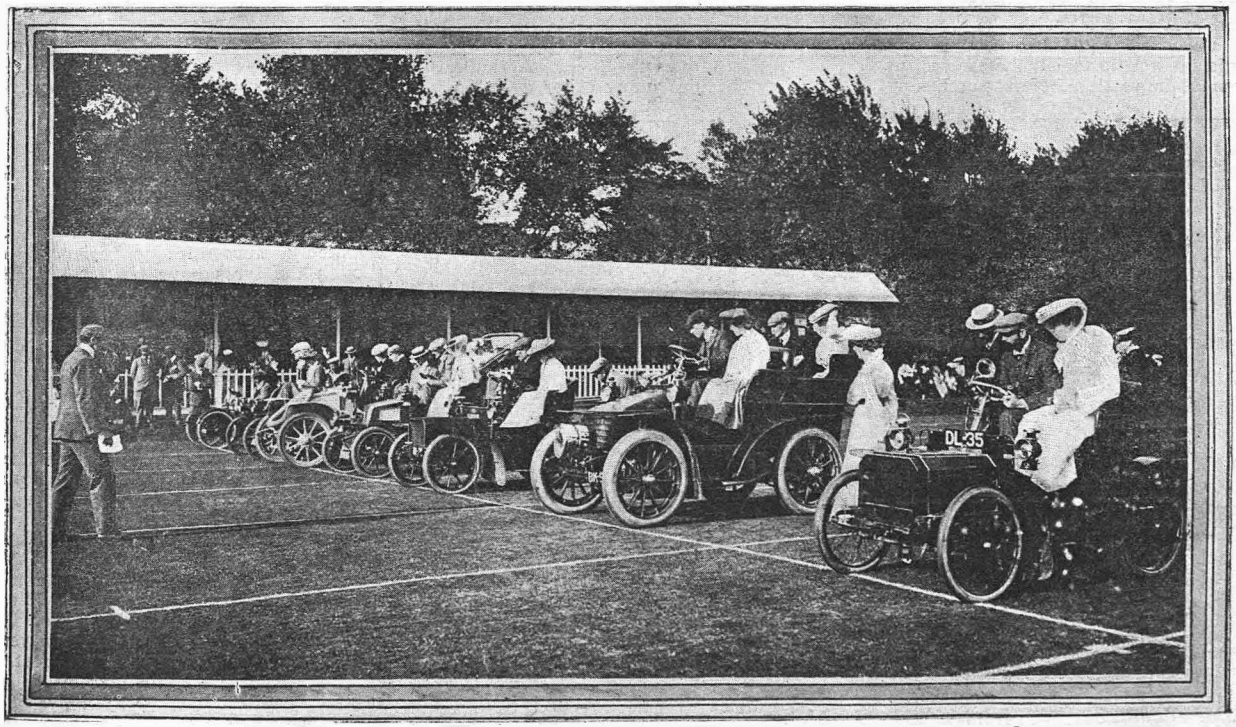
We publish illustrations of the naval and military officers' motor sports held at Portsmouth. Fine weather and a large crowd of friends and visitors favoured the day's sport, which partook of the nature of a gymkhana. Owing to the length of the programme, and the shortness of the autumn afternoons, several interesting events—including a reversing motorcar race, a blindfold race for motorcyclists, and a blindfold car race—had to be abandoned. A race in which each passenger of the car had to carry a glass of water proved most amusing, a sharp turn in the course proving very difficult to negotiate without losing a few drops of the precious fluid. This race was won by Major Cox's car, Major Francis being second. A "tortoise" race—last car in to be the winner—was won by Capt. Dixon; and in the ladies' section by Lady Arbuthnot. A motor-bicycle "Turk's head" competition was won by Commander Back, R.N., with Sub.-Lieut. Watson second. The "Legal Limit" race fell to Lieut. Good on a motorcycle; Lieut. Bellairs, Major Francis, Capt. Moody, and Lieut. Lewis tieing for second prize on cars. Lieut. Ramsey, R.N., won the "Musical Cars" competition, Lieutenant Bellairs being second.



**Portsmouth Gymkhana. Motorcyclists preparing for the striking off of the "Turk's head" competition.**

### *Southern Motor Club Hill-climbing Competition.*

Another successful hill climbing contest for single-seated motorcycles took place on Saturday, September 17th, on Coast Hill, near Westcott. The contest was divided into two events, one for private members, and one for trade members. The following members competed in the private class:—Messrs. W. Rathbone, 3½ h.p. Roper engine, belt-driven; H. Jones, 4½ h.p. Linon, belt-driven; G. Fisher, 3½ h.p. M.M.C., chain-driven; H. B. Colbourne, 2¼ h.p. Kerry, belt-driven; W. L. Lorkin, 2¾ h.p. Excelsior, belt-driven; C. H. Pugh, 3½ h.p. Minerva, belt-driven; A. East, 2½ h.p. Excelsior, belt-driven. Messrs. Eteson, 3½ h.p. Minerva, belt-driven, and H. C. Bygrave, 2¾ h.p. Cripto, belt-driven, although entering did not start. The winner of this section was G. Fisher, who ascended the hill in 1 min. 1⅘ secs., C. H. Pugh being second, and H. B. Colbourne third. Messrs. W. May, [illegible] h.p. Minerva, belt-driven, and S. O. Edwards, 1¾ h.p. Pykan, entered for the trade event together with the whole of the private class, with the exception of Messrs. W. Lorkin and A. East. G. Fisher was successful in winning in this class also, while Messrs. C. H. Pugh and H. B. Colbourne arrived in the same order as before. Gold medallions were given in each class, and the handicap was arranged by the Auto-Cycle Club, Mr. A. Weston and Mr. A. Vickers, N.C.U., doing excellent service as timekeepers. Forty members, including about ten ladies, sat down to a welcome tea after the contest at the Prince of Wales Hotel, where the above results were announced




**Portsmouth Gymkhana. The start of the tortoise race in which the last car was the winner.**

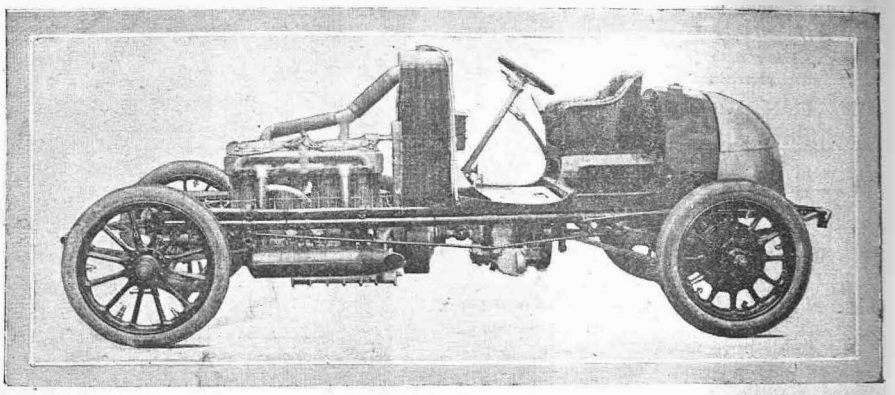
## NEWS.

The Helston Rural District Council having decided not to steam-roll the roads between Helston and the Lizard, the Great Western Company notify us that it has become necessary to withdraw the road motors between Helston, Mullion, and the Lizard, and the cars will cease running after September 30th. Once again, therefore, the public suffer through the high-handed action of a district council.

Owing to the great demand for Argyll cars, the Hozier Engineering Co., Ltd., have up till now been unable to give the necessary time and attention to the rapidly increasing demand for light delivery vans and lorries. We are informed, however, that the company have just completed arrangements to set aside a large portion of their extensive works for this important branch, and we understand Mr. J. D. Brimlow, who has a thorough knowledge of this business, has been appointed manager.

### *Warning to Buyers of Second-hand Machines.*

The Rex Manufacturing Company write to say that in consequence of having noticed in our "Sales Columns" an offer of a 1904 model 50-guinea Rex motor-bicycle (second-hand) for £17 10s., they communicated with the advertiser, and extracted from him (in the course of a letter of apology) an admission that his advertisement was practically a misrepresentation. We are much obliged to the Rex Company for their action in the matter, and we would warn all readers against too readily jumping at such suspiciously attractive bait. We safeguard our readers in every possible way, but it is manifestly impossible that we should subject every machine advertised in our columns to a personal inspection to see whether it complies with the wording of the advertisement. Prospective buyers would do well to insist, themselves, upon personal inspection before purchasing.



**The new Renault car which has left France to compete for the Vanderbilt Cup. The date of the contest is October 8th.**

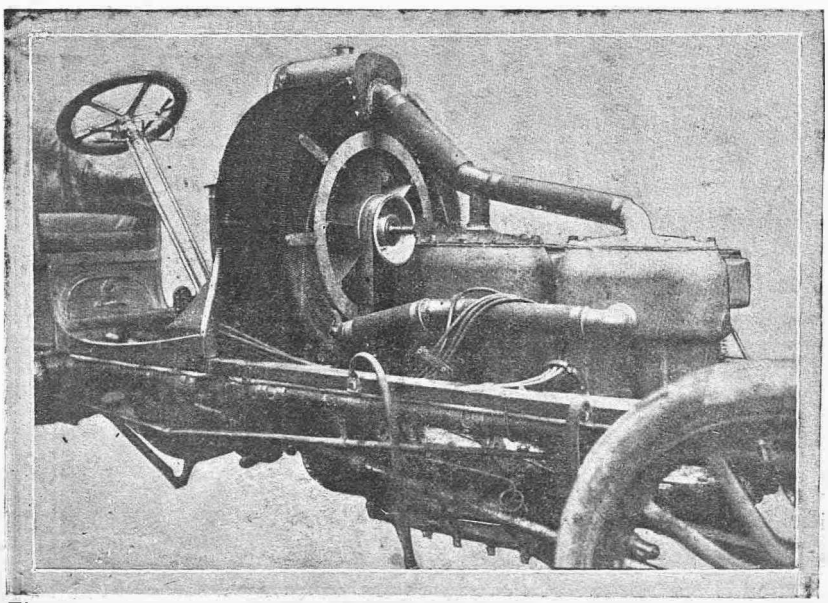
### *The Motor as an Aid to Farming.*

Some interesting experiments were conducted near Perth recently which go to prove that the agricultural motor is destined to be of incalculable assistance to the farmer in the near future. Already, indeed, some of these up-to-date farm implements have demonstarted their efficiency and are doing good work all over the country. In the trials under notice, which were arranged by the Highland and Agricultural Society of Scotland, two agricultural motors entered—one of Dan Albone's Ivel motors, and one of the Scottish motors manufactured by J. Scott, of Edinburgh. A slight mishap to the latter unfortunately hindered it from doing its best work, but the Ivel worked smoothly and strongly from beginning to end, and was a perfect revelation to those who had not hitherto witnessed an Ivel at work. A heavy crop of oats (three acres) was cut in 1 hr. 40 mins., and subsequently the Ivel drew a Howard three-furrow plough along at a rate, and with a result, which delighted all who saw it. Both motors were awarded the society's gold medal. The Ivel has already won the gold medal of the Stow-on-the-Wold Agricultural Society, besides many other awards.

At the inquest on the death of a Portsmouth motorcyclist through skidding on tramlines and being thrown under a cart, the coroner remarked that skidding was one of the most dangerous things cyclists had to guard against.

### *A Northern Hill-climb.*

The South Shields A.C. held a hill-climbing competition, on September 17th, over a course of 1¼ miles up Hedley Wood Bank (near Weldon Bridge). The entries were numerous, and considerable public interest was taken in the event. Results:—Bicycles and Tri-cars—(1) J. McHaffie (2¾ h.p. Humber), time 2 mins. 32 secs.; (2) Mole (2¼ h.p. Northumbrian), 3 mins. 17 secs. Cars up to 8 h.p.—(1) R. Rigbye (6½ h.p. Humberette), 5 mins. 1 sec.; (2) C. W. Ford (6½ h.p. Siddeley), 6 mins. 12 secs. Cars up to 12 b.h.p.—(1) G. Rumford (12 h.p. Darracq), 5 mins. 2⅕ secs.; (2) Wordsdall (10 h.p. Wolseley), 5 mins. 34 secs. Cars over 12 b.h.p.—(1) F. Turvey (15 h.p. Darracq), 4 mins. 12 secs.; (2) R. Murray (15 h.p. Darracq), 4 mins. 16¼ secs. Steam cars—Harrison (5 h.p. Stanley) 5 mins. 6 secs. The results of the motor-cycles competition were highly satisfactory. The time up such a hill works out at 30 miles an hour—a fine performance.



**The Renault car, which has been built for the Vanderbilt Cup contest: view showing engine and the circular radiators with fan in the centre.**

### *The Palmer Cord Tyre.*

Some weeks ago we fitted to a 12 h.p. car a set of Palmer cord tyres, and after having run them a distance of over 1,500 miles we are now able to report an undoubtedly successful experience. Although the tyres have travelled over all kinds of roads at the driest time of the year, there is scarcely a cut to be seen. The longitudinal treads have almost worn away, and a small blister or two have recently appeared on one of the back covers. A hobnail and a French nail succeeded in penetrating the air-tube, but on each occasion no air was lost until the nails were extracted. Apart from these two cases, we have had no puncture, and, needless to say, we have the highest opinion of the Palmer cord, and it is especially gratifying to feel that in motor tyres this country is more than able to hold its own against all comers. On the question of cost we think that the Palmer, as now made, can never be a low-priced tyre, but we are, however, quite prepared to find that its cost per mile will compare quite favourably with any other make, and after all the life of a tyre is the determining factor in the question of cost.

# NEWS.

On Saturday last, September 24th, the Herts A.C. held a very successful meet at Hatfield, some 20 members and friends turning up at the rendezvous, the Red Lion Hotel, where an excellent tea was served. Among those present were Mr. E. Kenealy, Miss Annesley Kenealy and Miss K. Kenealy (15 h.p. Darracq); Mr. and Mrs. Hunt and Mr. Wilson (7 h.p. Alldays); Mr. W. G. James 8 h.p. Crypto); Mr. and Mrs. Whittall (5 h.p. Humberette); Mr. E. Neal (5 h.p. Humberette); and Mr. C. Wood (2¾ h.p. Kerry).

### *The Minerva Spring Front Fork: Messrs. Griffon's Claim.*

In our last issue we gave an illustrated description of the spring front forks which will be fitted to the new Minerva motorcycles. On Thursday we received a letter from Messrs. Griffon, of Courbevoie (Seine), in which they informed us that the device illustrated and described by us was a feature of the Griffon motorcycles, and was their property, and we were informed that unless we altered our statements proceedings would be taken against us. We immediately set enquiries on foot, and found that our statement was perfectly correct, and, moreover, had done no injustice to Messrs. Griffon. The patented spring fork is the invention and property of M. C. Vigneaux, of Paris, who has granted licenses for its use to both Messrs. Griffon and the Minerva Motors, Ltd. This information comes not only from the latter firm, but it is confirmed by the patentee in a letter to us. Whilst being glad to draw attention to Messrs. Griffon's right to the use of the invention, we should have been better pleased had their letter stated the whole of the facts and not merely a part. Had we accepted their statement to us without making our own enquiries, we should have done the Minerva Motors, Ltd., a great injustice, besides misleading our readers.

# *THE INTERNATIONAL MOTOR-CYCLE CUP.*

## *A Nail-strewn Course: Stewards Declare the Race void.*

(BY OUR FRENCH REPRESENTATIVE.)

The first race for the International Motorcycle Cup founded by the Motorcycle Club de France, with the object of having for the light motor machine a similar event as the Gordon-Bennett Cup is for the cars, was held on Sunday last.

Representatives of no fewer than five countries competed. Victory eventually rested with France, as was generally anticipated, Demester taking first place, but the visitors were by no means disgraced, as the detailed report will show, inasmuch as the race was marred by numerous punctures caused by nails thrown on the road.

Splendid weather favoured the race, the sun shining brilliantly as soon as daylight appeared, and not being obscured afterwards by a single cloud during the day.

The early hour of the start, and also the fact that it took place in a district situated some 50 miles from Paris, made it very inconvenient for many people to assist. Nevertheless, there must have been more than a thousand present when the first competitor started.

And as the day wore on hundreds of spectators kept arriving, so that by the time Demester passed the post a winner, the above attendance must have been at least trebled. Many of the familiar faces one is accustomed to see at all automobile gatherings were present, as well as a number of delegates from the foreign countries represented in the contest. As the weighing operations had taken place on the Saturday, the starting formalities were quickly dispatched under the able guidance of the members of the committee, chief among whom ought to be mentioned Messieurs Deckert and De la Hausse, who spared no effort in the or

**The French competitors in the International Motorcycle Race, viz: Demester (winner), Lamberjack, and Inghilbert.**

**Silver (Quadrant), Hodgkinson (J.A.P.), and Rignold (Lagonda).**
**The English representatives in Sunday's International Motor-bicycle Contest.**

## NEWS.

ganisation of the race throughout. The start was given at 6 a.m. sharp by Mons. Tampier, the official time-keeper, all the other men being afterwards sent on their journey at intervals of two minutes.

In all there were 11 starters. These were as follow:—(1) Lamberjack (France), Griffon; (2) Wenceslas Vondrick (Austria), Laurin et Klement; (3) Rignold (England), Lagonda; (4) Adolf Mraz (Germany), Progress; (5) Niels Petersen (Denmark), Jorgensen; (6) Inghilbert (France), Griffon; (7) Toman (Austria), Laurin et Klement; (8) W. Hodgkinson (England), J.A.P.; (9) Em. Volksdorf (Germany), Progress; (10) Demester (France), Griffon; (11) Thomas Silver (England), Quadrant.

The third member of the German team, Mueller, did not start, his machine having been injured by fire on Saturday.

Twenty minutes had elapsed since Tampier gave the last "go," when the leader on the first circuit—distance 54 kilometres, or a bit under 34 miles—the Austrian, Vondrick, rushed by, amid the cheers of an evidently interested crowd. He had covered the first lap in 56 mins. 31 secs. gross time, and was closely followed by Petersen, of the Danish team, while Demester, who passed fourth, was the first Frenchman to appear.

Lamberjack, who was a hot favourite, arrived last, a long way behind. He complained of several punctures caused by nails. Two members of the English team were also victims of this dastardly action, and were not checked at all on the first lap; Rignold, who passed third, being the only English competitor to complete the first lap. In all, nine riders passed this before time, but before the second circuit was completed the punctures had reduced the field to six.

This time, again, the Austrian, Vondrick, was leading, while Demester had run into second place, only six minutes behind the leader.

ENGLAND'S LAST HOPE WAS GONE

with the retirement of Rignold through punctures.

When the third circuit was completed, it was seen that France had taken the lead with Demester, and although Vondrick passed second, he was as much as 119 minutes behind the leader. Only five of the eleven starters had survived at that point of the contest, and with no changes in positions taking place during the fourth circuit, the victory could now only be taken by accident from France, who had still three representatives left in.

No incidents or accidents were, however, recorded, and Demester, slightly increasing his lead, scored a highly popular win for the home team; while Toman had the honour of taking second place (more than one hour behind) for Austria; and the Frenchman, Inghilbert, was third, 21 minutes later. The official net time of the winner for the 270 kilometres (about 169 miles) was 3 hrs. 45 mins. 08 sec., which averages about 45 miles an hour, not nearly so good as the speed attained by Lamberjack in the French eliminatory race over the same course.

The names and times of the competitors who finished are as follow:—(1) Demester (France), 3 hrs. 45 mins. 08 sec.; (2) Toman (Austria), 4 hrs. 53 mins.; (3) Inghilbert (France), 4 hrs. 14 mins.; (4) Lamberjack (France), 4 hrs. 44 mins.; (5) Vondrick (Austria), 5 hrs. 4 mins. Only the first three finished in standard time.

The comparatively slow times and small number of finishers is accounted for by the fact that every one of the competitors sustained several punctures, for reasons indicated above. The committee intend to send a complaint to the police authorities with a view of discovering, if possible, the authors of the mischief.

[We have since heard by wire that the stewards have declared the race void.]

THE INTERNATIONAL RACE.

1. Demester en route. 2. Inghilbert passing the grand stand. 3. The telegraph board. 4. Demester (central figure) after his victory.

## NEWS.

L. R. Oswald Sealy broke the Irish "end to end" record (Mizen Head, Cork, to Fair Head, Antrim) last week-end, when he covered a distance of 392 miles in 29 hrs. 32 mins., on a 2¾ h.p. Brown motor-bicycle, beating the previous best by 1 hr. 48 mins. An extended report of this feat is withheld until next week.

### *Motorcycle Union of Ireland.*

A reliability run, which will be the last of the season, will take place on Saturday, October 8th. It will take the form of a 100 miles run from Dublin to Maryboro' and back, for double machines. The maximum speed allowed will be 20 miles and the minimum 15 miles per hour. The driver of the winning vehicle will hold a share in a valuable cup presented to the Union by Messrs. W. P. Lewis and Co., of Dublin. The start will be from Inchicore Bridge at 10.30. The committee will be glad to see any English drivers who may decide to compete. The annual dinner of the Union will be held at the Dolphin Hotel, Saturday, October 29th, at 8 p.m. The secretary is Mr. C. G. Grey, 15, Marlborough Road, Donnybrook.

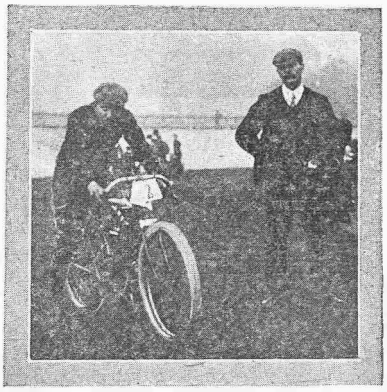
### *The "Bob-a-Nob" Trials.*

"A chapter of accidents!" "A brilliant failure!" "Most enjoyable trial of the year!" "All blanks and no prizes!" Such were some of the descriptions applied to the recent trials of the Auto-Cycle Club—so aptly christened by some genius "The Bob-a-Nob Trials." As a matter of fact, they really were one of the most successful failures imaginable. Seven started: three discoutinued at various points: four finished: and all were disqualified. It must have been a little irritating to the indomitable four who sacrificed bobs and dollars galore on the strength of raking them all in again in the form of pool money to be disqualified for their brilliant achievement of a task which a thoughtful committee had adjudged too difficult, and had eliminated in consequence. A "consolation" prize was really the most fitting way out of the difficulty, and from the mere outsider's point of view the committee emerged from the trial covered with more honour and glory even than the competitors. Theirs was a fearsome task, and they *might* have got very much mixed up; instead of which, they cut the Gordian knot at one fell swoop, and everybody has "lived happily ever since."

# *THE AUTO-CYCLE CLUB MEETING.*

## *A Long and Interesting Afternoon's Sport at the Crystal Palace.*

The governing body of the sport of motorcycling held their annual race meeting at the Crystal Palace track, on Saturday afternoon, and the arrangements reflected credit on all concerned. A welcome innovation was the decision of the one hour race at the commencement of the programme, which insured the finish being completed before dusk. The first few miles of the one hour race witnessed a fine struggle between Crundall (holder of the cup) and F. Bent. In the seventh mile an unfortunate smash occurred. A. A. Chase was just passing C. E. Bennet, when the latter wobbled and touched Yates' shoulder, and then Chase's back wheel, and fell. Bent was just coming



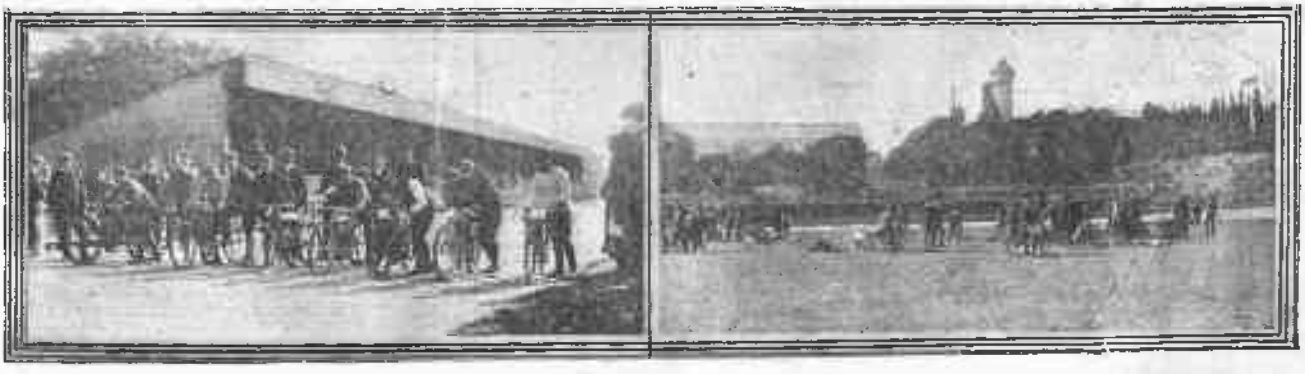
**C. Collier (Matchless) who won the five miles handicap and the mile time trial at the Crystal Palace on Saturday.**

up behind Bennett, and rode over him, and came down with a crash, breaking his collar bone, and sustaining several bad cuts. Bennett was also cut about badly on the arms and legs, but he was fortunate in escaping with such small damage. The race was immediately stopped, and Bent was taken to the Norwood Cottage Hospital, and we understand he is progressing satisfactorily, and will soon be about again.

A COUPLE OF HEAVY SHOWERS FELL during the afternoon, spoiling the chances of the last men to attempt the flying mile, there being too much danger of side-slip in negotiating the banking at high speeds. We must certainly congratulate C. Collier upon his dual win in the flying mile time trial and the five miles handicap. Collier is a very good sportsman, who does not push his personality too prominently, except when actually on his machine, and deserves his success in proving that, when he did the best time in the flying mile at last year's meeting, it was due to his ability in tuning up and driving. It may be remembered that at the 1903 meeting Collier did the best time in the mile time trial, but was disqualified by the judges for not having an efficient silencer. Since that time the Auto-Cycle Club committee have passed a rule permitting the removal of silencers when racing upon enclosed tracks. As a matter of interest, it is worth mentioning that Collier used an engine having exactly the same cylinder capacity (76 by 76) last year and this year, and in both races he did practically identical time.

In the hour race for "Motor Cycle" challenge cup for engines having a capacity not exceeding 70 mm. by 70 mm. (holder, J. F. Crundall), J. F. Crundall (Humber), 42 miles 1,390 yards, beating his performance last year by 192 yards, was first; 2nd, C. Collier (Matchless), 39 miles 470 yds.; 3rd, B. Yates (Humber), 38 miles 100 yds.; 4th, J. Leonard (Lurquin-Coudert), 33 miles 1,272 yards. After Bent's smash the race was re-started, and Crundall practically led from start to finish. At the half hour he had covered 22 miles; A. A. Chase (Chase) 20 miles; Collier 19⅜ miles; Leonard 17⅓ miles; Yates 16⅝ miles. Chase retired soon after the half hour through a broken sparking-plug. There was a splendid tussle for second position. Yates, after he had passed Leonard, hung on to Collier for mile after mile, with only a few inches separating them. Collier got away in the last ten minutes, and beat the third man by over a mile.

Five miles handicap for "Motor Car Journal" challenge cup for engines having a capacity not exceeding 76 mm. by 76 mm. (holder, J. J. Leonard).—Heat 1: 1st, C. B. Franklin (F.N.), 5 secs. start, time 7 mins. 16⅘ secs.; 2nd, C. R. Clarke (New Century), 10 secs. start, time, 7 mins. 24⅘ secs. Heat 2: 1st, H. A. Dipple (Lurquin-Coudert), 15 secs. start, time, 6 mins. 58⅘ secs.; 2nd, E. Varney (Crownfield), 10 secs. start, time, 7 mins. 25 secs. Heat 3: 1st, J. F. Crundall (Humber), scratch, time, 7 mins. 21⅘ secs.; 2nd, Perkins



**THE CRYSTAL PALACE MEETING.**
**1. The start of the hour race. 2. A view of the enclosure.**


(Crownfield), scratch, 7 mins. 22⅘ secs. Heat 4: 1st, C. Collier (Matchless), scratch, time, 6 mins. 37⅕ secs.; 2nd, W. Genn (Eland-Minerva), 5 secs. start, 6 mins. 54⅖ secs. Heat 5: 1st, A. Tyler (J.A.P.), scratch, 6 mins. 44 secs.; 2nd, H. Martin (Excelsior), 5 secs. start, 6 mins. 57⅕ secs. Final: Collier 1st, Crundall 2nd, Franklin 3rd. This was the best race of the day. Franklin made good use of his five seconds, and up to two miles the scratch men had not made much impression upon his lead. Collier and Crundall passed each other alternately, neither gaining more than a few yards until the last two laps, when Collier went to the front and kept there, finishing a popular winner in 7 mins. 3⅘ secs.; Crundall's time, 7 mins. 7⅘ secs.

One mile flying start time trials for the "Automotor Journal" challenge cup (holder, J. F. Crundall).—Winner, C. Collier (Matchless), 1 min. 15 secs.; 2nd, W. Genn (Minerva), 1 min. 16⅘ secs.; 3rd, H. Martin (Excelsior), 1 min. 17⅖ secs.; J. F. Crundall (Humber), 1 min. 18⅗ secs.; H. C. Tyler (Humber), 1 min. 20 secs.; Varney (Crownfield), 1 min. 20⅗ secs.; Franklin (F.N.), 1 min. 21⅘ secs.; J. Leonard (Lurquin-Coudert), 1 min. 22⅘ secs.; F. E. Barker (Chater Lea), 1 min. 24 secs.; Holloway (Minerva), 1 min. 26⅗ secs.; C. E. E. Smith (Humber), 1 min. 28⅕ secs.; and Chappell (F.N.), 1 min. 47⅘ secs. The last times can be accounted for by the wetness of the track, as previously mentioned. Crundall's time last year was 4⅘ secs. slower than Collier's on Saturday. The club officials can be congratulated on a well carried out meeting, in which every detail had been foreseen and arranged. We must not forget to add that Mr. F. Straight, the secretary, was indefatigable in his efforts to secure the success of the meeting.

### *Motor 'Buses in London.*

The new Clarkson steam omnibus, which the London General Omnibus Co. has been experimenting with, has accommodation for 16 passengers—14 inside and two on the box. Messrs. Tilling, the proprietors of the well-known "Times" 'buses, have been testing a big petrol vehicle of the double-decker type: this holds 34 passengers. It has a motor of 20 h.p., and a live axle drive. Twin solid tyres are used, this type wearing much better than the single tyre, and also tending to prevent side-slip. Indeed, Mr. J. M. Maclulich, the Dunlop tyre expert, recommends a triple tyre for use on heavy motor vehicles. The petrol 'bus will run between Piccadilly Circus and Peckham; and there is talk of another of the same type to be put on by the Associated Omnibus Co. for service between Charing Cross and St. Thomas's Hospital.

# NEWS.

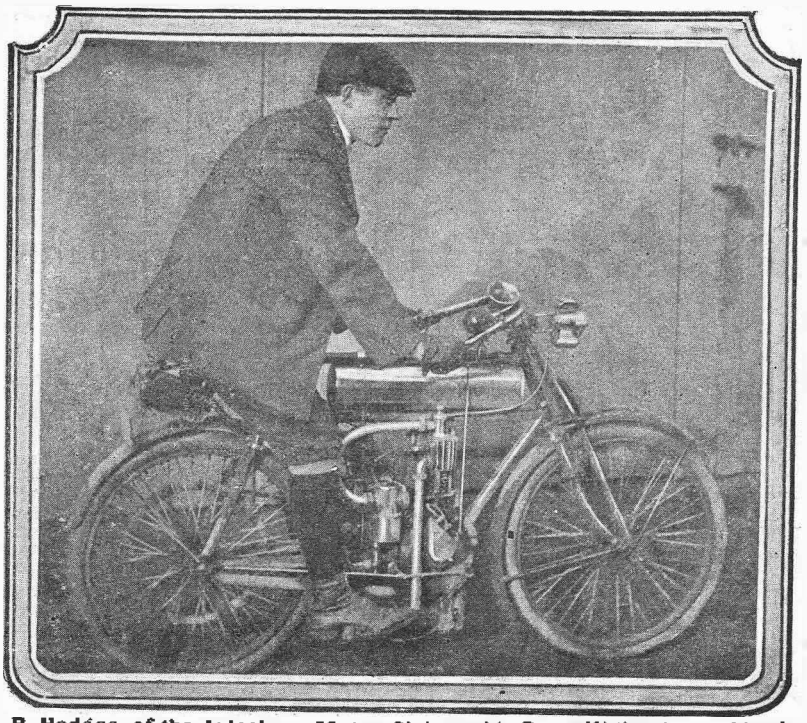
Sir E. Bradford, late chief of Scotland Yard, collided with a motorcar at Adderbury last month, and was knocked off his horse, though not injured. The sequel to this accident was provided last week, when the driver of the car was charged with driving to the public danger. After a long hearing, the magistrates imposed a fine of £5, and costs amounting to £2 4s. Notice of appeal to the Quarter Session was given.

### *The Rule of the Road.*

An unusual case was heard at Birkdale last Thursday, when a farmer named Gee was summoned by a motorist for obstructing the highway at Altcar. Gee was riding along the right-hand side of the road —which is macadam, the other side being setts—and when the motorist came along, going the same way, the horse-driver refused to move out of the way. The Bench fined the defendant 5s. and costs, and added that they considered that the offence was not serious enough to justify a summons. If the motorist had been the defendant, their doubts on the matter would not have been so much in evidence.

### *Olympia Exhibition.*

We are officially informed that the demand for space at the Society of Motor Manufacturers' and Traders' third International Motor Exhibition at Olympia, in February, 1905, having already exceeded the 100,000 square feet originally arranged for, structural alterations will be made at considerable expense in the annexe (which has a total area of some 40,000 square feet, and is in reality a continuation of the main building), whereby the whole of this will be rendered perfectly suitable for exhibition purposes. This portion of the building will contain a particularly attractive exhibit in the shape of the motor boat section. By the alterations in question car stands will also be made available there to the extent of about 20,000 square feet, constituting a practically continuous exhibit with those in the main hall. Stands in this annexe have already been applied for by a number of well-known firms, and the total space now available for letting will be brought up to 120,000 square feet.



**T. B. Hedges, of the Aylesbury Motor Club, on his Bat. With this machine he won the A.M.C.'s recent hill-climb, and also the club's scratch race.**

### *A Promising American Amateur.*

New York "Automobile" states that George P. Fuller, of San Francisco, is one of the finest racing motorists in the United States. At a recent race meeting in 'Frisco he "gave a consistent exhibition of driving such as has not been seen on the Coast except in the case of Barney Oldfield's visit last year, and asks little odds even at the hands of that intrepid driver. Fuller is practically new at the game, but he has all the coolness and skill of a veteran and takes his turns with a cleverness that is little short of marvellous. He has a peculiar style of nursing his wheel almost over his right shoulder, and his driving throughout is especially remarkable for its steadiness."

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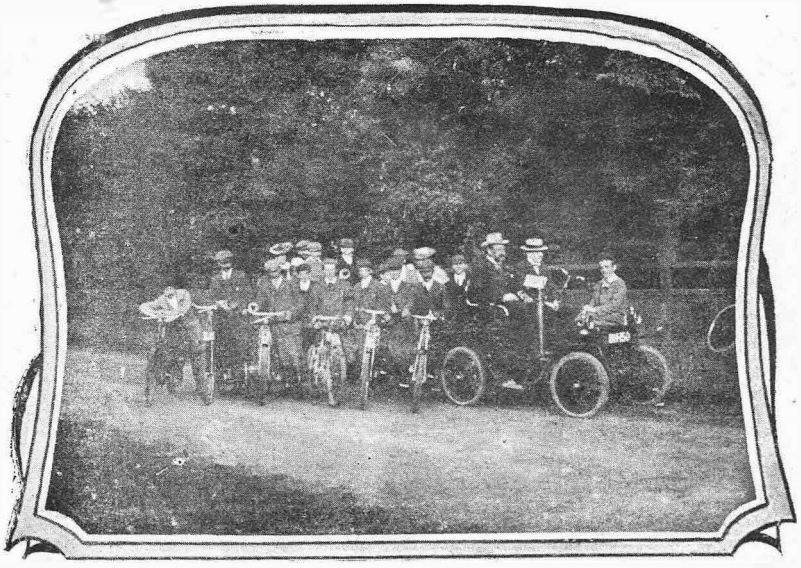
The experiment of pacing a trotting horse by means of a motorcar has been successfully tried in America on the Ormond-Daytona shell track.

### *The Birmingham Motorcycle Club.*

The recent run of the Birmingham Motorcycle Club from Streetly to Lichfield, via Shire Oak, and back, was one of the most successful and enjoyable yet held by the club. The distance of the course mentioned above is 20 miles, and it was decided to run this five times—making a 100 miles non-stop run, with one control stop of 15 minutes at Lichfield on the third round. The following members entered:—H. Downing (2¼ h.p. Allday), R. Simms (Allday), Goodwin (2¾ h.p. Allday), C. Garrard (5 h.p. Garrard), W. Walker (4 h.p. Garrard), R. Gould (2¾ h.p. Lloyd), C. Norton (2 h.p. Norton), G. Bull (2 h.p. Garrard), Wincle (3 h.p. Hamilton), F. Carpenter (2 h.p. J.A.P.), R. Tingey (3 h.p. Smith o' Saltley), E. H. Humphries (3 h.p. Smith o' Saltley). Of these Goodwin, R. Tingey, R. Gould, E. H. Humphries, Simms, and Garrard completed non-stop runs. C. Norton also did the distance without a stop, but he arrived in front of schedule time. As Messrs. Tingey and Goodwin both did non-stops, their tussle for first prize (for which, it will be remembered, they "dead-heated" on a previous occasion) still remains undecided.



**A group of members of the Aylesbury Motor Club. The photograph was taken on the occasion of the club's recent hill climb at Hamilton.**

## NEWS.

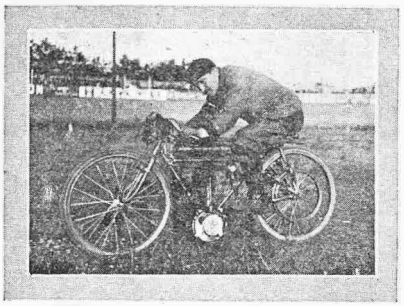
A clearance sale of new and second-hand cycles, motorcycles and cars is now being held by the Clyde Cycle and Motor Co., Ltd., London Road, Leicester. We advise our readers in search of bargains to write the company for their special list, obtainable free upon application.

A big road and track motorcycle meeting was held on Labour Day, at Buffalo (New York State), with the following results:—Fifteen miles road race, E. Arenz (4 mins. 15 secs. hcp.), 34 mins. 46 secs. Fifteen miles track race: E. Denniston (Auto-Bi), 25 mins. Five miles track race: G. H. Curtis (2¼ h.p. Hercules). Five miles exhibition race: G. H. Curtis (5 h.p. two-cyl. Hercules), 7 mins.

### *The German Emperor and Motor Exhibition.*

In the course of the German Emperor's recent conversation with Baron von Brandenstein, secretary-general of the German Motor Club, the monarch intimated his intention to exhibit the Royal motorcar at the forthcoming International Automobile Exhibition in Berlin. The Baron seized the opportunity to ask his Majesty whether he would open that exhibition, and the answer, although not of a definite character—the German Emperor is too busy a man to dispose of his time so far ahead as February—was couched in a favourable sense. His Majesty laid stress on the necessity of the Club keeping a watchful eye on the "encroachments" of motorism, whereupon the secretary-general gave the assurance that one of the principal tasks of the German Automobile Club was to support the authorities in their efforts to put down reckless moting.

The Kensington Motor Co., Ltd., will remove in the middle of next month to new premises which are being built for them in Avonmore Road, Kensington, W., about three minutes' walk from Olympia. There they will continue to turn out four and eight cylinder motors, specially suitable for launch work. Garage accommodation for about 100 cars is being built, and will be open day and night; while machinery for the manufacture of new parts will be installed



**Tessier, the well-known motorcycle racer, on his speedy Werner.**

### *Scorching No Offence.*

Laffan's telegraphic agency is responsible for the statement that Madame Nordica, the famous prima donna, recently travelled from New York to Ardsley by special motorcar to fulfil an engagement. Laffan gravely—not to say naively—adds that the distance, "which is 23 miles, mostly through busy streets, was covered in 35 minutes." 39.42 miles an hour through busy streets is quite tall enough, even for America. It is interesting to learn, on the same authority, that the police did not interfere with the driver. It is incidents such as this which serve to demonstrate the absolute impartiality of the Law!

A Mansfield motorist has been fined £5 and costs for driving to the public danger. The car came round a bend in the road and knocked over a mare which was being ridden. Defence sought to prove carelessness on the part of the rider of the mare in riding it with only a halter, and in being on the wrong side of the road; but the Bench found as above. Notice of appeal was given.

### *Coventry M.C. Consumption Tes'.*

The results of the petrol consumption trials recently held by the Coventry Motorcycle Club are as follow: Eleven competitors entered, two of whom drove tricars, the rest motor-bicycles. The tri-cars were allowed one quart of petrol and the bicycles one pint. Most of the competitors carried the spirit in a special round tin designed to hold just the exact quantity. This was in order to avoid having the last few drops cut off going up-hill, in consequence of the position of the supply pipe to the carburetter. The approximate distances covered were:—Tri-cars: E. Walford (Riley), 25¼ miles; B. Yates (Humber), 18¾ miles. Singles: H. W. Duret (Singer), 25 miles 220 yards; E. Harris (Singer), 25 miles 195 yards; S. Wright (Excelsior), 20⅜ miles; R. W. Ayton (Triumph), 20 miles 1,170 yards; C. J. Johnson (Triumph), 20 miles 1,140 yards; V. A. Holroyd (Excelsior), 20 miles 850 yards; A. Riley (Riley), 19¼ miles; J. Bright (Rover), 15½ miles; F. Cremonini (Excelsior), 15¼ miles. Duret's machine, geared to 1 to 7, was fitted with a free engine clutch, whilst Harris, who was mounted on a similar make of machine, had a fairly high gear, and a spray carburetter, but no free engine clutch. Both machines covered almost exactly the same distance, but Harris arrived about 37 minutes in front of Duret. Walford reached the 65th milestone from London on the road from Daventry to Weedon

**A SECTION OF THE PRETORIA AMATEUR MOTOR CLUB.**

**The above group was photographed last month; the men had taken part in a 40 mile road race, the winner's time being 1 hour 31 minutes. All the machines were fitted with Minerva engines.**

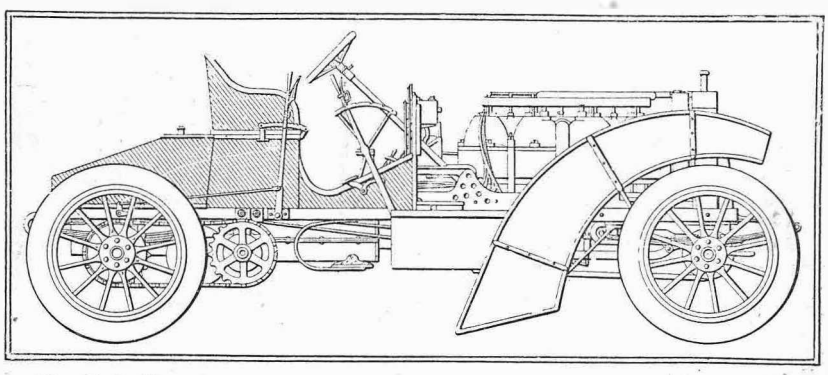
# NEWS.

The results of the "Consuma" hill-climbing competition, which took place at Florence on September 11th are: Big cars—1st, Lancia (Fiat), 13 mins. 20 secs.; 2nd, Teste (Panhard), 14 mins. 17 secs.; 3rd, Duray (Darracq), 15 mins. 22 secs.; 4th, Nazari (Mercedes), 15 mins. 24 secs. Light cars—1st Hemery (Darracq), 16 mins. 8 secs. Tourists' race—Cagno (Fiat).

The Riley Cycle Co. ask us to explain that the reason the Riley tri-car did not compete for the "Brown" trophy (which it was entered for) was owing to the difficulty in finding suitable English accessories to replace the French ones, which are a standard fitment. The machine was apparently satisfactory up till late on the Friday, when, without warning, the coil was suddenly put out of order. In every other respect the machine was in working condition, and, with another coil fitted, it was driven without delay to Coventry.

### *The Largest Car in the World.*

Rome boasts the largest and most powerful car yet constructed—in the shape of Messrs. Dobelli's 180 h.p. four-cylinder racer, of which we give here an illustration with the bonnet removed. The car has an armoured wood frame sprung on wide semi-elliptic springs and supported on solid steel axles, with artillery wheels 36 inches in diameter, shod with 4½ in. tyres. The motor is a cast-iron four-cylinder vertical, the cylinders being cast in pairs, and having bore and stroke of 8¾ in. Mechanically-operated exhaust and inlet valves (4½ in. diameter) are fitted. The motor is fed by a huge carburetter of the Longuemare pattern. Two systems of ignition—high tension magneto and high tension coil and battery—are fitted. Cooling is by forced water circulation. Transmission takes place through a cone clutch and a sliding gear, giving five speeds and reverse. The differential, being on a cross counter shaft, gives a double chain final drive. Double-acting brakes are fitted on the differential shaft and on the driving road wheels.



**The Dobelli 180 h.p. four-cylinder car: the largest racer in the world.**

### *The Vanderbilt Cup.*

Five Mercedes have been entered by the German Automobile Club for the Vanderbilt Cup, the owners being Mr. Gray Dinsmore, whose 90 h.p. car will be steered by Werner; Mr. George Arents, of New York, who will drive his own 60 h.p. car; Messrs. S. B. Stevens, C. R. Thomas, and Isidor Wormser, each to drive his own 60 h.p. car. Mr. Dinsmore has long been a member of the German Automobile Club, but the other American gentlemen appear to have joined with a view to representing the club in the race for the Vanderbilt Cup.

### *The Awful Motorcar.*

The "Manchester Evening News" recently published an article signed "X.Y.Z.," which contained the following indictment against the motorcar. We have passed it on to a captious critic on our staff for comment. Here follows the indictment:—

"All the ills to which roads are heir, almost, are promoted by the motorcars. Here follows a list of a few of them: (1) They frighten the life out of people by rushing by at tremendous speed. (2) They make the day hideous by the sound of their horns. (3) They raise clouds of choking dust. (4) They create a fearful noise. (5) They upset the nerves of people who feel that they are being overtaken by a whirlwind. (6) They drive off the roads all sickly and elderly people. (7) They compel parents to forbid children to go a blackberrying in the lanes. (8) They pollute the air with foul odours. (9) They inspire envy in the breasts of people who cannot travel at one-fourth the speed. (10) Their riders seem to think they have a monopoly of the centre of the highway, and they have not the time, even if they have the inclination, to murmur words of apology to people whose nerves they upset, and whose mouth, nose, eyes, and ears they fill with dust."

And herewith follow the comments of the captious critic:—

(1) We never heard of anyone being deprived of life by the mere passing of a motorcar, and on the theory of the survival of the "fit-ist" we should doubt its possibility.

(2) Remedy: import more German bands as antidotes.

(3) And by so doing call attention to the scandalously inadequate manner in which our roads are constructed and maintained.

(4) The Act provides that they shall duly acquaint the public of the fact that they are there. If the public will *not* keep its eyes open, it must be approached through the ears.

(5) The nerves of a person who mistakes a motorcar for a whirlwind require gentle exercise of some sort: the next stage in the disease is little blue devils.

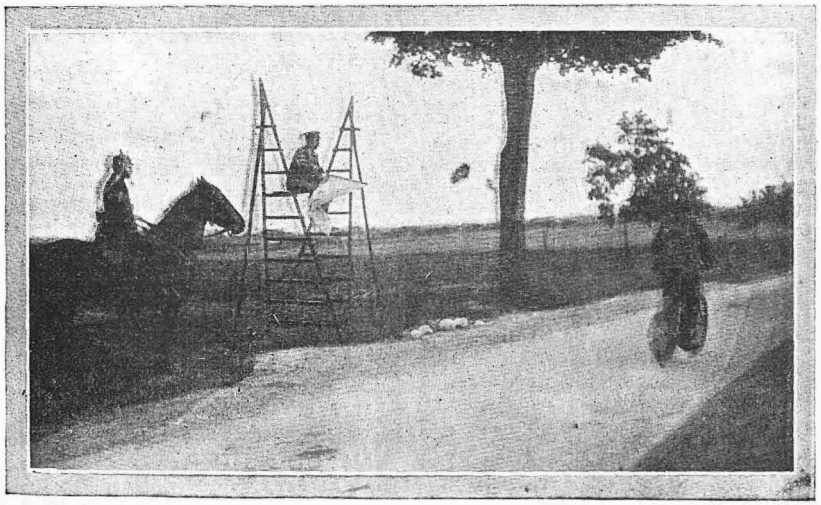
(6) There is an entire canton in Switzerland, open to invalids and centipedes, where the motorcar is totally prohibited. For inclusive fares apply to Thos. Cook and Son.

(7) Another instance of the beneficial effect of the motorcar. It is a well-known fact that many children in the pursuit of the blackberry consume poisonous berries and die suddenly—to say nothing of stained pinafores and torn stockings. Thus it is that the motor movement increases domestic felicity.

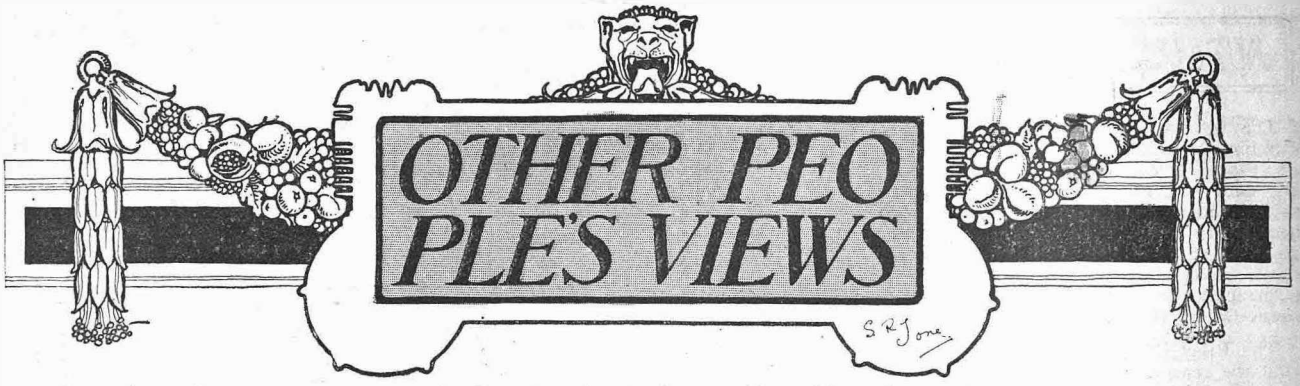
(8) A mere matter of taste: petrol for a grown man; patchouli for an old woman.

(9) This is the root of the whole matter. "I hate your beastly car because it goes faster than my dogcart or my bicycle."

(10) Of what use is an apology to one whose eyes and ears are full of dust! He can neither see the apologetic attitude nor hear the words of propitiation. Besides, why apologise at all? By taking the centre the motorist leaves the two sides for the non-motorist. "In medio tutissimus ibis." "Keep in de middle ob de road."



**A motorcycle race in Germany. A recent snap.**




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

### *A Motor Paradox.*

Sir,—With reference to the letter from "Minerva," who wonders why he gets more speed out of his motor when he only slightly lifts the exhaust, it is pretty obvious to me that the exhaust valve is not lifted high enough under ordinary circumstances. Probably the cam that lifts it or the exhaust valve stem is worn. If he remedies this I think he will find he will always get the 28 m.p.h. instead of 20 m.p.h. under the same conditions, as there is no doubt if the valve is not lifted sufficiently you get less power.—Yours faithfully, V.F.G.

### *Gudgeon Pin Set Screw Dangers.*

Sir,—I entirely agree with "Magneto" in a recent issue of "THE MOTOR" as to the danger of the gudgeon pin set-screw. A short time ago I was riding my 3½ h.p. Kerry machine, when the set-screw came out, chipped about half the piston away, from the bottom upwards, then got jammed in the slot through which the oil gets to cylinder, bending the connecting-rod about quarter of an inch, and bringing the motor to a dead stop when going about 20 m.p.h. If the belt had not slipped, I should have had a serious accident. It would be a great boon if some other method for holding the gudgeon pin could be devised.—Yours faithfully,

A. B. WHITE.

### *Setting of Timing Gear Wheels.*

Sir,—We have recently had a small experience which may be useful to others in the trade. We had occasion to take to pieces a car engine of well-known and very excellent French make, and among other things to take down the two-to-one gear. It is usual in engineering practice to mark gear wheels that have to be kept in step with marks, so that when the wheels are put together with the marks adjacent the wheels are meshed right. We noticed that there were such marks on the wheels, and therefore took no measures to mark them ourselves, but put them together according to marks, and found the engine would not run satisfactorily. Before taking engine to pieces, we had had the curiosity to find out how the valves and ignition were set, and we found that in order to set them the same, the wheels had not been put together to the marks, which were therefore misleading. On being set as before the engine ran all right. The moral is, when taking an engine to pieces, either put your own marks on the wheels, or see that those that are there are right. Neglect of this precaution is liable to cause much worry and delay.—Yours faithfully,

STRICKLAND AND CO.

### *A Police Trap.*

Sir,—May I warn your readers of a police trap at Cowfold, on the Horsham to Brighton road, at which I was caught on a recent occasion? The police cannot be seen, and move the trap, which is in operation every day, to different parts of the road.—Yours faithfully, W. P.

### *The Gudgeon Set Screw.*

Sir,—In reply to G. Varney, of Stratford, re gudgeon pin screw, we do not know as yet any maker who fits up engines without screws, for fear of pin working endwise (and it will do it as we have seen it), but if he will send his piston to any first-class motor repairer, and have it recessed, and a piston ring fitted, his trouble will end. We have done several this way, and it acts admirably.—Yours faithfully, STUBBS AND ROGERSON.

Winsford, Cheshire.

### *Difficulty with Duplex Steering Side-car.*

Sir,—I should be much obliged to any reader having had experience with duplex steering side-car who would help me re the setting of the steering. I have tried all means of adjusting, but always find the car wheel skids and scrapes on the road when attempting to turn: it is practically impossible to swing the car right round on an ordinary road; I have to turn half-way, and then back again to get round. There must be something wrong, as it simply tears off the ribbed tread of the Clincher tyre (I enclose you a small specimen). I received the car from the manufacturers last Easter, but owing to this difficulty in steering have only taken it about 30 miles or so. A friend of mine has just fitted a fixed wheel side-car which steers beautifully. The car fits the machine all right, and the wheels are lined up true. It appears to me that moving the front wheel gives the side wheel too great a range in both directions.—Yours faithfully, H. R. HAIGH.



### *Freemasonry of the Wheel.*

Sir,—On a recent Saturday evening I was returning from Colchester, and when about nine miles from Chelmsford on a very deserted piece of road, I had the misfortune to have the timing gear of my motor go wrong. Whilst endeavouring to locate the fault a fellow motorcyclist went by, but seeing me "hors de combat" very kindly came back to render assistance and eventually towed me into Chelmsford. I consider that instances of this kind, showing as they do the real freemasonry of the wheel, should not go unrecorded, and I should like to publicly thank the gentleman (who I believe was an officer from the Woolwich Garrison) for his kindness on this occasion.—Yours faithfully, P. R. CARTER.

### *Pedals or no Pedals?*

Sir,—In reply to "Q. Rios," the problem seems to work out thus:—Suppose the rider to be 10 stone, the pedal gear to be 60 in., with 6 in. cranks, and to be going up a hill of 1 in 12. Now let the rider stand on the pedal at its highest point, and go down with it. Two motions occur, viz.: (1) That due to revolution of pedal; (2) that due to movement of bicycle up hill. The first of these causes positive work, and the second negative. The amount of work due to the first is $\frac{10\times14\times6\times2}{12}$ ft. lb. = 140 ft. lb. Considering the second motion, the distance travelled along the road is $\frac{60}{2}\times\frac{22}{7}$ inches, and, therefore, the vertical distance risen is $\frac{660}{7\times12}-\frac{55}{7}=8$ inches nearly, and, therefore, the work done is $\frac{8}{12}\times10\times14$ ft. lb.: therefore, total amount of external work done is $\frac{12-8}{12}=8\times140$ ft. lb. = 46⅔ ft. lb. Then taking into consideration such factors as friction, and the fact that the rider would not exert the full force of his weight for quite a considerable portion of the circuit on either side of the two dead points, and that his weight would not remain quite 10 stone owing to his descent, it seems that very little, if any, of the 46⅔ lb of external work would be left, so that the effect, as far as the engine is concerned, of standing on the pedals as much as possible, would be practically equivalent to dismounting, and letting the engine take the cycle up alone.—Yours faithfully, D.N.P.

# O.P.U.

### Concerning Hills.

Sir,—I read with interest the Frome's Hill climb of the light cars in "The Motor." I think your readers, in common with myself, would like to know how it compares with, say, the Hog's Back, Reigate Hill, Bury Hill, and that nasty, long, steep, and crooked hill on the way between Petworth and Bognor (I do not know its name) as regards length, steepness, and crookedness.—Yours faithfully,

B.K.T.

### The Cremorne Paraffin Carburetter.

Sir,—In reply to "M.C.J.," I have been using a Cremorne carburetter for the last few months with entire satisfaction. There is not the least chance of the valve sticking through dust, nor is there any probability of leakage. I do not as a rule use paraffin with it, owing to petrol being more cleanly to handle, although I have used it for several hundred miles with good results. I find the carburetter absolutely automatic, requiring no alteration of mixture from throttle full open to only just open; and even if any alteration were required, it only means turning the adjusting screw the slightest amount. Although it may not seem credible, I am able to run on paraffin without heating up the carburetter at all, so perfect is the atomisation, although, of course, I have got a heating pipe rigged up. Trusting I have given "M.C.J." all the information he requires, and that he will have as satisfactory results as I have had.—Yours faithfully,

S. W. HUMPHREY.

### Good Work with a 2 h.p. Engine.

Sir,—I notice in your reply to Mr. J. Yule, in a recent issue, you state that a 2¼ h.p. engine is of no use for fore-car work on even the most moderate hills. My experience is rather different to that. Last season I did nearly 8,000 miles on a motorcycle fitted with a 2¼ h.p. Kerry engine, and a great proportion of the distance was done with a fore car. I found it would take most of the hills easily with a passenger up (and this is not a level country). It was quite a feature in our club runs, sometimes with two passengers in front, and even then towing two, and sometimes three, on the level. If the engine is kept properly tuned up and also properly handled, I consider there is just as much pleasure to be got from a moderate power as from the high powers now being pushed by the trade.—Yours faithfully,

FRED. B. BURLEY.

[We think our correspondent's experience with the 2¼ h.p. Kerry engine is unique, and it must be a remarkably good engine indeed to perform the work mentioned. It would be interesting to know the length and steepness of gradients it would take with passenger unaided, also the gear of machine and net weight of rider and passenger and machine.—ED.]

### The Barter Engine.

Sir,—I have a motorcycle fitted with a "Barter" engine, and having broken two gear wheels should be glad if any reader could give me the present address of the makers of this engine.—Yours faithfully,

F. ASHLEY.

### The Side-Car.

Sir,—In reply to "A.E.99," I have had six months' riding with a side-car fixed with compensating joints to a 3 h.p. Rex machine, and can speak very highly of it. Advantages: ordinary cycle steering, easy to keep up conversation with passenger, engine kept cooler, no side strain or extra wear on tyres noticeable. The car is a comfortable and safe seat for lady, and I find that cycle rides much steadier with car on than as a cycle alone. Attachment to cycle takes three minutes, detachment two minutes only. Only disadvantages I have discovered are extra width of road required, and great wind resistance offered on a very windy day.—Yours faithfully,

A.J.73.

### The Motor Manufacturing Co's. Engine.

Sir,—In your issue, Sept. 13, we note a letter from a Mr. G. Varney, of Stratford, Essex, relating to gudgeon pin screw troubles in what he states is an M.M.C. engine. We have never had any dealings with Mr. Varney personally, and we think it is hard on us that so damaging an assertion should have been made without our having knowledge of the case. We may say that we have found, time and again, that engines represented to be M.M.C., *are not of our make at all*, and also very frequently that the gudgeon screws have been tampered with, and the wire ring which secures them has not been replaced. If Mr. Varney could tell us the number of his engine, and that of his friend's, we might be able to give him some information about both.—Yours faithfully.

THE MOTOR MFG. CO.

Coventry.

**"I heard Flitby using some weird gibberish today. Do you think the late weather has affected his mind?"**

**"Oh dear, no! He is strongly of opinion, now that moting has become so universal, that it's his duty to master Volapuk."**

### The Fafnir Engine.—A Reason for Loss of Power.

Sir,—May I summarise my experience with my 5 h.p. Fafnir engine for the benefit of others? I have been troubled with loss of power since first I had the engine. Valves all right; grand compression and no misfiring. The engine overheated, and consequently knocked considerably; I could not get enough air into the carburetter (spray). I fitted an extra air sleeve, but still could not upset the mixture with it. It slowed down on any average hill. I returned the carburetter to the makers and had a new one, thinking naturally the feed was too strong; but no better results with a new one. I eventually took off the silencer and tried the motor on a hill nearly equal to Westerham, and it fairly raced it without any signs of slowing, and was exceptionally cool at the finish. The carburetter could not have worked better. So that throttling in the silencer accounted for everything. There were 40 ⅛-in. holes on inside tube of silencer, giving an area of .48 in. I doubled area by drilling another 40. The extra noise is hardly appreciable, and the extra power!—I can hardly believe it to be the same engine. I believe the silencer was the standard one supplied for 3 h.p. Fafnirs. I may remark that I always admired the work and finish on engine, and I now equally admire its power and capabilities.—Yours faithfully,

"Y217."

### Two h.p. Engine Experiences.

Sir,—I quite agree with your correspondent, C. Ball, as to the advantage of the large diameter outside fly-wheel for cycle motors. Like "A.2144" I also use a Clement 60 by 70 mm. engine, and carburetter, without the two-speed gear, whole scaling about 85 lb. I find it a far better hill climber than a machine I had with a 2 h.p. M.I.V. engine of well-known make, as it takes me easily up 1 in 12 at an *average* pace of 10-12 m.p.h., without any pedalling whatever, speed gradually slackening, of course, towards summit. As he says, the carburetter requires understanding, but it is, in my opinion, really the simplest and most efficient I have ever met with, whether on cycle or car. I took mine to pieces, fitted it so that it just shut "dead," then filed edge into small "saw-teeth," so that when shut off hard a mere whiff passed through. With engine well warmed up, pace up to 14 or 15 m.p.h., throttle gradually closed, air levers slowly opened, and spark advanced to correspond, the engine will simply "roar" and tear along as if possessed. It is all a question of air lever regulation. The machine can be driven almost entirely on it instead of throttle if desired. I can get 25 to 30 m.p.h. this way with throttle closed. For hill-climbing and starting cold, air must be reduced. It can be run as stated, with both throttle and air inlet wide open, but it seems wasteful to do so, as engine soon gets uncontrollably "fierce," unless spark is retarded, which is not desirable. I am able to cover 40 miles of cross-country roads on mine on a quart of Pratt's "B" spirit.—Yours faithfully,

B.Y 103.

## O.P.U.

### The Lithanode Accumulator.

Sir,—With reference to R. Ford's (Dunton Green) enquiry re 8 ampere-hour Lithanode accumulators in your issue of August 23rd, 1904, there must be something radically wrong with his coil; as I have two of these accumulators, purchased in March last, which are doing magnificently, and are proof that the makers do not, as you state, over-rate their capacity at 700 miles. I may say I run my accumulators for a month each, and at the end of the month I recharge, independent of their state, so as to keep them in good order. My monthly runs have been as follow:—537, 677, 751, 896, 628, and in no case has either accumulator given out, so that I am unable to state the full capacity, but it is certainly over 900 miles. My coil is a De Dion, and they must be very economical in running, and the contact is a trembling one. I may also mention that I have now completed 6,000 miles running on my motor without experiencing a puncture, which strikes me as remarkable, 2,000 miles being run on Clincher tyres and 4,000 miles on Palmer tyres.—Yours faithfully,

G. BATESON LYLE, Major R.A.

### 1,000 miles Reliability Hill-climbing A.C.C. Trials.

Sir,—I read with interest your splendid report of the 1,000 miles motorcycle reliability trials. With regard to Thursday's run, I quite expected that the portion from Helmsley to Thirsk would have been via Scawton and Sutton Bank, as a hill test. I rode these hills both ways on August 1st, on a 2¼ h.p. Ormonde motorcycle. Sutton Bank rises about 600ft. in 1,400yds., average gradient 1 in 7 to 1 in 8. This is the worst hill I have ever ridden up, and think it is one of the worst in the country for a main road. I shall be glad to hear if any other motorcyclist has ever ridden up it and their opinion, also if anyone has motorcycled up a worse hill. If so, where? I have ridden all the other hills you comment on, viz., Whitwell Hill, near Malton, both hills out of Scarborough, and all on the road between Helmsley and York, via Oswaldkirk, both up and down, and the worst of these only averages 1 in 11½ for about 850yds., which is nothing compared with the one mentioned above. Hoping this may be of interest, and that the A.C.C. will arrange a hill climb up Sutton Bank next year. Such a test would, in my opinion, show conclusively the hill climbing merits of the machines.—Yours faithfully, E. J. TIFFIN.

Sunderland.

### Converting Trailer to Fore-car.

Sir,—In a recent issue (Bureau), I notice that a correspondent, J. Yule, mentions in brief that he is converting a trailer into a fore-carriage. I am sure many readers beside myself would be interested to hear how this conversion was made.—Yours faithfully, W. C. ALLEN.

### Silencing.

Sir,—Cannot some effort be made towards more efficient silencing? I consider that many people's only objection to motorcycles is the noise of the engine. Some firms advertise that their silencers will make a motor as silent as a "pedal-cycle," but, alas! the promise is unfulfilled. To a man who uses a motorcycle constantly, speed is not everything. A light, handy, reliable, but, above all, a quiet cycle is what is needed.—Yours faithfully, H.E.S. (Hants).

### De Dion Gear Troubles.

Sir,—I should be greatly indebted to any reader who could advise me on the following:—I have an 8 h.p. De Dion car, two speeds and reverse, with expanding fibre covered clutches. When car is running a jarring sound like that of a tight bearing is heard, the slower the car goes the worse it is. When driving wheels are jacked up and change speed handle in "free" position, the engine when started drives the driving wheels strongly at high speed, as if the clutch had been put in. Any contraction of clutches by regulating screw renders them ineffective for practical use on the road. In order to prevent them driving when in "free" position as described, they have to be contracted to their utmost. The low speed clutch is quite effective for hill-climbing, but the high speed one slips badly. All axles run true, any worn bushes being made good. I have had four new screw spindles for expanding segments, and new clutch fibres turned true in lathe after being fitted. Everything seems in perfect order and works freely, but excessive wear of the gear is taking place through both clutches driving at the same time; the gear box after a ten miles run is quite hot. I have had one of the lever arms in connection with the change speed handle made shorter, so that the same amount of movement of handle causes about three times the amount of former movement in the clutches. Sometimes the noise is absent, but during the last two runs it has been very bad indeed. Is there any special kind of fibre for these clutches? I have hard vulcanised fibre on them now, but it seems to heat and swell with use. I have had at various times a good deal of trouble with these clutches slipping, in fact that is the only trouble I have had with the car.—Yours faithfully, A.H.R.

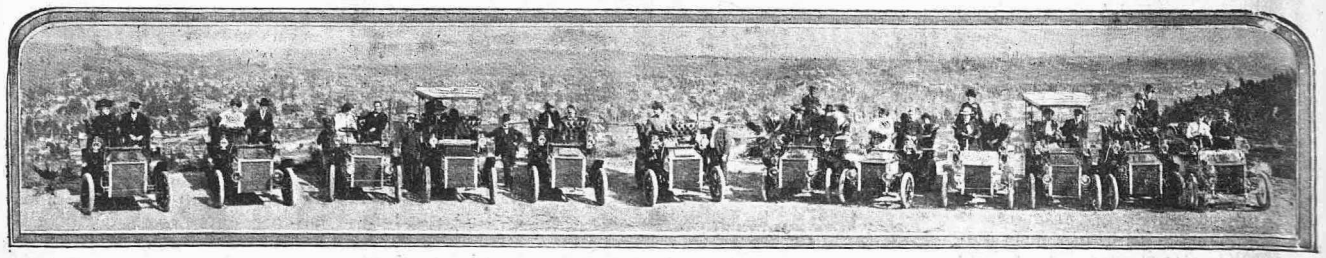
### Starting the Humber Cycle.

Sir,—Seeing one or two letters in "THE MOTOR" respecting the difficulty in starting the 2¾ h.p. Humber motor-bicycle with free engine, after coasting down hill, I should like to give the writers a hint which I think would enable them to re-start the engine easily. Just before reaching the bottom of the hill, raise the exhaust valve, and at the same time gently slip in the clutch and let it run for a second or two, then let down the valve and the engine will pick up at once. This is the plan I adopt, and I think your readers will find it successful.—Yours faithfully, GERARD J. LLOYD.

### Simple Carburetters.

Sir,—I have read with interest Mr. H. G. Bell's letter in your issue No. 131 on the subject of "An Automatic Carburetter." The carburetter described is identical in principle with one I have fitted to my car. What I cannot, for the life of me, understand is why every small car and bicycle is not fitted with such a design of carburetter. One sees letters every week on the subject of "carburetter difficulties." I have driven my car now for some thousands of miles and never once had the slightest trouble with my carburation. Only once have I had the carburetter to pieces to "see how it worked," and since then I know that no trouble can come from that direction. One can understand scientific and ingenious arrangements being fitted to expensive cars which are to be driven by experts; but as nine out of ten cars are driven by amateurs—myself among them—it is difficult to understand why such a simple contrivance is not more in evidence. Of its efficiency there is no question. The average petrol consumption for my car works out at about 45 miles to the gallon, and on the top gear a variation of speed from 8 to 25 miles per hour can be obtained. Much more cannot be expected of a cheap carburetter. I am not acquainted with the working of any other type of carburetter, but from the troubles I read of, and from the complicated designs I see, I cannot think that any arrangement could beat the one described by Mr. Bell; certainly in the following points, which after all are the main points from an amateur's point of view: Reliability, efficiency, cheapness, for being fool-proof, and for the small amount of attention required. What 99 per cent. of motorists want is a simple machine that they can rely on to work well under their own management, not a scientifically perfect machine that would work a little better in the hands of an expert, and give no end of trouble. Trusting to hear further opinions.—Yours faithfully, "AN AMATEUR."

Madras.



**Members of the "Silver Slipper" Theatrical Co., in a detachment of White Steam touring-cars just outside City of Los Angeles, California.**

## O.P.U.

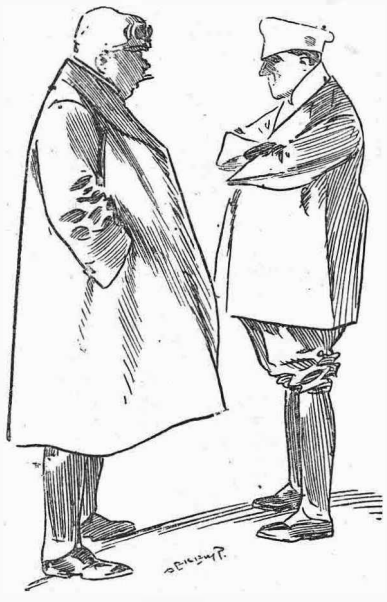
### *The Light Car Trials and Bowden Mechanism.*

Sir,—In the report of the judges occurs the following paragraph: — "Bowden wires are used in a few cases for throttle and spark connections, and proved unsuitable." This specific mention, derogatory as it is, calls for explanation. If the judges had said they proved unsuitable because they were improperly fitted I could have understood it; but when it is known that the Bowden wire mechanism is universally used with pronounced success in numerous mechanical operations, it is late in the day to condemn it without qualification. One might think that the fact that over a million bicycle brakes operated by Bowden wire mechanism have been made and sold is some evidence of its suitability for such operations; but if further proof is required its common use on motorcycles, the shutters of photographic cameras (demanding the most delicate movement), organ valves, and many similar operations may be cited. As for its suitability for motorcar work, I may say that it is largely used in France, and its use is increasing. In Germany, after a year's testing, about a dozen firms have adopted it, two of them using it for brake work as well as for the lighter operations; while the German War Office have adopted it for light and heavy vehicles. For such purposes as the last-mentioned, we have recently been called upon to produce a combined wire capable of braking ten-ton vehicles, its function being a flexible connection between driver and trailer. Schiemann, of Dresden, inventor of the one-track train of road vehicles, is licensed, and is using the Bowden mechanism freely on his vehicles. It is regrettable to have to say that in the adoption of this, as in many other things, I have found my own country the most conservative. In seeking for an explanation, I have concluded that it is chiefly because up till now British manufacturers have been engaged in making up lost time on the essentials of motorcar construction, and have, therefore, paid little consideration as yet to economies and refinements. The Continental firms have passed the one stage and reached the other. It was not so with the British bicycle trade; they had reached comparative perfection, and so readily embraced the Bowden mechanism. I may add that my firm was not aware of the Bowden wire mechanism being used by any of the competitors in the Light Car Trials, or that it would be subjected to the criticism of the judges; otherwise care would have been taken to see that it was properly fitted, for our experience is that there is a lamentable lack of knowledge of the functions of the mechanism in engineering circles. Had the judges added to their criticism the simple words "as fitted," this somewhat lengthy letter need not have been penned. My firm will at any time be pleased to place a car at the disposal of the judges or any manufacturer to demonstrate the suitability of the Bowden mechanism for the purposes indicated.

—Yours faithfully, JAMES R. NISBET
(Chairman, E. M. Bowden's Patents Synd., Ltd.).

### *Handlebar Control for Motorcycles.*

Sir,—I have read the interesting article by "B.H.D." on the above subject, and as a rider of motorcycles for many years I beg to offer my opinion. I well remember some years back when riding a De Dion tricycle meeting a van with two horses, and the driver fast asleep. The van was some distance away, but I could see at once that the horses were frightened. I slowed up and blew my horn, but this only frightened the horses more. The road was narrow, with a nasty ditch on the near side of the two horses, and we gradually got closer together. Suddenly the driver awoke, and as he had not handlebar control, the reins at the time being hooked to the top of the van, he evidently pulled the wrong lever, for one horse rolled on his back in the ditch, and the other one stood across



**THE ENGLISH BREED.**

**"It was the nearest thing in my life! Stripes dashed at me, but by a lucky—"**
**"Stripes! I didn't know you had been in India! Did the tiger catch you?"**
**"Tiger! I'm talking about the sergeant who tried to nab me yesterday."**

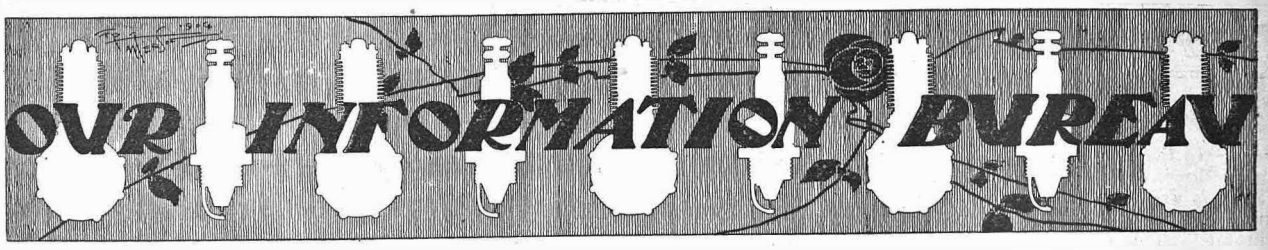
him; two of the shafts were broken, and there was much cutting of harness and many "cutting" remarks before things were put right again. We had no numbers or licenses in those days, or no doubt the latter would have been endorsed, although, as a matter of fact, I was just as frightened as the horses, and would willingly have jumped the opposite hedge long before I reached them if I could have done it. Now I consider that a man on a motorcycle without handlebar control is exactly like the driver, who had not got the reins in his hand. We, on motorcycles, want the reins in our hand. Without them, a sudden emergency, a frantic grab for levers, and we are kicking on our backs in the ditch, or lucky if we are kicking at all. The motorcycle requires controlling like a horse. The reins in driving are equivalent to our handlebar control, they are not only used for steering, but a horse knows at once what is required of him by the bit in his mouth, and a good driver has perfect control of his horse with the reins in one hand and the whip, which acts as the spark advance, in the other. I would suggest the following essentials for handlebar control:—Switch, exhaust valve lift, two brakes, throttle, air, spark advance. For the switch, nothing is simpler than the old De Dion twist handle. Exhaust lift, Bowden lever; brakes, Bowdens. These are all operated by the fingers, and can be fitted to either handlebar as is most convenient. We still have the thumbs free, and they are eminently suited to work the other three levers. I know someone will say, "we haven't got three thumbs," but still we don't require to do seven things at once, although it is possible to do six; I do know a man who has three thumbs, and no doubt he could manage the lot, but unfortunately he doesn't mote. The throttle, air and spark advance move very easily, or should do so, and it does not require a powerful lever to work them. The Bowden cable, as everyone knows, is quite capable of pulling them forward, but it is not generally known that this cable will push them back without the help of a spring. As the inner wire consists of a bundle of firm, stiff twisted wire, it will easily be seen that it is quite stiff enough to accomplish this, and the great advantage is using no spring, as there is no tendency for the tap to creep back of its own accord, and there is sufficient resistance between the inner and outer wires to lock it completely where it is placed. All then that is necessary is to have a suitable apparatus on the handlebar to move the inner wire.—Yours faithfully,

GEORGE ROBERTS.

### *Hill-climbing Tests.*

Sir,—I was much interested in reading the letter of "One in Five" in a recent issue. I quite agree with him that very few people know when they are riding up a 1 in 5 grade, and that the gradients of 1 in 5, etc., which correspondents say they have ridden up in a motor of such and such a power, and with so many pounds load, are judged either by the eye or, perhaps, by means of a yard measure. Now, even the latter method is very unreliable, as anyone knows who has used a level for measuring gradients. If any readers of "THE MOTOR" wish to measure a gradient, they can construct a level at a cost of about 1s., and I shall be happy to describe its simple construction and use to any fellow-reader. As "One in Five" writes from S. Africa, it would take too long to get an answer from him; so perhaps there is some other reader who could clear up a point in the letter referred to, where the writer says that "Professor Callender has demonstrated that about 1 h.p. would be required to overcome road and other resistances, and about 30 per cent. has to be added to the whole for transmission losses." I think that the "road and other resistances" must vary with the speed of the motor (by a coefficient), and that 1 h.p. was the power absorbed in these resistances at some particular speed. The transmission losses mentioned (viz., 30 per cent.) are higher than, for instance, belt-driven machine tools. Of course, the drive in their case is longer, and the belts are not worked so tight, but I think that 30 per cent. is not absorbed in transmission on the average motorcycle. Where could the particulars of Professor Callender's (or any similar experiments) be obtained?—Yours faithfully,

MERSEY.




### 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.*

M.F. (London) wishes to know present address of makers of the Pieper engine.

"E. 123."—If you intend having the machine out of use for a long period, you could remove the acid from the cells, wash the plates, and fill up cells with water.

P. Lapthorn (Hereford).—Best to go via Hereford, Ross, Gloucester, Stroud, Bristol, Taunton, and Exeter. Get a good map such as our England and Wales map.

"Bachelor."—It depends on what speed you wish to go up the 1 in 5 grade. To go up at eight miles an hour you would require a full 4 h.p. and a gear of about 1 to 8. Of course, the weight of the passenger has to be considered.

J. T. Harrison (Newark).—(1) The oil is much too thin for an air-cooled motor. It would do very well for a car engine water-cooled. Get some Motorine or Motorol. You cannot be too careful about using only a first-class oil; otherwise you will have trouble. (2) It is the general rule to give a charge every 15 miles irrespective of speed.

#### *Spark at Contacts.*

P.D. (Lochwinnoch) writes:—I have bought a Peugeot car, fitted with make and break. I am sometimes troubled with misfiring. I have the accumulator fully charged (4.2 volts). I notice there is a good bright spark at the contact breaker; I think if it was inside the cylinder there would be little or no misfiring. I have read somewhere that the spark at the contact should not be too strong: perhaps the wires are not right?—Diagrams of wiring have been given in many recent issues. A strong spark at the make and break shows that the coil is not a particularly good one. You could reduce it by inserting a small amount of resistance wire in the circuit to reduce the current. It cannot be got rid of entirely.

E. J. Wheeler (Woodford Bridge).—Write Secretary, Motor Union, 16, Down Street, Piccadilly, London, W.

A. Bales (Canterbury).—For details of the type of agricultural motor you specify write Mr. D. Albone, Biggleswade, Beds.

C. H. Boatley (Sleaford).—The engine you have is such an inferior type that you are bound to have trouble with it. It is clear that the inlet valve does not shut properly, and also that the piston rings are defective and let the oil past. Of course, you may be using an excess of oil.

"Alpha" (Westminster).—You had better have the piston rings seen to: the engine overheats and pre-ignition occurs. This is the cause of the sudden braking effect on the machine that you notice. We do not think there is much amiss with the Longuemare carburetter you have.

#### *Clanking Noise in Engine.*

F.G.C. (Harpenden) writes:—I have a new 3½ h.p. Minerva engine. I get considerable clanking (not knocking) on hills, even when by no means overheated. The trouble begins very soon, and retarding the ignition will only effect a cure for a few yards. At last it will clank, with the spark occurring very late—e.g., one-third of the way down the firing stroke. Often after this occurs I have felt the engine, and it is barely warm; in fact, it keeps very cool always, as I drive on the weakest mixture I can get, and can average 90 to 100 miles per gallon of petrol, so it is not likely to be overheated. Do you think this is due to loose connecting rod bearings? Copious lubrication makes no difference.—It is not improbable, from your description, that there is something loose inside the engine. It could not be a worn bearing, and we are inclined to think the crank pin has become loose. If not this, have a look at the valve cams. Of course, the valve gear, under ordinary circumstances, sets up a very considerable noise through the valves striking their seatings, and on a quiet road this is apt to sound abnormal, and as if something was wrong; but we assume in this instance that the noise indicates something being at fault.



V.F.C. (Nottingham).—The Bowden Co. have a new band brake which is very effective. We do not say you could fit this yourself, however. Any good local cycle agent would do it.

B.L. 469.—The idea you describe is a very old one. Numerous devices for effecting it have been illustrated and described in our pages. The demand for such a fitting would not, in our opinion, pay you to develop it.

K. Ross (Manchester).—(1) Yes, you are geared rather too high at 1 to 4½. Have this altered to 1 to 5½, and it should take the long hills without help. The makers have evidently geared it up for speed. (2) Castor oil is about the best dressing. (3) The idea of injecting paraffin into the cylinder at starting is merely to ease the piston from the thick lubricating oil and reduce the friction.

"Novice."—(1) A Phœnix would be as near as possible the machine to your specification. This we advise in preference to the other make as it may be impossible to obtain any parts in the near future. The figure you specify would more than cover the petrol consumption per mile, but the inclusive cost per mile, allowing for depreciation, would not exceed ¾d. If you have the tyres you specify, and look after them, you would easily get 6,000 miles out of them, as the tread is so thick. (2) Yes, if you can obtain some practical instruction from a really competent man (there are many bogus "experts" about), so much the better. You can learn all about the principles of construction and management from our "Manual."

#### *Sudden Increase of Speed.*

G. Freame (Lewisham) writes:—My 2¾ h.p. Kerry machine, which has hitherto run very well, has suddenly developed a nasty trick. With gas and spark about normal, I can only get about eight miles per hour, and that in a very spasmodic, jerky way. If I advance the spark and open the throttle the engine jumps furiously, and then gradually develops about 40 m.p.h. This latter speed is too quick for me! Electrical arrangements are all right; valves in good order; compression splendid: belt is quite right.—This peculiar behaviour of the machine suggests that the carburetter is not working well. The sparking cannot be amiss or it would evidently not fire the charges at high speed. What we think is most probable is that the carburetter floods slightly, and an imperfect mixture results at low speeds, and the charges misfire now and again. With more gas given, the engine picks up speed, and more air is drawn in through the carburetter, and the quality of the mixture improves with the speed. We presume you have inspected the throttle valve itself to see that it has not in some way got deranged and jerks open. Grinding in the needle valve of the carburetter will stop the flooding.

# BUREAU.

A.C.C. (London, W.)—You can get over the difficulty of the leather accumulator cases rotting from the effects of acid spilling inside by obtaining from Peto and Radford's, or Gamage's, a tin-lined leather case to suit your cells. The cells themselves, however, should not leak if they are well constructed and not cracked in any part.

"Carbo" (Leicester) writes:—I have an aluminium carburetter on my motor-bicycle, which, owing to an accident, has cracked at the side of the float chamber. I wish to know if I can solder this crack up satisfactorily to stop the leakage.—Aluminium is an exceedingly awkward metal to solder: we believe the Birmingham Aluminium Castings Co., Cambridge Street, Birmingham, supply soldering material that would effect a repair. Personally, in a similar case, we should try and seal up the crack with some white lead both from the inside and outside; it should be successful.

T. F. Gaskell (Liverpool).—The only explanation of the blow back that we can suggest is that the inlet valve is not working well: the valve stem is most likely a very loose fit in the guide through wear, and does not close up on its seating as it should. The remedy would be a new valve rather than fitting a stronger spring. The carburetter you have is a very simple one, but not necessarily inefficient. We rather suspect that the float valve wants some attention, as at present you get too strong a mixture owing to flooding. If your car is an old pattern, you may have some difficulty in getting spare parts: you might enquire of Clement-Talbot, Ltd., 97, Long Acre, London, W.C., as to the best thing to do.

### *Erratic Running.*

R.J. (Ilford) writes:—I have been experiencing some trouble with my 3 h.p. Fafnir engine lately. When I start off the motor goes fairly well for a few miles, and then starts to misfire, and gradually slows down almost to a dead stop, and then, without touching the levers, etc., starts off and goes for 50 yards or so, and repeats the performance; but if I come to a down-hill—a steep one—it gradually picks up, and runs down splendidly, developing its full power, and after that continues going well on the level until I stop. But if I dismount and start off again it repeats the same as at first.—This would appear to be the result of erratic working of the carburetter: doubtless it floods occasionally and upsets the mixture. The carburetter is the most likely detail to be at fault, and we should advise you to examine it and see that the float and needle valve act all right. Inefficient lubrication might also have something to do with the matter.

"L.202" (Ogmore Vale).—We do not think you can improve on a dressing of castor oil occasionally on the canvas belt you have. It is very effective on the Dick's Balata belt.

"Constant Reader" (London).—You had better take the cylinder off the engine and have a look at the rings. There must be some escape past them. The reasons for overheating have been given scores of times: look up your back issues for similar instances.

"N.117" (Stretford).—(1) If you exceed 3½ h.p. (single cylinder) you would be safer to go in for a water-cooled engine. The M.M.C. 3½ h.p. is a very fine engine. This is 85 by 85 millimetres, and air-cooled: you would get as much speed out of this as you want. (2) Automatic valve. (3) Gear 1 to 4—except for track work, when a 1 to 3½ would be highest you could gear to. (4) Not less than 12 gauge tubing. (5) Yes; have a long wheel base rather than a short one.

### *Sparking Plug Failure.*

A.C.25 writes:—I have had a great deal of trouble with sparking plugs lately, and should be much obliged if you could suggest a remedy. I have tried several kinds, but they have all failed after about two hundred miles' running, that is to say, they have started misfiring. Previous to experiencing this trouble, I had a plug that lasted a year, and which only cost 2s. My bicycle is a 2¾ h.p. Excelsior, 1903, and it has an ordinary trembler blade contact on the two-to-one gear shaft and a coil and accumulator. The connections are kept perfectly clean throughout. I have a four-volt Peto and Radford battery, and I charge it from a 100-volt dynamo through a 50 candle-power lamp. Should I do better if I got it in series with two sixteen candle-power lamps?—You do not specify what happens to the plugs, whether they soot up or crack. A good mica plug, like the E.I.C. or Castle, should give very little trouble if you do not over-lubricate the engine or drive with too rich a charge of gas. Of course, the plugs may not be at fault at all; it may be your contact breaker. The 50 c.-p. lamp will let about two amperes pass through the cells; this should be a suitable charging current for any cells not less than 10 ampere-hours capacity. If you use two 16 c.-p. lamps in parallel, the charging would take longer than with a 50 c.-p.

W.B.A. (Dublin) would be obliged to any reader who could tell him of a method by which the presence of water in the petrol tank would immediately indicate itself.

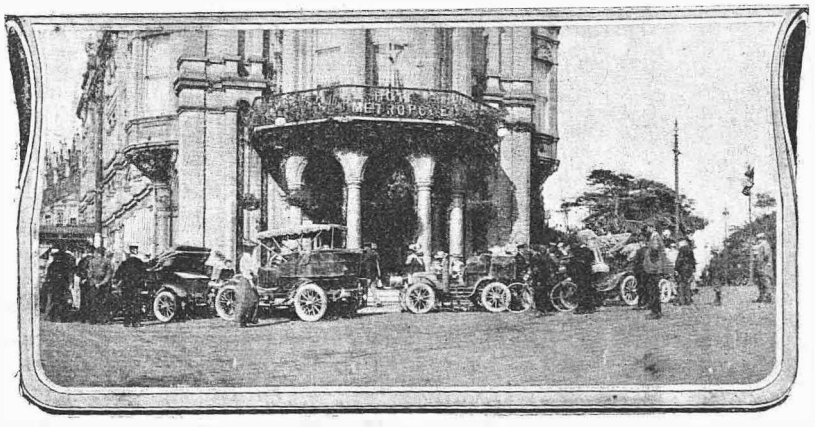
"Constant Reader" (Wandsworth).—The makers of the machine would hardly replace the gears free of cost if you have had the machine 12 months. The sudden stop and stripping of the gear teeth might have been caused by failure of lubrication and seizing of the shaft.

"A.W. 9" (Ludlow).—(1) You could fit an Auto trembler in the circuit. This would practically be the same as having a trembler coil. Peto and Radford's have a good and simple pattern. (2) Could not tell you what current your coil takes. You would have to test it with an ammeter. (3) Yes; a good make of coil.

M.H.E. (Dover).—It is quite evident that you have simply saturated your driving belt with castor oil, and the excess squeezes out on to the walls of the pulley and causes slipping, no matter how tight. Castor oil is an excellent dressing undoubtedly, but it should be applied to the top of the belt sparingly and at intervals. You must not aim at getting the belt into a greasy state, but rather into a thoroughly pliable and adhesive condition. To get the surplus oil out of the leather we should think your best plan would be to give it a 24 hours' soaking in petrol, and then let it dry.

### *Accumulator Queries.*

A.L. (Upper Clapton) writes:—I recently got stranded while on tour, the two accumulators on my Humber motor-bicycle running down to below 4 volts. I managed to get over the difficulty by connecting the two cells of one accumulator with one cell of the other, raising the voltage to 5.9. My engine, under these conditions, actually worked better than it had done previously. Am I likely to injure the coil in any way by doing this, or is it a sufficient test that, having once stood the high voltage for 80 miles, it will be safe to repeat the experiment? I also notice a pinky grey precipitate in the lower part of the accumulator. What is this? Should I empty out and refill with fresh acid when this is thick enough to touch the bottom of plates?—The coil is not likely to have been injured in the least, if it sparks all right. It would be of a very poor quality to break down with anything below 8 volts. But nevertheless, it is better not to exceed 4 volts, except in case of emergency, as no risks are taken thereby. The deposit you refer to is a scale of oxide of lead from the plates. This is not of any serious moment, so long as no solid pieces of active material actually come out of the grids and wedge in between the plates. You should run off the acid into another vessel, and wash out the scale before it touches the bottom of the plates. Then replace the original acid, and make any loss up with fresh dilute acid of the correct strength.



**A group of cars outside the Hotel Metropole, Bournemouth.**

## BUREAU.

T.W. (Leicester).—The additional 2 h.p. would not necessitate altering the gears, carburetter, or coil, but you would probably have to increase your radiators. If you have a twin-cylinder engine, you will require a different carburetter and coil; the latter must be a double one to spark two plugs.

### *Lubrication.*

A.W.P. (Cuckfield) writes:—Can you advise me on the following? I have a 2¾ h.p. 1904 Minerva engine. Lately the lubrication has seemed to fail, the cylinder walls appearing to get dry, and the engine to labour and knock. In driving to-day about 10 miles, I gave three full charges of oil, and yet the piston seemed not to be oiled. The crank-case gets hot. I cannot trace any dark line on the rings, or any sign of the charge passing there. Oil used is "Moebius" brand. I do not think carburetter is at fault, as it does not drip, and I cannot use air open full, as suction on petrol ceases if I do so.—If the oil really enters the crank-case, it is difficult to see why it does not reach the cylinder. It would be as well to make certain that the oil pump is acting properly. If the crank-case heats up abnormally, then it is pretty certain that some of the exploded charge gets into it. It is questionable if it is a case of under-lubrication at all. It would appear to be pre-ignition through overheating and weak compression. It is a good thing to free the piston rings occasionally with a dose of paraffin injected in the cylinder. They sometimes stick from accumulation of thick and burnt oil in the grooves.

### *No Power on Road.*

T. Maybury (Liverpool) writes:—I have lately purchased a motorcycle, Minerva engine (2 h.p., 1903). I find that machine works splendidly on the stand, but not so satisfactorily on the road. I can get it running at about eight miles an hour, and the moment that I advance the spark it pulls up to a standstill. The wiring, spark plug, and everything electrical on the machine seems perfect, timing correct, compression good. I have overhauled the carburetter, and everything looks right there. When I open the small air hole to the mixing chamber there seems to be a kind of blowing back through it. Should this occur? I have cleaned and overhauled the silencer, and have even removed the sparking cam, and tried it in different positions on the shaft, with the same result.—The engine simply has no power when there is any load put on it. Running it light on the stand is no test. You will most probably find from careful inspection that the exhaust and spark timing are not correctly set, assuming in the first place that the ignition is not weak. The articles that have appeared recently on timing will help you in this respect. It is evident that you require a slightly stronger spring on the inlet valve, as some of the compressed charge is lost through blowing back. From your description we should assume that the machine was a secondhand one and had seen some service. If the above matters are put right, with good lubrication and carburetter working well the machine is bound to run satisfactorily.

B 30

"Alpha" (Richmond).—Your difficulty seems to be a slight leak at the valve seating on the air tube. If tightening up the seating nut does not effect a remedy, the best thing to do is to remove the valve nut and take away the washer, remove the canvas patch with benzoline, and solution a sheet rubber patch around the valve, keeping the hole to pass the valve stem through very small. The patch must be very securely fixed or further leaks will occur. The canvas, washer and nut must, of course, be replaced.

"Pedal" (Perth) writes:—I have a motor-bicycle with engine 2⅞ in. bore by 3 in. stroke. The machine weighs 160 lb. What pedalling gear would you recommend, and what length of cranks? I may say that I start the machine by running alongside and dropping the exhaust valve so that no pedalling is required for starting. The hills in our district do not exceed, on an average, 1 in 16, and the pedals would be used mostly for slight assistance on hills and keeping the machine going in traffic, although I find no difficulty in doing this with the exhaust valve lifter. My feeling is for a fairly high gear, so as not to have very rapid pedalling when assisting the motor, but would like your advice.—As the pedals are not required for starting, we should consider that a 76-inch gear, with 7-inch cranks, would be as good an all-round combination as you could have.

### *Gearing Problem, etc.*

F.G.A. writes:—I have had a this year's pattern M.M.C. engine, 2¾ h.p., fitted to a locally assembled machine. It is chain driven, but on trying it I find it is geared too low, only eight miles an hour with spark advanced. The chains are ½ in. pitch, the wheel on the crank spindle has 16 teeth on it, gearing into the large intermediate with 60 teeth on it; the small intermediate has 16 teeth on it, gearing into the wheel on the back with 48 teeth. If these are wrong, kindly state what would go with the 48 back wheel. I think the simplest way will be to put a larger wheel on the crank spindle. Will you kindly tell me what size I shall want? It is fairly hilly about here in the Thames Valley, but not excessively so. I also should state that I have 26 in. wheels on the bicycle. Also, the machine is fitted with the ordinary make-and-break contact, with the usual striking piece on the cam and trembler blade, and I have got a trembler fitted on my coil; do I need this? Further, I have a Longuemare carburetter, Pattern E, fitted; the makers have sent nipples with five, six, and seven slits in. Which would be the best one for me to use?—The gear you have at present it about 11 to 1. You could reduce this to 5½ to 1 by fitting a 32-teeth wheel on engine shaft, but this would give an excessive length of chain, so that on the whole you would do better by altering the 60-teeth chain wheel to a 30, and leave the engine shaft and other wheels as they are. You will probably find that you can speed up to over 20 miles an hour. The engine having previously an 11 to 1 gear would be overheating through it racing. (2) A plain non-trembler coil is best for the make-and-break, but you can use the trembler coil with fair results by having the make-and-break contacts screwed rather closer together than usual. (3) For a 2¾ h.p. engine, use a 7-slit sprayer in the carburetter.

A. Mepham (Plumstead).—The connections should be as follow: Terminal + on coil to positive of accumulator: terminal on coil marked "int" to contact screw on engine: negative of accumulator to interrupter plug, and from this to the frame; the other odd terminal being the return for the high tension current also joins to frame; spark plug connects to single terminal at one end, as you now have it. If the battery runs down quickly with this arrangement of wiring, it shows that it is faulty in itself.

## *ANSWERS BY POST.*

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

*Thursday, September 15th.*—A. Powell (Beckenham), R. Vaughan (London), A. H. Spicer (Eastbourne), G. Parry (Poole), A. Hodson (Windermere), T. W. Barker (Silhurst), J. E. Wood (Eccles), A. Shanks (London), A. Mighell (Brighton), A. Williamson (Swansea), W. Tatman (Wellingboro'), F. R. Gotlee (East Croydon), D. Willetts (Stourbridge), L. Jewell (Rochdale), R. Booth (Brondesbury), W. Frampton (Clitheroe), W. Hulley (Doncaster), W. Welchman (Tonbridge), "D. 33" (London).

*Friday, September 16th.*—A. H. Nash (Poplar), P. Millar (Camberwell), A. C. Yarborough (Sheffield), E. Green (London), S. H. Hole (Bermondsey), (E. David (Swansea), W. Candlee (London), H. Beale (Twickenham), J. W. Brown (Ashbourne), C. Hyland (Bexhill), H. Combe (Witham), F. R. Woodley (Rosslare), J. T. Harrison (Newark), R. Tidy (London), F. W. Harland (Hull), F. E. Wilson (London), S. Weatherhead (Luton), W. Merritt (London).

*Saturday, September 17th.*—E. A. Isherwood (Coventry), H. M. Blenkinsop (Warwick), W. Sanderson (North Shields), P. J. Jarmain (Colchester), A. R. Lewis (Morriston), H. G. Cribb (Purley), A. H. Croncher (Eastbourne), J. A. McCombie (Aberdeen), E. H. Rowley (Ossett), W. Biddulph (Bury), J. Corkey (Armagh), P. Dewar (Lochwinnoch).

*Monday, September 19th.*—B. L. Willows (Clifton), W. C. Brigg (Liverpool), W. D. Smith (Derby), W. Russell (Ilford), R. E. Percy (Sevenoaks), D. W. Reid (Crediton), E. A. Hick (Watford), A. Macnab (London), G. Steeple (Stoke Newington), R. Grieg (Pretoria), A. B. Wilson (London), A. B. Lyne (Bodmin), C. Bolkow (Sunderland), G. W. Gibson (Coldstream), A. Ringwood (Banbury), S. L. Jervis (Reading).

*Tuesday, September 20th.*—F. C. Wright (Moy), T. Peckham (Lewis), D. Marsden (Sunderland), S. E. Bee (London), J. H. Parker (Cheltenham), J. Barbour (Ramsey).

*Wednesday, September 21st.*—Jas. Bottomley (Dobcross), H. Brown (Dublin), E. West (Moreton-in-Marsh), J. B. Clive (Berkswell), W. Hart-Potts (Nottingham), E. W. Preece (Monmouth), W. R. Willson (Bromley), A. M. Waterson (London), S. Marshall (Purley), R. Butler (Southall).