

# The Motor

Vol. 4, No. 96,

December 9th, 1903.

INCORPORATING

Motor  
Cycling

and  
Motoring

## MOTORING IN INDIA.

### FROM POONA TO MAHABLESHWAR BY MOTORCAR.

By P. A. NOLAN STEWART.

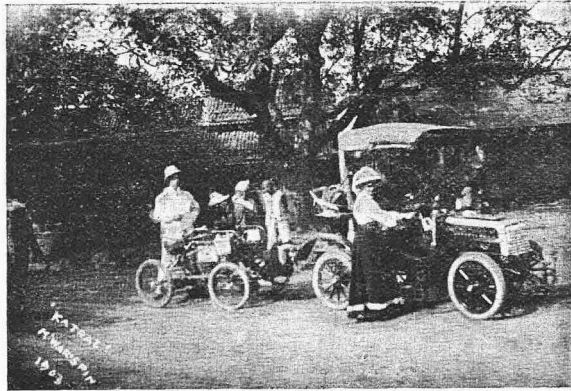
The fascinating and oft-attempted journey to the heights of Mahableshtar was essayed on a cool and cloudy Saturday afternoon in October. Three motors started: a Popular car, carrying Mr. and Mrs. F. B. Stewart, led the way, the third seat being utilised for the luggage and commissariat of the whole party; a Reading steam car, with Mr. C. Walke and O. A. Smith, followed next; and a quadricycle driven by Mr. P. A. Stewart, with Mr. J. Collins in front, completed the party. The day, combined with the hour of starting—1 p.m.—did not seem propitious to motoring. Heavy and loaden clouds appeared to crown the hills, but the three cars, nothing daunted, were soon doing fast time down the Parbuttee road straight on to Katraj. The steam car here brought up the rear; its occupants experienced great trouble in maintaining pressure. Half-way up the Ghat, three miles long, a flock of sheep necessitated the brake being applied very suddenly to this car, and then it was discovered that in order to accomplish the route with any degree of success the burner would have to be put lower down from the boiler. In the hurry of starting the detail was missed. The steamer was then directed back to Poona, leaving the other two cars to proceed with the journey.

The gradient in some parts of the Katraj Ghat varies from 1 in 30 to 1 in 10, and is very severe and trying, and the motor of the quadricycle was scarcely powerful enough to overcome it. Pushing a heavy car up hill is by no means pleasant work, and it was decided to tow it up behind the Popular car, which was proving very clearly its herculean

powers of hill-climbing. Slowly but surely the car went up the hill with no hitch, and at last the tunnel on the top

was reached, where some fresh water was put into the tanks which cool the engine. The cars ran down the Ghats in fine form, brakes being applied very occasionally. From here it is plain sailing into Shirwal, the inclines and declines being about equal. The muddy state of the road, owing to the recent rains, combined with all motor vehicles' great propensity to throw up dust, resulted at last in choking the air inlet of the carburetter. The car stopped suddenly, and after a short diagnosis the spray was taken to pieces and cleaned. And now the rain came down. To proceed with the "trip" was the most expedient thing to do under these circumstances, as the village of Shirwal was only about 20 miles away.

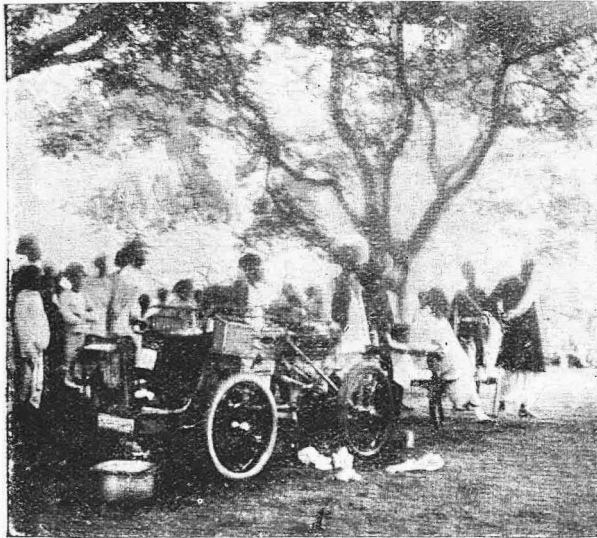
The levers were pushed forward and the cars were soon going from 20 to 30 miles an hour with comparative ease. It was a pretty sight to see the mud-splashed and drenched cars at Shirwal. The occupants of the small quad, which has no hood, could hardly be recognised for dust and mud. The rain came down in torrents, and a postponement of our journey till the following morning was made. The village of Shirwal boasts of a capital Dak bungalow, and contains two or three missionary ladies and a few hundred people. The news of our arrival had spread far and wide, and in the morning the arrival of the august Chief of Bhar (a state about ten miles distant) was announced. He was escorted by two men on gaily decorated ponies, carrying swords four



Katraj Ghat. A stop for cooling water.



The Popular Car and the Quad.  
Mr. and Mrs. Stewart and Mr. Collins on Khandala Ghat.



H.H. the Chief of Bhor watching the cars being cleaned at Shrirwal

feet long. All the people had assembled to see the start, and as the Chief expressed his wish to see the cars run, a performance was then gone through, to the evident satisfaction of the dazed and motley crowd.

Continuing our journey, we now passed on to the Khanda Ghat, which the quadricycle just managed with a single passenger; the other had to content himself by standing behind the Popular, whose healthy "puff-puffing" was pleasing to hear. This Ghat is two miles long and has a very circuitous ascent. A very small descent compared with that of the other incline, is on the other side. Now the dirty grey village of Wai was seen in front of us. Its famous temples were passed, and then the most severe test of the cars' hill-climbing propensities was experienced. A Ghat ten miles long and almost insurmountable by four ponies and a tonga had to be negotiated. The quad refused to move after the first few hundred yards, and towing was again resorted to. A small stop half-way up to allow the engine to cool, and then the victorious Popular sailed into Panchgani.

Motoring in India, although the name of pleasure, has a few drawbacks. The roads are rough, very rough; horses take a fancy to rear and shy when a car passes; there are no wayside inns; and petrol is dear, running at 2s. 6d. a gallon for Pratts'.



Cleaning plugs, etc., during a halt on Wai Ghat.

## SOME INTERESTING REMARKS ON MAGNETO IGNITION FOR CARS.

There are two interesting points in favour of the magneto system of ignition which deserve bringing into prominence. (1) Much less range of movement is required than with a transformer (coil) to obtain the same advance in period of ignition. (2) The advance is almost automatically obtained. In an interesting report read by M. Brazier at the last Automobile Congress the observation was made, after demonstrating the value of the magneto as a sparking instrument, both as regards safety and simplicity, that it would be well from the mechanical point of view to utilize for ignition of a four-cylinder motor, the two currents which the rotary shield magneto generator gives per revolution, by making it revolve only at half the speed of the motor; but the slight initial voltage is an inconvenience. Owing to this, he pointed out the advantage of employing constant speed contact breakers: otherwise, as self-induction varies with speed of breaks, the heat of the sparks from the plugs will also vary and be initially of very slight intensity, as likewise happens at low speeds of the motor. If we note the mode of adapting a magneto sparker to a good four-cylinder motor—a Dietrich (Turcat-Méry) motor for example—we find that in the system utilised by these makers

THE HEAT OF THE SPARK VARIES WITH SPEED OF ROTATION.

However, M. Turcot, who was interviewed on the subject, immediately explained the reasons which guided them, and described the results attained.

"We are aware," he said, "that the rapidity of ignition of an explosive mixture varies with several factors, a principal one being heat of the spark. We also know that the lead or advance in the period of ignition should vary with the speed of the motor in order that all the contents of the cylinder may be ignited at the commencement of the stroke. It is, then, evident that if we increase sparking heat and consequently rapidity of ignition there will be no need, for a given speed of the motor, to have such a great advance in the period of ignition. But if, instead of varying advance, the heat of the spark is made to vary with the speed of the motor (which is just the same as regards result) an advantage is gained from an apparent inconvenience. There will be an artificial advance or retardation in the period of ignition

VARYING WITH THE SPEED OF THE MOTOR.

We found an advance of 25 degrees sufficient with the magneto to obtain a speed in the motor which demanded 90 degrees advance with sparking plugs and accumulators. The test proved that the magneto spark was hotter than that obtained with a coil. Another advantage is the simplicity of the mechanism for governing the sparking plugs, and there is a third—viz., avoidance of sudden shocks due to too early an ignition which might result in damage to the parts, or at least wear them to such an extent as to alter the ignition point. Finally, the magneto is less strained in rotating at half the speed of the motor. As for the inconvenience or difficulty in starting there is none, provided that the precaution is taken to place the sparking cam at such a point that the "break" in sparking will take place at the precise moment that the magneto gives a current of maximum voltage, a point easily noted by aid of the handle. This can be verified by turning the motor slowly with the hand after removal of the valves, when one can observe much larger sparks from the plugs than those given with accumulators. Another feature is that when the motor has been stopped by cutting off the gas it can be started again by a single revolution. If the stoppage is caused by ignition, in which case the cylinders are left full of gas, a quarter revolution of the cranks suffices to start again. Thus with the magneto the mechanical device for advancing the period of ignition can be considerably simplified or even dispensed with, because the advance is to a great extent automatic; and the danger of a back fire, which is existent in motors fitted with sparking plugs and coil ignition, is very rare when a magneto is utilized, because at starting the heat of the spark is slight and the minimum amount of advance possible is consequently obtained."

— "La Locomotion."

## DESIRABLE IMPROVEMENTS ON MOTOR-BICYCLES.

.. By ..  
Mervyn O'Gorman.

[Mr. O'Gorman was invited to read a Paper on this subject at the first Annual Dinner of the Auto-Cycle Club last Tuesday. Owing to the length of the proceedings, the reading of the Paper was deferred to a later date; but prior publication is asked so that the matter may be fully ventilated.]

When I was told that this title had been selected for me, it became my duty to invent improvements as quickly as possible, and I called to mind a remark made at the Society of Arts by an eminent patent expert: "Any fool can make an invention, but it takes a clever man to work it out, and a genius to sell it." Those who sell motor-bicycles will, I hope, accept the compliment to their genius in selling them, while I claim the excuse that my mandate from the Committee is only to play the fool.

It is almost impossible to go out for a ride and not come back home with the outline of an invention, and I fancy some of our "geniuses" have had more suggestions of desirable improvements than they know what to do with, so I leave it to you to decide whether or not my proposals conform to my title—whether or not they are desirable.

**Weight.**—If we had an explosion turbine, and if the gain of weight and space were proportionate to the reduction obtained in turbine steamships, we would have a 2 h.p. engine and gear weighing, not 30 lbs., but 5 lbs., occupying not half a cubic foot, but only a quarter.

Such a machine, to give the necessary effort, would need to revolve, not at 1,200, but at 5,000 revolutions per minute, and not to give 600 useful impulses, but about 5,000 useful impulses in the same period of time. This development is remote because of the imperative necessity for compression, with its attendant reciprocating parts.

Still, whether for good or evil, we are about to make a step in the direction of higher engine speeds, for it will not take us long to realise that under the newly fixed limitation of cylinder capacity alone we can obtain more power if we use that cylinder more often in a given time. Personally, I look upon a limit to cylinder capacity alone as a temporary measure of a somewhat dangerous character. The alterations which are desirable for race winning under that standard are somewhat as follows:—

- (1) Increased engine speed.
- (2) Multiple cylinders, possibly.
- (3) Water cooling, certainly.
- (4) Fly wheels larger, certainly; heavier, probably; external, possibly, in spite of the fact that for touring purposes an external fly wheel is notorious for throwing mud.
- (5) Larger valves, both inlet and exhaust, and larger exhaust tubes (inevitable if the engine speed goes up, to allow the gases to pass through unimpeded at the enormous velocity which will then be impressed on them).
- (6) Mechanical inlet valves, for the valves will have to work fast, and as they will be relatively larger, their inertia is liable to be increased, and therefore to require strong springs and a positive opening.
- (7) Pressure fuel feed, for, as I have before suggested, if we wish to get gas rapidly through a given size of tube, we must push it in instead of merely sucking at it, and if we supply the gas under pressure, we shall be working the engine at a less ratio of expansion, so that we shall be driven to every sort of ruse to keep the cylinder cold.
- (8) Insulated exhaust, by keeping our red-hot exhaust tube well insulated with asbestos from the exhaust port, we may secure that none of its heat shall be conducted back to the engine.

I do not suggest that all this is either entirely undesirable

or entirely inevitable, but those very few who do not believe in the permanency of the new limit will have been interested to see that the Technical Committee of the French Automobile Club reported against it on the 11th November, 1903, that is after the holding of the "Quarter Litre" cycle trials.

**Fuel efficiency.**—In fact, it would be a desirable improvement if an ingenious person would formulate a standard based on both fuel consumption and weight limit (if not for short races at least for all competitions over 100 miles). For we all admit that what we want is an efficient transmission and engine, and a light vehicle. We really do not care how big our cylinders are, provided the whole thing weighs less for the same power on the road wheels, and the best way to encourage the development of an efficient engine and transmission rather than a large engine and bad transmission is to call for a high fuel efficiency under a weight limit.

The best plan for turning the objectionable but popular cylinder capacity standard into the more desirable fuel consumption standard is by adopting the capacity of cylinder per second, and thus showing that this is the same as "fuel consumption per second." Here is a far better plan than our present limit, though Mr. Lyons Sampson, by what I think must have been an oversight, used it to defend the present capacity system. It is also for some reasons better than cylinder capacity multiplied by the ratio of mean piston speed to linear road speed, or cylinder capacity multiplied by the ratio of engine revolutions to road wheel revolutions, both of the latter combinations having been ingeniously and instantaneously devised, if I remember them rightly, by Mr. Napier and by Col. Crompton respectively, when I criticised Mr. Crawley's very clever advocacy of the capacity limit. The volume of mixture swept out per second (or per hour) is a measure of the amount of fuel burnt and Hospitalier showed that when that volume is  $7\frac{1}{2}$  litres (of petrol and air mixture) the horse-power is with ordinary engines approximately 1 h.p. For long races it is far easier to measure the liquid fuel than the gaseous mixture, especially when we remember that the speed of the engine is not a definite quantity on which calculations can be fairly based.

For short races at full power it were easier to calculate the amount of mixture after the race had been won, provided the motorcycle had no two-speed gear. The only drawback that arises against a fuel consumption race is that though a competitor would appear to win he might find himself disqualified after the event, whereas the on-lookers much prefer to see a race of which the visible winner really wins the prize, unless he commits some act of wickedness on the course.

**Silencing.**—On a long run it is an intense relief felt when a steep down hill makes it necessary to cut off the ignition and the motor ceases to flutter. Those who have pedalled home with the belt over their handlebars will recollect how pleasant it was to hear the musical click of the free-wheel alone. Yet a few years ago motorists used to say they would not accept the gift of a perfectly silent motor. Even to-day this would be a safe threat, for I know of no philanthropic society which is compulsorily showering inaudible motor-bicycles on a reluctant public. The effect of that sophistry remains, the demand for silence is absurdly little pressed home, though such a machine is almost as desirable as one which will cause no vibration to the rider at 30 miles per hour. It is

also far easier of attainment. Think of the difficulty of asking one's way, of the unsociable character of a motor-cycle tour, of the pleasant interchange of chat which the absence of pedal exertion would otherwise invite. Think of the lurking constable whom we warn, and the farmer who extendeth his hand on principle, but who only picketh up his whip if he gets warning before the cyclist is in sight! For silence we must aim at:—

- (1) A noiseless transmission such as a belt without the drawbacks.
- (2) An efficient transmission, because this helps to keep the engine small, and therefore the explosion small.
- (3) A noiseless valve and ignition gear.
- (4) A real exhaust silencer.

**Silencing by interference.**—Exhaust silencing without appreciable back pressure might be based on interference of sound waves—i.e., on the principle of two negatives making an affirmative. Indeed, it has been done in the case of a musical note—i.e., a sound consisting of a simple series of variations from a maximum to a minimum of pressure. Such a musical exhaust could be divided into two equal blasts, one of which passed through a long tube equal to half the wave length, while the other tube was very short; then by making the outlets face one another, a point of maximum air density would be confronted by a point of minimum density, so as to neutralise. Some slight advantage might be derived from this plan, although for complete silence you must first get your musical note without harmonics, and then prevent it varying with fluctuations of load, and I do not see any way to this just now.

**Silencing by preventing the oscillation of the air.**—You will have read that the German army is said to be testing a silent gun, and it has been surmised that this silence was secured by a flap valve, which closed over the mouth of the cannon within 1-100th of a second after the shot had been fired, thus preventing the inrush of air to fill the void, and thereby preventing air oscillation, and resulting in silence. This is, I think, theoretically sound; also a similar theory is the basis of the Oldsmobile and other silencers, which exhaust freely into a pot with small exit tubes. The pressure in the pot is raised quickly, but the small tubes let the air fizzle out slowly. The larger the pot the less the back-pressure, and the more continuous is the stream from the small holes—i.e., the less air vibration or sound.

**Silencing by diminishing air velocity.**—In the above methods it will be seen that the air velocity need not be diminished; in fact, it may even be increased—i.e., where small tubes are used. There is, however, a totally different plan. It is well-known that if the air channel has an ever-increasing diameter, the gas pushed through it will travel at an ever-decreasing velocity. If the sides of the conical opening so formed be free to vibrate, we get a trumpet which

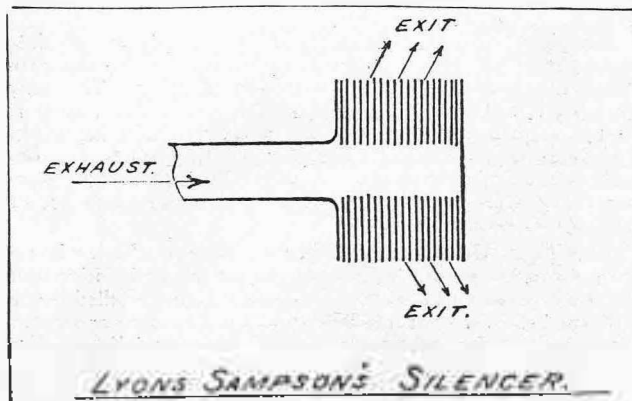


Fig. 1.

might give the musical note required for Case I.; but Mr. Lyons Sampson has suggested that the extreme case of a cone be taken—viz., the space between a flat plate with a central circular hole, shown in Fig. 1.

The plates are held at their outer edges, and are excessively close together. The thing is so simple that it really ought to work.

I must leave this subject by pointing out that now that perfect exhaust silencers have been devised for motorcars, it is time cycles followed suit. I am sure that from the vendor's point of view silence is golden; from the purchaser's silence means consent.

**Vibration.**—Just as dust is the greatest enemy of the motorcar, so is vibration to the motorcycle. Resilient frames are amongst the most alluring and yet discouraging problems. The methods, pneumatic and other, tried heretofore are not the only possible ones. The cyclist takes vibration at three parts of his person—his hands, his feet, and his seat. Hence we may either:—

- (1) Have a rigid vehicle and separately insulate each part of him.
- (2) Seat him on a flexible frame, with spring handle and handlebars, but neglect his feet.
- (3) Mount him hands, feet, and seat on an upper carriage, separately hung, and insulated by springs from the road carriage.

The existing spring frame, as now used, provided with a compressible top bar, though excellent for push bicycles, has a drawback in that when the wheel base spreads, the handlebars close up towards the saddle and give an objectionable lateral joggle, which might be found undesirable with the speedy succession of shocks to which a motorcyclist is subjected on the road.

I cannot pretend that I have studied the details of the device, but whether a pneumatic or other suspension be employed I would point out that an inefficient spring (or one that does not bounce) is essential to the success of any such device, and that a coil spring is one of the worst, and a leaf spring one of the best for the purpose. Air might well be used in a dashpot as in the pneumatic anti-slam on shop doors. Another plan might be to use a pneumatic cushion on which the sides of the containing vessel were of metal, and to employ, instead of air, a vapour which liquefies at, say, 100lb. pressure; it might be possible through the liquid to quickly lose the heat of compression. Wire-drawing the air through fine holes is, of course, the more usual plan.

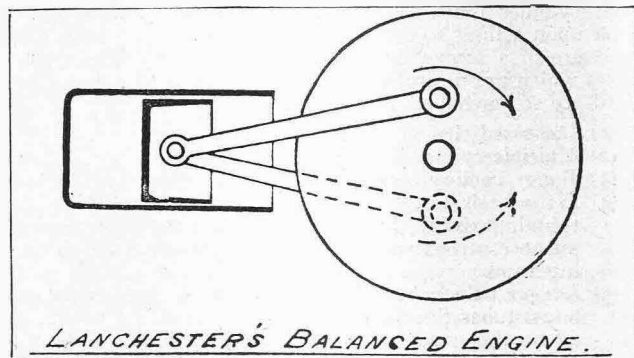


Fig. 2.

Prof. Sharp does not put springs in the top bar of his air cushion bicycle, and I illustrate a design different to his in the hope of drawing him into an exposition of his own plan, though I should not scruple to advocate the use of his remarkably pretty pneumatic "mitten" inside the buffer arrangement shown in the illustration on the next page.

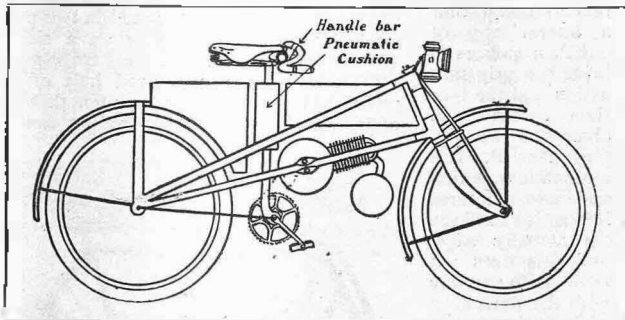
**Balanced engine.**—Somehow very few bicycle makers are attending to the question of the balanced engine. I would commend them, one and all, to study the fly wheels of the Lanchester air-cooled engine (fig. 2), and I would congratulate the first man to secure the rights to manufacture this engine under license for bicycles.

**Pedals.**—The fight between pedals and no pedals is likely to be a long one, because everyone has a right to an opinion on a question which concerns solely his own comfort. It is certain that pedals are necessary on a bicycle assisted by a



small engine, and that they can be discarded on a regular two-wheeled motorcar. The world is large enough for both systems, just as some people like hunting and others fishing. The pedal machine, however, suffers under one serious disability, and that is the stiff-legged appearance of the rider who keeps one pedal up and one down as is usual. One remedy for this which ought to be tried, despite the old-time prejudice of our pedal-propelled days, is the *up-and-down treadle gear*. This arrangement is probably not as efficient as the chain, but the inefficiency which condemned the device formerly is not now the prime consideration (for the man-driven part of the mechanism), though this is a fact which it is difficult for a community of bicyclists to admit. We have admitted it in the case of the spring saddle pillar and the unrigid frame, both of which are fatiguing in one case and restful in the other. In fact, when the motorcyclist has to pedal at distant intervals the small inefficiency is probably fully outweighed by his extra freshness, owing to his extra comfort and absence of vibration during the rest of the journey.

**Wheel base.**—It would be interesting to know why, in the case of motor-bicycles, an extra long wheel base is so much appreciated. Is this the car copying craze? I am by no means clear that it is an advantage, though I have no evidence to the contrary. Diminished side-slip is alleged, but it is very difficult to prove it; besides, people grumble more



ANTI-VIBRATION BICYCLE.

*The entire rider (hands, feet and seat) is mounted on one and the same spring buffer or cushion, so that the weight of the rider's body helps to cut off vibration from his hands and feet. Steering is effected through links, and the engine mounted Humber-wise on the chassis. This particular sketch is somewhat of a freak; all that is insisted on is the separate insulation of the whole rider—as a whole.*

about it than they did in the days of the  $1\frac{1}{2}$  h.p. Minera, though the pace then on grease was the same as now. One man's experience, unless he be perpetually on the road, is scarcely likely to be varied enough, but a consensus of experience of opinion is valuable, and I should like to know whether, with small powers, we had not better keep the wheel base normal. I hope the discussion may bring this out.

**Ignition.**—Electric ignition has not yet been displaced, but if we are to use that inefficient mechanism, an induction coil, we should at least derive from it the essential advantage which it is calculated to afford, namely, excessively accurate timing. A variation of the time of sparking unknown to the rider of a minute fraction of a second, will easily make a difference of 5 or 10 per cent. in the output of an engine, i.e., quite as much in the difference between chain and belt drive, and a very large number of machines lose in this way by the absurd minuteness and cheapness of the rocker gear. The system which can yield the utmost accuracy, namely, mechanical make-and-break, is the one which with skill should give the best results. I am sorry to hear that some of us are convinced that the purchasing public cannot be educated up to this device, and that they cannot be expected to avoid short-circuits and waste of current, if they do not hear a buzzing noise to warn them. The superiority of the single spark is that the instant of break can be determined with mechanical precision, so as to be practically independent of the backlash of gear-wheels, of vibration and jolting of the engine, of the voltage of the accumulator, and independent of the previous actuation of the spring. With the trembler coil, however, the moment of making contact is by no means so clearly determined. It is a secondary effect after a

brush has rubbed upon a surface which it approaches along a more or less conducting slope. If the accumulator is not full, the attractive force of the iron core of the coil rapidly diminishes (with the 25 per cent. fall of voltage), and the response of the attracted armature is correspondingly less rapid. If the first spark fails to ignite the charge under compression, a later spark will do so when the piston has moved forward, so that the driver is not warned by a misfire that his ignition timing is wrong and his gear faulty.

Furthermore, the rapidity of movement of the little armature may be affected by the vibrations of the spring due to the previous contact and to the jolting of the cycle. On one occasion the spring will be starting a movement forward when the impressed current occurs, and therefore a spark will rapidly occur. On another occasion the armature will have started an oscillation backwards, which must be neutralised before the impressed current can produce its normal effect, and therefore the spark occurs less early. These defects have only been partly remedied by the invention of the so-called high-speed trembler, which is an excessively light device and is liable to be delicate. The only drawback of the single spark type of ignition is the very heavy pressures to which, by a slight wrong adjustment the platinum tips are liable to be subjected by the mechanical "make," and the accidental fouling of the platinum with oil, etc. Unfortunately, no satisfactory rubbing contact has been evolved to replace the pressure device so much in vogue.

One of my assistants, Mr. Gregory, has a device for displacing electric, catalytic, and lamp ignition. The plan wants working out, but it is similar to a recently published patent of the De Dion-Bouton Company. If an explosive charge be compressed excessively it will ignite. If, therefore, on a half-speed shaft we mount an ignition cam, which, instead of making an electrical contact, forces a minute piston up very fast and very far into a minute cylinder whose suction stroke occurs at the same time as that of the main engine, it is possible to get the auxiliary cylinder to ignite, although it communicates or leaks by a small hole into the main engine cylinder. This leakage of flame would ignite the main charge, and allow of timing on the same lines as the timing on the Simms-Bosch ignition.

**Cleanliness.**—I think that motorcyclists will derive some benefit from periodically blackleading the radiating ribs of their engine. It will be found that caked mud when dry easily drops off when this has been done, and that dust does not settle thickly; furthermore, no loss of radiating efficiency need be feared. A much desired improvement in the direction of cleanliness is the Werner Co.'s plan of placing the delicate mechanism of their carburetter entirely inside the tank casing. This will have the additional advantage of keeping the carburetter warm. Another little step towards cleanliness is to

**Lubricate** the engine bearings with stiff grease, and so keep the oil in the crank case.

**Lamp.**—If I were giving a catalogue of desirable improvements as a reminder to inventors I would mention that a minute and powerful lamp which does not come off like a mere smile is badly wanted.

**Numbering.**—I have been told of a device which I must warn you strongly against, but I mention it because it is ingenious (though reprehensible). We all agree that a man who drives furiously should be punished, but we all know that speed (20 m.p.h.) as such does not fairly constitute furiously driving. Mr. Baillie's suggestion is that the new number plates shall be fixed not on a rigid support, but on a support to which the moment the vehicle exceeds a speed of 20 m.p.h. is given a rapid oscillatory motion, with an amplitude of half an inch (the distance between the figures). The object of this is, of course, to shake the dust off the number plate, so that it may be the more clean and legible. All that is required is a fairly stiff spring support of some length, and mounted on a rotating part of a fly-bob, which will joggle the spring when the desired speed has been reached.

A simpler method of obtaining a very similar unlawful result is to support the number plate centrally on a quick threaded screw, which, by giving a pull to a Bowden lever, will turn the plate upside down.

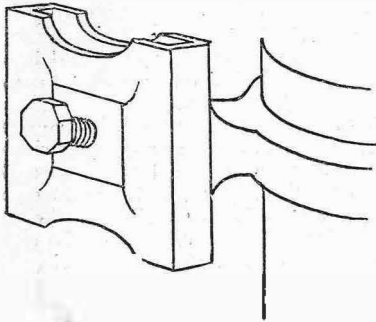
**SOME INTERESTING NOVELTIES.**

**A New Densimeter.**



The latest thing in petrol testers is the "Cossor" densimeter. This is a little glass device with weighted bulb and graduated stem. The special feature about it is the fact that the graduations are clearly marked so that the motorist can at once tell the limit of density which his petrol should have for winter and summer use. This little instrument is supplied with glass test jar and metal containing case at 1s. 6d., or with leather case 2s. 6d. They can be obtained at Gamage's. Just at present they should prove specially useful, by reason of the cold weather we are having. Riders who have surface carburetters fitted to their machines, should especially see the petrol is the right specific gravity.

The Twentieth Century Manufacturing Company, of 114, Fore Street, E.C., has been devoting particular effort to designing a satisfactory back attachment for their



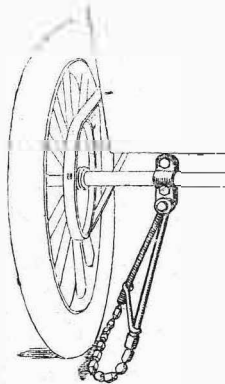
motorcycle gas lamp. We illustrate a recent design of rigid back which gives excellent results and will stand speed work on bad roads. It has been further improved since we first saw it by a butterfly headed bolt being placed where an ordinary bolt is shown in sketch.

**The "Fuller" Test Lamp.**

Messrs. J. C. Fuller, Woodland Works, Wick Lane, Bow, London, E.C., have recently placed on the market an improved accumulator test lamp and searchlight. The lamp is fitted in a polished ebony case having a window at the side and a lens at the end. The lamp filament is thus examined against a dead black background and can be used equally as a test by day or night. The lamp is supplied complete with flexible connecting leads at 4s.

**Bluemel's "Skid-Not."**

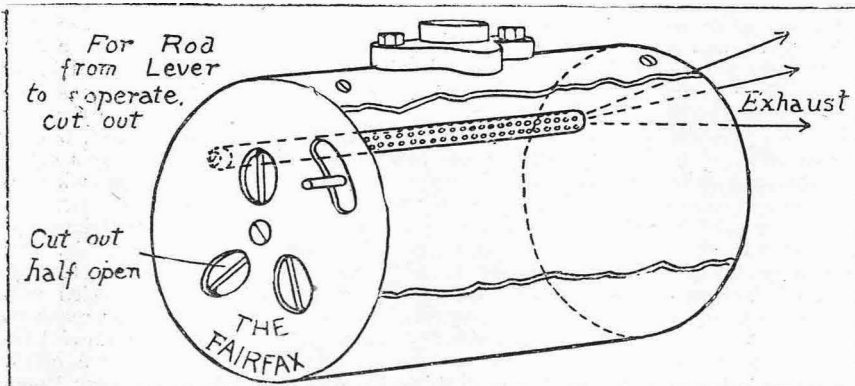
The illustration depicts a non-slipping device which can be attached to the rear axle of cars.



Bluemel's "Skid-Not."

The makers claim that a lateral slip of one inch suffices to bring the grip into action and the tyre then touches the chain and the slipping arrested. It is automatic in action and does not come into action until the car actually slips, and this does not interfere in any way with the detaching of the tyre as it is not fixed to the tread. The trailing cube chain can be hooked up in dry weather. The makers are Bluemel Bros., Crown Works, Globe Road, London, E.

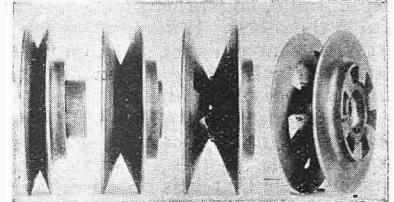
The diagram shows the interior of the Fairfax Exhaust Box, which was exhibited by Mr. R. W. Coan at the Stanley Show. It is made of aluminium, and in the illustration the working is clearly indicated. As will be seen, it provides a free exhaust when desired. The manufacturers are the London General Motor Co., 69, Commercial Street, London, E. These silencers have become very popular during the past season for their good qualities.



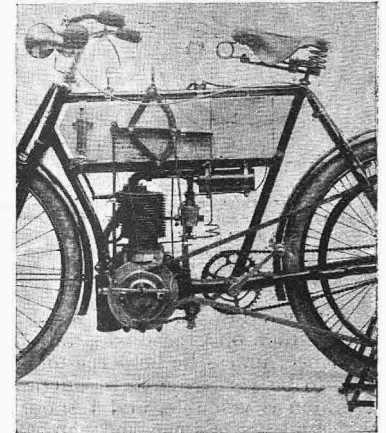
The Fairfax Exhaust Box.

**A Variable Speed Gear.**

A very simple and what should prove a durable and effective device, is Honey's variable speed pulley, made by Jas. Honey



and Company, 39, Beckenham Road, Penge, London, S.E. The illustration shows that the pulley is made in two parts one of which is moveable on a sleeve. This half has a series of arms corresponding with slots in the fixed half of the pulley. It will readily be seen that the effective diameter of the pulley can be

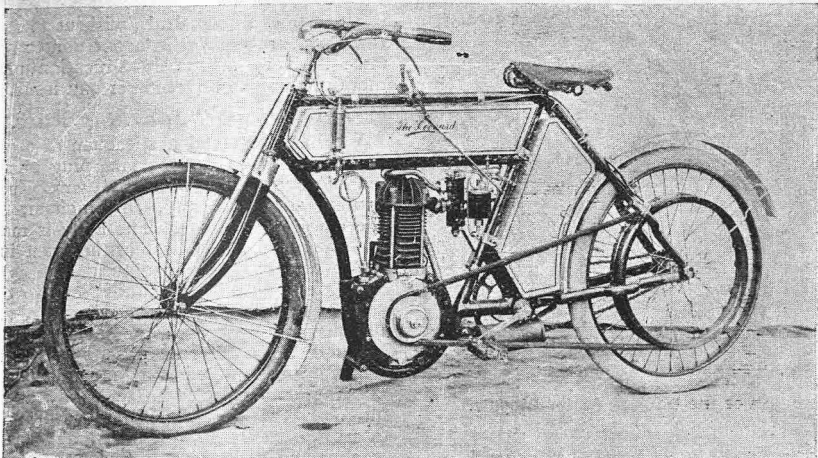


Arrangement of Levers.

altered within a considerable range by bringing the adjustable half of the pulley nearer or farther away from the other. The makers claim a variation from 1 to 3½ to 1 to 8. The method of operating the pulley is by a lever system mounted on the side of the tank. The slack of the belt is taken up by a jockey pulley. The makers claim that they can fit the pulley to practically any make of machine. The price, fitted complete, is 3 guineas.

**The Leonard Motor-Bicycle.**

The machine illustrated is made by Messrs. J. J. Leonard and Co., Brockley Garage, Brockley Jack Hotel, Brockley, London, S.E. It is built on very sound lines, and fitted with the high-class M.M.C. 3 1/2 h.p. motor mounted vertically in a loop frame. The carburetter is a Longuemare, and a large supply of petrol can be carried equal to 100 miles' running. The case behind the diagonal contains a 20 ampere hour Dinin accumulator and trembler coil, and ample space



The Leonard Motor-Bicycle.

for spare parts and tools. The frame is made of the highest grade fittings, and, as will be noticed, the front forks are Duplex pattern. The transmission is by a long V belt. An efficient silencer is fitted, and lubrication is by force pump. The tyres are new Dunlops, the rear one being 2 1/2 inches diameter. The wheel base is long, giving very comfortable riding. The front mudguard is extended over the wheel. The finish is of the best, and the price, with the liberal guarantee of 12 months for frame and engine, is 45 guineas.

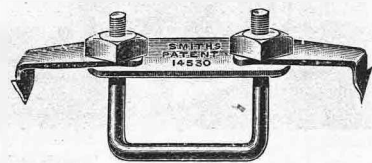
**A Turbine-Dynamo Charging Set.**

A compact little charging set for the accumulators of motorcars and cycles is that depicted in the illustration. This is distinctly a little set which has long been wanted, and where one has an ordinary water supply with a good pressure—say not less than 40lbs. to the square inch—the combined turbine and dynamo should prove invaluable. The makers are Messrs. Gilbert Gilkes and Co., Ltd., Canal Iron Works, Kendal, who are the leading manufacturers of turbines of all powers in the kingdom, so this alone should be a guarantee of the excellence of the workmanship. All that is necessary is to join up the turbine to the ordinary house tap and

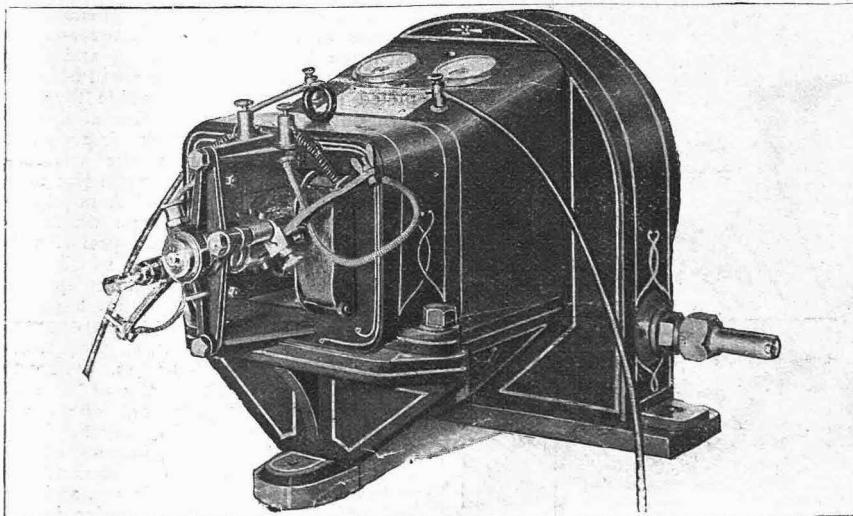
then the accumulator being connected up to the dynamo it is simply necessary to regulate the water supply so as to obtain the correct charging current, the necessary instruments being combined with the set. This little set appears to be just the thing for country agents and car owners. It is vastly more convenient than using a small gas engine. The price, complete, is £17 10s.

**A New Belt Fastener.**

A new form of belt fastener introduced by T. A. Smith, Gordon Works and Northgate Mansions, Gloucester, is depicted in the illustration. It is designed so that both ends of the belt meet together. The top cleats have oval holes,



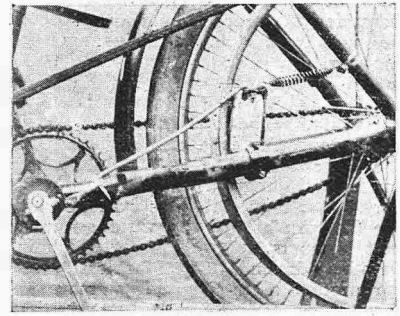
so that when passing over the engine pulley they take away half the strain on the centre staple, and thus allow the belt to be quite flexible. It is suitable for V and flat belts. The price is 1s. 6d. each.



Turbine-Dynamo Charging Set.

**The Applebee Back-Pedal Brake.**

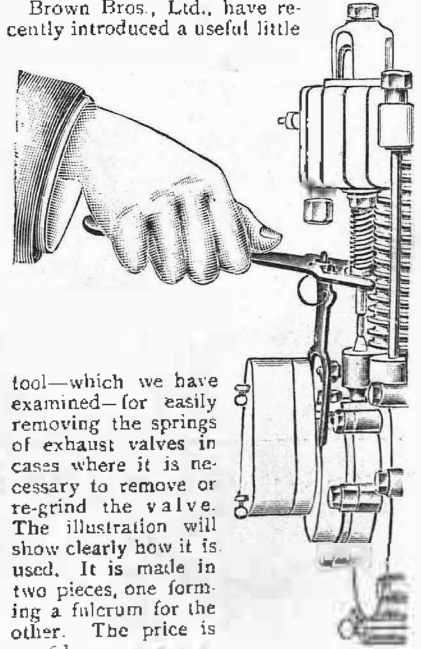
The accompanying illustration shows a back-pedal brake which was made and fitted to his machine by Mr. F. Applebee (who rode in the private owners' class of the Auto-Cycle Club's 1,000 miles Reliability Trials last August) of Church Hill, Walthamstow, London, E. The brake although only roughly made has proved so successful that it has now been fully protected, and the inventor is designing it upon smarter lines, but the illustration is sufficient to show the idea. On the axle is fitted a free-wheel clutch, gripping on a backward movement of the axle. To the outer member of the clutch a shackle is fastened into the eye of which drops the hook of the brake rod. The shoe is pivoted on the chain stay and has a take-off spring. A backward movement of the pedal pulls the brake shoe on to the driving pulley and thus a powerful but at the same time sensitive brake is provided.



Whenever it is desired to wheel the machine backwards the brake rod is unhooked from the shackle. In its redesigned form the brake should enjoy a ready sale, because it can be fitted to almost any machine, as there is generally enough room on the left hand end of the axle to take the clutch.

**The "Duco" Exhaust Spring Remover.**

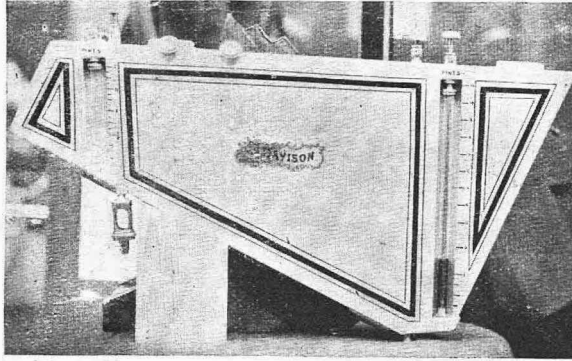
Brown Bros., Ltd., have recently introduced a useful little



tool—which we have examined—for easily removing the springs of exhaust valves in cases where it is necessary to remove or re-grind the valve. The illustration will show clearly how it is used. It is made in two pieces, one forming a fulcrum for the other. The price is 2s. 6d.

### Oil and Spirit Gauges.

In the Davison motor-bicycle exhibited at the Stanley Show a feature was the system of gauges for petrol and lubricating oil. The illustration clearly shows these let into the side of the tank. The oil gauge is marked off in half-pints, whilst the petrol gauge is in pints. It is possible by means of these gauges to ascertain the exact quantity in each of the tanks. This is a capital arrangement and was very favourably commented on by visitors at the Show.



Gauges on the tank of the Davison Motor-Bicycle.

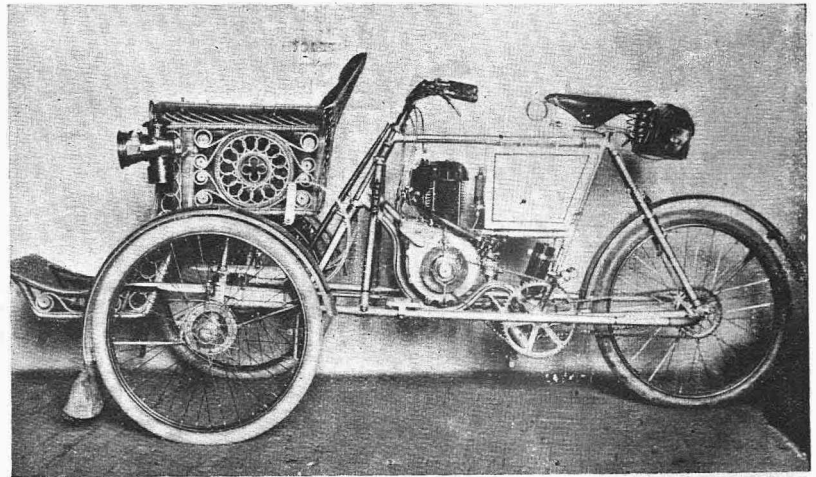
### F. L. Anderson's Exhibit.

F. L. Anderson, 1, Furnival Street, London, E.C., had a very comprehensive show at the Stanley, comprising Elswick belts for motorcycles and one specially designed for a  $3\frac{1}{2}$  h.p. machine, such as a fore-carriage and also chrome and tanned single and double belts for motorcars. Chrome leather for tyre covers is another speciality. The Armitage non-slipping pulley covering is a fibre cement which the maker claims is an absolute remedy for belt slipping on pulleys of belt-driven cars. Other special lines exhibited were the Holborn belt punch, various forms of belt fasteners, "Strapoline"—which is a new belt dressing. The Marples-Roubeau carburetter, a clutch giving a free engine at will, and a very excellent speed indicator and revolution counter, these latter are Dr. Winter's patent.

### The Morris Motorcycles.

The particulars of this firm's exhibit at the Stanley were crowded out in the Show issues. The machines shown included one fitted with a  $2\frac{1}{2}$  h.p. M.M.C. motor, belt drive and weight 140lbs. One was fitted with a  $3\frac{1}{2}$  h.p. De Dion engine chain-drive and friction clutch, and another on similar lines with  $2\frac{1}{2}$  h.p. De Dion engine. The Morris fore-carriage has a  $2\frac{1}{2}$  h.p. M.M.C. motor with chain drive and friction clutch. Special features of the firm's latest machines are the chain drive, free

engine and clutch, handlebar control, mechanical valves. The whole collection of machines was characterised by excellent design and workmanship. The makers

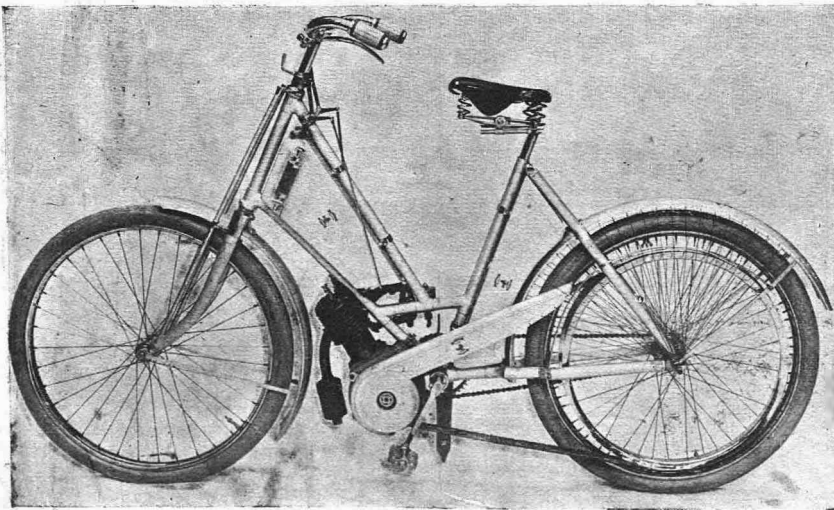


The Morris Fore-Carriage.

are the Oxford Automobile and Cycle Agency, 16, George Street, and 48, High Street, Oxford. The fore-carriage, which has very symmetrical lines, is illustrated.

### A Well-designed Lady's Machine.

In our last issue in describing the exhibit of the Booth Motor Company we should have stated that the concern would in future be known as the Hulbert-Bramley Motor Company. The phenomenal success of the old firm has necessitated extensive building operations, and their new factory, which they hope will be completed by January, will enable them to turn out high class machines at a very moderate figure. They are introducing an entirely new feature in the construction of next year's frame, the engine now being built into the same. A novel exhibit at their stand and one which attracted much attention and praise, was their new lady's motorcycle, which presented a very neat and compact appearance. We understand that they have already booked several orders for these machines, including one from that well-known lady motorcyclist, Mrs. Kennard. Another feature well worthy of note is their excellent fore-carriage, which although detachable, is of a very rigid design. The steering heads, in place of the usual vertical ones, are now raked at the same angle as that of the bicycle, and the ball and socket system of steering is entirely dispensed with.



The Bramley Lady's Motor-Bicycle.



## CYCLOMOT'S CAUSERIE.

### *Aims at Perfection.*

Mr. Mervyn O'Gorman has so pretty a wit and at the same time is so sound in his mechanical theory that when the Auto-Cycle Club were compelled to bring the proceedings, on the occasion of the annual dinner, to a close without hearing his paper on improvements which are desirable in the motorcycle, there was a general feeling of disappointment. However, now that we have had a night's sleep upon the decision, the impression has gained ground that the delay will be to the general advantage, especially as prior publication of the paper is permitted in this case. We are able to read it through at leisure and to go over it time after time and to form well-considered opinions upon it, and the result will be that, when the paper is read, in a week or two's time, there will be such a flood of discussion that it will require all Mr. O'Gorman's level-headedness to prevent him from being overwhelmed! Mr. O'Gorman raises many points in the paper, which appears elsewhere in this issue, and it is significant that the matters which have to-day become important are those which two years ago were placed in the background as being almost irrelevant when there were matters of so much greater importance to be discussed. This would seem to confirm my argument that the motorcycle has been improved out of all knowledge during the past two years; so much so, in fact, that we have become critical about minor details, and are even objecting to certain small discomforts attaching to the use of the individual locomotive.

### *Silence: its Advantages and Otherwise.*

Thus, Mr. O'Gorman asks for better methods of silencing, and he suggests two or three principles upon which designers might work in order to secure a silent machine. This is rather a complicated subject because, speaking from my own experience, there are certain advantages and disadvantages about a motor that is as silent as a country churchyard. My present machine is the quietest I have ever ridden and, in consequence, fewer dogs are disturbed or irritated to the barking point, when they are passed by the wayside, whilst companions in trailers or on cycles find the small noise omitted to be far from unpleasant. However, I would willingly agree to a further reduction of such noise as is still made by it, provided a certain modicum of sound were left whereby to judge how the engine is running. In this respect, dead silence is not altogether desirable. I dare say many of my readers have driven their machines over cobbled roads where the din of the traffic has been so great that not a sound could be heard from the motor, or they have ridden in a party of pom-pomming machines when the sound from the rider's own engine could not be disentangled from the uproar going on around. The position in either case is somewhat disconcerting because the other senses are not trained to pick out the other indications, and so the rider has, for the time being, lost all grip of his engine. In fact, there are times in such circumstances as these when one wonders whether the engine is firing properly and the only guide to its behaviour is the fact that the machine is travelling forward. But it is a curious fact that the pace of the machine is absolutely no guide whatever to the man who drives his machine on hearing, and so it comes about that a perfectly silent engine would be a most difficult piece of mechanism to control. A well-known motoring friend of mine, who is stone deaf, does not seem to suffer from the permanent loss of hearing as would anyone else who was but temporarily deprived of that sense, but in the course of many years he must have

developed other senses of which we ordinary mortals are ignorant. Driving with him, I have sat and marvelled at the absolute perfect consciousness of the doings of his engine—a consciousness quite as acute as that of the passenger, who was judging the engine's behaviour purely from sound. But when one learns to judge by sound, the presence of an overpowering noise is so distracting that one is, for a time, all at sea, and this fact is all the more curious in that whilst driving under normal circumstances the noise from the engine does not dominate the mind; rather one is merely conscious of the sound in an automatic sort of fashion (except when the attention is specially directed towards it), and only when a variation is noticed does the mind consent to drop other matters for the moment to give some regard to the engine, giving the impulse to the hand, which instantly proceeds to make the necessary adjustments. In fact, after a rider has gained the experience and the confidence which go to make him part and parcel of the machine he is driving, his hands make the changes almost as automatically as the stride is lengthened or shortened when walking.

### *Other Guides to Driving.*

Of course, there are other useful sounds besides the noise from the exhaust which might be utilised for the purpose of a guide to driving, and perhaps the best of these is the clicking of the valves. On a governed engine, noise of any kind is scarcely necessary, because the engine is not able to race when the load is taken off, and the most delightful ride I have ever had was on a car which was so perfectly silent that only the slight buzzing of the tremblers on the coil could be heard. Yet, despite this fact, I still cling to sound as possessing a value in the driving of a motorcycle, the only thing I ask being that the sound shall only be just sufficient for the purpose of the driver, and not enough to be heard by an onlooker a few yards distant from the machine. Perhaps, as the efficient silencer is gradually developed, we shall develop that other sense of "feeling" which in my friend afore-mentioned has taken the place of hearing.

### *The M.O. Valve.*

A step towards perfection which has been generally taken by makers of motorcycle engines for next year is the adoption of the mechanically-operated inlet valve. When the Minerva Company introduced the device a year ago it was the subject of much adverse criticism, and it occasioned very heated trade opposition. I remember perfectly that this journal was the only one which commended the change and regarded it as a distinct improvement, an opinion which, in a month, was confirmed by the appearance of the mechanical valve on most of the new designs in the Paris Show. This year it must be a source of satisfaction to the pioneers of the M.O.-V. to observe that the people who bitterly opposed it twelve months ago have now adopted it. In this the latter unquestionably do a very wise thing, but it must have been a lesson to them and to many others (at least, so I hope), the outcome of which will presumably be that they will in future be a little more temperate in their criticisms of new methods and devices appearing on rival engines and motorcycles. Users of motorcycles always remember these facts in a most awkward way, and their sympathies will always lean towards the concern which has led the way in the matter of improvement, and, when a novel feature introduced by a particular firm of makers becomes a success, riders have faith in any other departure from generally accepted lines that may afterwards be introduced by that firm, and at the same time feel contempt towards the rivals who could do nothing but throw mud.



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## OPINION

### A Serious Menace.

Lord Shrewsbury—himself associated with the motor industry—in a notable speech last week strongly urged the advisability of the formation of an independent body constituted on the lines of the Jockey Club of competent gentlemen entirely free from trade influences, which should undertake the vitally important tasks of controlling the sport and encouraging the pastime of motoring. Recently, the feeling has grown strong that the time has come for the dissociation of the Automobile Club from all trade influences. The matter is already one of wide comment at the Club, and whilst the remarks of Lord Shrewsbury but give form to these feelings and echo the general opinion, he suggests a solution of the difficulty which would inevitably involve automobilism in a maelstrom of strife and disorder. The way out of the difficulty is a simple one, but it is one which must be followed determinedly and without any hesitation. It is this: The trade and motor Press must be rigidly excluded from all committees of the Club. The former for the reasons stated below; the latter because it is obviously under obligations to the trade. The adoption of such a course, especially as regards the trade, has been found to be advisable, and in some cases necessary, in connection with all other sports and pastimes, and the Automobile Club will find that the principle cannot be departed from with impunity. Nobody will deny that during the early days of motoring the presence of trade members on the various committees was an advantage, nor can it be denied that they have performed valuable services in the past, but conditions have now changed. Trade members are no longer indispensable on committees and, again, competition has become so keen in business that the temptation to use a position for motives of self-interest is one which can only be resisted by a few. We know of some trade members, for instance, who possess the rare ability of considering a question from the disinterested standpoint, and of refusing to consider the effects of a proposal upon their own interests; we also have reason to believe that such gentlemen agree with us upon the advisability of Club committees being free from trade influences, and would be prepared to set an example by resigning. A pointer in this direction was plainly given at last week's important meeting of the provincial clubs, when a chorus of approval went up on the suggestion that the proposed federation should be free from the trade element. To-day the Automobile Club is strong enough, if it likes, to stand up and shake off this influence

It must make a bold effort to render it impossible for individuals to exploit the Club for their own ends at the inevitable expense of the Club, and also of the rest of the trade itself. It must remove all semblance of trade influence and control from the organisation of Club events. It must, in fact, set itself to foster the amateur side of the sport and the pastime, and thus render itself independent of the trade. The state of affairs which exists to-day at the Club has never been permitted for a moment even in the legislative circles of cycling, the result being that the controlling body of cycling is strong and powerful, is actuated solely by the desire to keep the sport pure, whilst it suffers not a suggestion of dictation from the trade. It might be urged that their removal would be the means of inducing men of leisure and experience, who had hitherto stood aloof, to come forward and rapidly fill the vacancies. If they did not do this, it would be proof positive that the Club itself was not wanted; at least by those who at present form its backbone. A glance down the list of members shows man after man who would be both competent and willing to work for the Club under altered conditions. Besides, even if the trade and Press retire from the Club committees, it does not follow that their services will no longer be available in case of need.

We are confident that none will more cordially agree with our advocacy of the retirement of trade members than the trade as a whole. Its interests will be best served by free, fair and independent decisions, and by the compulsory cessation of tactics which may possibly end in monopoly.

### The Provinces and Piccadilly.

Whilst automobilism has grown by leaps and bounds, both within and without the sphere of the Automobile Club, it cannot be truthfully said that the Club has made the most of its opportunities or has gone out of its way in the least in order to bring every actual and potential motorist into touch with the Club. In its treatment of provincial automobile clubs the Automobile Club has been most remiss. It should never have flagged in its efforts to secure the affiliation to it of every provincial motor club, and it should have amended its rules at once when it ascertained that the reason why such clubs held aloof was because such advantages as were offered were not indispensable, whilst the fee demanded for them was excessive. The great cause for complaint was the alleged practical hopelessness of any attempt to secure a voice in the control of affairs without an unwelcome recourse to a provincial ticket and plumping at the annual election of the executive committees. Had these complaints been met and had any determined attempt been made to overcome the objections, there would have been no need for the proposal of the Reading Automobile Club, and there would have been no such meeting of provincial clubs as that held in London last Wednesday. The formation of a Provincial Automobile Association we have all along regarded as being quite unnecessary, unless the Automobile Club should decline to step down from its pedestal, and the feeling of the meeting on Wednesday showed that this view is generally held, but the reason for the prevalence of this opinion is not mere consideration for the welfare of the Club. Rather it is the broader reason that anything in the nature of a split in the ranks of motorists at so crucial a time as the present is to be avoided at all costs.

It is to be hoped that, in the meeting of provincial clubs, the Automobile Club will recognise the writing on the wall, which plainly says, "Cater for the popular side, and consider the sport." The popular side of motoring wants real live advantages offered in return for the subscriptions demanded—which must be moderate. It requires to be considered in every way, emphasising the fact that in numbers alone it carries far more weight than does the limited class who can afford to purchase the luxurious car. It contends—and rightly so—that the wealthy individual is constant to no hobby or pastime, but will be as easily converted from motoring as he was towards it, whereas the man of moderate means has selected the hobby of motoring after careful thought and as the result of enthusiasm.

# NEWS.

## The Paris Show!

First illustrated report of motorcycle and light car exhibits in next week's issue of "THE MOTOR."

Three special representatives of this journal left London for Paris on Tuesday to report the Paris Show.

The special attention of every reader of "THE MOTOR" is directed to the two leading articles in this issue.

The Chinese Empress is said to have recently had sixteen motorcars delivered by a Berlin firm to her order.

A telegram from Berlin states that Harkness and Winton will definitely enter cars for the Gordon-Bennett race.

Mr. Mark Mayhew denies emphatically a rumour that he is about to relinquish the command of the Motor Volunteer Corps.

Sir Frederick Bramwell, the well-known and greatly respected technical expert, died last week in London. He was the only honorary member of the Automobile Club.

The question of the moment is whether the Automobile Club will make an effort to shake itself free of trade influence. We deal with the matter editorially this week.

Motorcars form one of the principal features of the Christmas toy collections this year. They range from 6d. upwards, and may be said to appeal particularly to those of moderate means.

Mr. Mark Mayhew has promised to present to the Putney Athletic Club a 50 guinea challenge cup to be competed for in motorcycling events, when the projected track at Putney materialises.

"Cycling" this week might almost be described as a club dinner number, a large number of "annuals" having been held during the week-end, all of which are reported in the only English cycling journal.

The Auto-Cycle Club is preparing, for the purposes of history, a complete list of the motorcycling clubs in this country, and, in connection therewith, is noting the date of the actual formation of each club. In a few years' time such information will not be so easily obtainable as it is at present.

The Duke of Newcastle, whilst riding in his car with two friends, near Retford, last week, had a very unpleasant experience. His chauffeur, who was at the helm, suddenly encountered a flock of sheep. It was impossible to steer clear of them, and nine of the poor animals met with a sudden death.

A contemporary makes the mistake of publicly regretting that the limit on trailer speed has not been abolished by the new regulations. It is now perfectly clear that all the old speed limitations have been entirely abolished in favour of the new one of twenty miles an hour, which applies to all motor vehicles and to trains of such vehicles.

A motor launch race meeting on Lake Lucerne is one of the attractions for next year's visitors to Switzerland.

The Danish fishing industry, realising the value of motor boats, are experimenting in this direction. The Danish Government has offered to lend £5,000 to cover the initial cost of purchasing suitable boats.

Starley's worm driven motorcycle created a vast amount of interest at the National Show, and considerable difficulty was experienced in accommodating the number of applicants for trial spins in the grounds. Mr. W. Starley informs us he is delighted with the amount of business done.

The report of the judges of the thousand miles reliability trials for cars is now in its final stages, and is expected to be issued very shortly. The awards are expected to be announced this week. The interval between the conclusion of the trials and the announcement of the results—nearly three months—has been inevitable, owing to the elaborate character of the information which was abstracted from the doings of the cars. Consequently the amount of statistical work (which has been in the capable hands of Mr. Stewart Mallam and his staff) has been enormous. This lapse of time has had the effect of giving undue prominence to those cars which made non-stop runs, a fact which shows that the public is apt to be led to false conclusions by incomplete information.

## The Paris Salon.

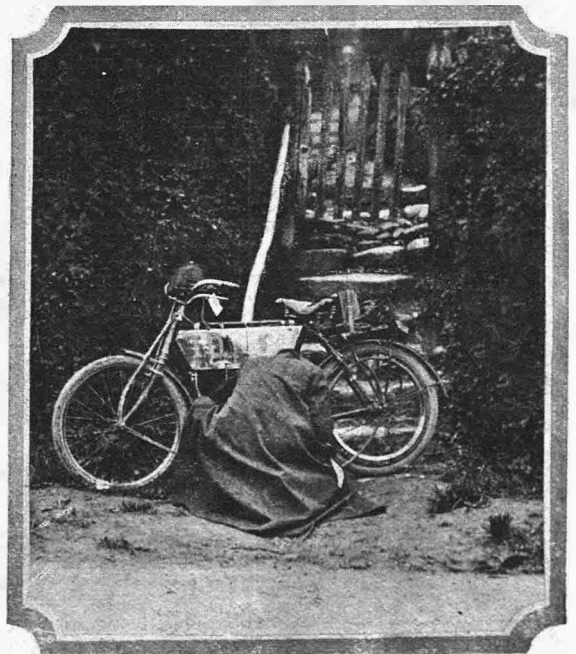
This annual exhibition, which includes a comprehensive display of motorcars, motorcycles and bicycles, opens on Thursday, December 10th, and continues over the two following weeks. The municipal council of the City has again decided to offer its gold medal for competition in the motor section. The Grand Palais, where the exhibition is held, is undergoing considerable alteration and re-construction in parts, in view of the fact that the number of exhibitors this year exceeds that of any former year by about 300. The motor exhibits promise to be of unusual interest and importance. Exhibitors are busy constructing their stands. A special section will be devoted to exhibits demonstrating the value of denaturised alcohol for lighting, heating, and motive purposes.

One of the interesting features at the Paris Salon, which opens this week, will be the various types of motor launches.

The results of the French Motorcycle Club's labours in awarding prizes, etc., do not appear to have given general satisfaction to the competitors. More than one letter has been written on the subject and doubtless more will be heard of it.

## Failure through Lack of Capital.

The Velox Motor Co., of Coventry, which was promoted in 1902 by the New Amalgamated Tyre Co., with a nominal capital of £50,000, in 200,000 5s. shares, has been wound up, and a meeting of the creditors and shareholders was held in London, on Thursday last. It appears that the working capital had only amounted to £3,000, in addition to which the directors had advanced £515 and guaranteed certain payments for which £ debentures for £1,500 were given as security. Accounts were filed showing a deficiency of £3,103 of assets over liabilities, and a contributories' deficiency of £18,219. The chairman of the company, Mr. R. C. Power, in support of a scheme for the re-construction of the company, said that, with a capital of £10,000 to £12,000, the company would have been successful. The creditors favoured the election of Mr. E. M. Hart, of Birmingham, as liquidator; but as the shareholders supported the appointment of the Official Receiver, the matter will be settled by the Court.

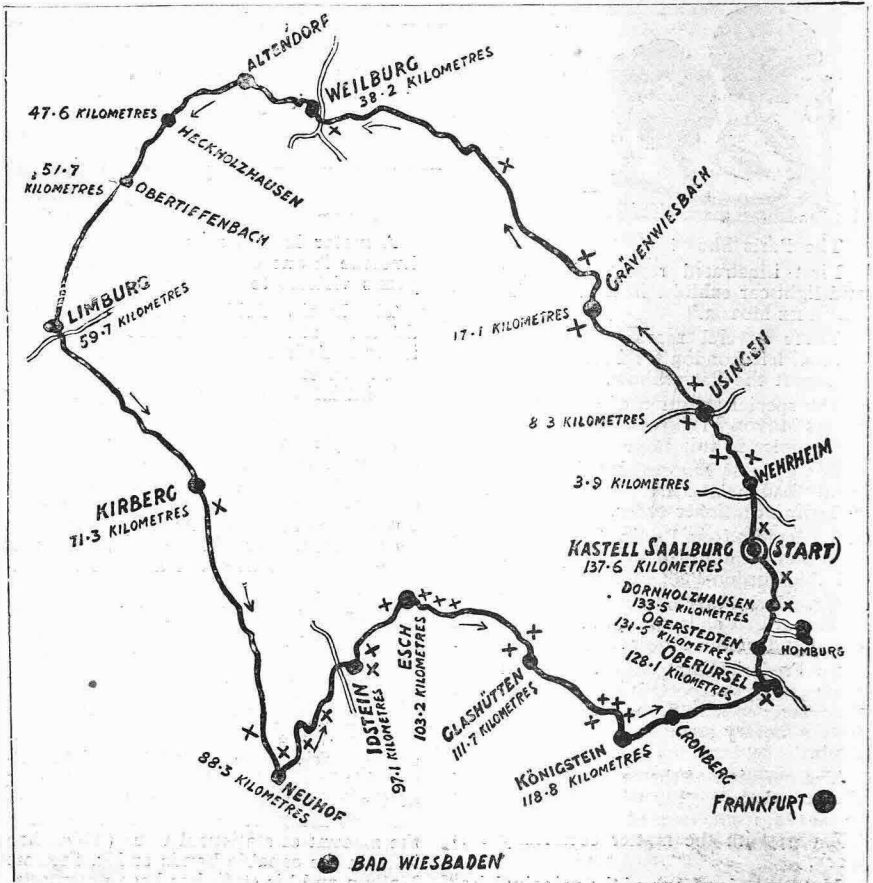


A WAYSIDE ECHO!

The Society of Motor Manufacturers and Traders met in annual general meeting at the Hotel Cecil last Thursday and passed the committee's report and statement of accounts. There are no concerns forming the Society, the chief work of which is the promotion of the Trade Show at the Crystal Palace each spring. Mr. F. R. Simms, who was in the chair, hinted at the possibility of the need for two shows in the near future—one in November for the trade and one in February for the public. Beyond the election of seven new councillors, no other business transpired.

**Federation of Motor Clubs in the Air.**

At the invitation of the Reading Automobile Club a dozen or more provincial motor clubs met at the Inns of Court Hotel, London, on Wednesday last to consider the proposals recently put forward by the Reading Association for the formation of a federation of provincial clubs. Dr. J. H. Walters, the president of the Reading Club, occupied the chair and introduced the subject to the audience. The ground for complaint against the Automobile Club was that the advantages offered to clubs affiliated to it were very small, whilst the fee (10s. 6d. per annum for each member) was proportionately high, and the affiliated clubs were able to secure little or no voice in the control of the parent club. The formation of a separate federation was, therefore, proposed, but it was intended that it should work in a friendly manner with the Automobile Club. Considerable discussion ensued, the general feeling being that if the provincial clubs would agree on a concerted line of action, the parent club would probably be induced to alter its attitude and, therefore, it was decided to go to the club with a set of demands when, if a satisfactory agreement could not be arrived at, the formation of the federation be again considered. With that the meeting proceeded, in camera, to consider its requirements. We believe the Automobile Club has recently issued an amended offer whereby a choice of three forms of affiliation is given at different rates, and we also understand that the Auto-Cycle Club has for some time been dealing with the matter of securing the affiliation to it of all motorcycle clubs, feeling that motorcyclists will be well advised to look after themselves.

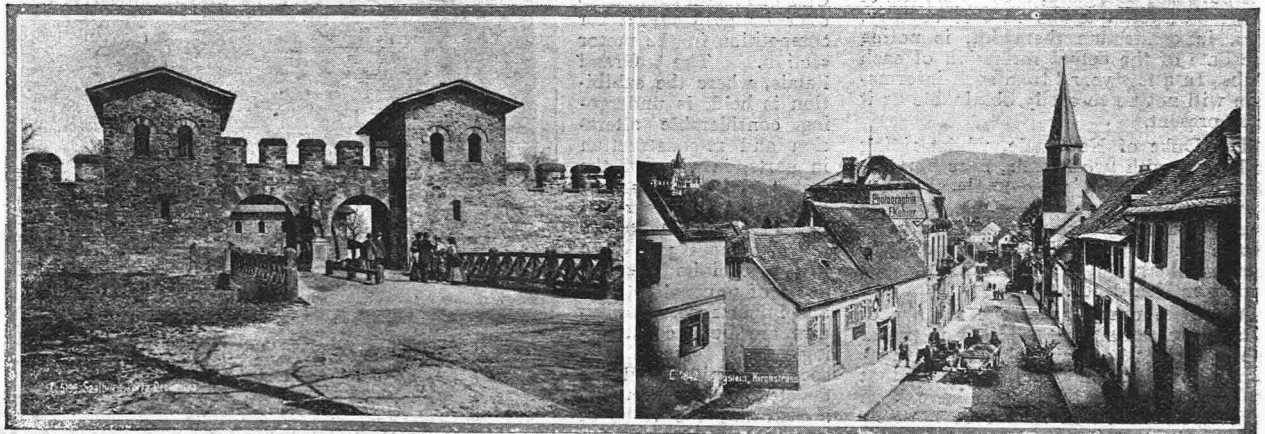


**THE GORDON-BENNETT RACE ROUTE.**  
NOTE.—The map gives the distances; the arrows indicate the direction of the cars; railways are indicated by double open lines; and danger spots are shown by the crosses.

**The Illuminated Number Plate.**

Mr. A. Pellant the well-known motorcar and cycle expert of 74, Shaftesbury Avenue, London, W.C., has produced to us ample evidence to show that the credit for suggesting the number plate which projects from the lamp to the Local Government Board belongs to him alone. He is well acquainted with the Lord Advocate of Scotland, and it was at the latter's instigation that Mr. Pellant conducted a

series of experiments which finally resulted in the above-mentioned suggestion and we are also told that Mr. Pellant has protected the idea. Mr. Pellant proposes to fix on any lamp that may be sent to him a plate of the full size to carry the number allotted to a rider and to have the number painted on both sides, as well for a very small charge guaranteeing to fit up any lamp sent him. He will probably be advertising his intentions in the current issue of "THE MOTOR."



**ON THE GORDON-BENNETT ROUTE.**  
Historic gate at Saalburg. Church Street, Königstein.



**The First Dinner of the Auto-Cycle Club.**

The Auto-Cycle Club deserves to be congratulated upon the success of its first annual dinner, held at the Automobile Club, Piccadilly, last Tuesday. The President, Mr. Roger W. Wallace, was in the chair, and was supported by nearly sixty members and friends of the Club, including Professor Boys, Dr. Whitehall Cooke, Messrs. M. O'Gorman, J. W. Orde, C. A. Smith, J. Pennell, E. Perman, D. Citroen, J. A. Jackson, A. Goodwin, J. van Hooydonk, A. F. Hisley, A. J. Wilson, A. G. Reynolds, F. J. Johns, G. F. Sharp, H. Rose, A. C. Wright, H. Martin, F. Crundall, F. Straight, and others. A notable feature was the strong force in which members of the Motor Cycling Club attended the dinner, a courtesy which we feel sure will be reciprocated when the latter club holds its annual function next month. Last year the M.C.C. introduced a novel kind of programme for its dinner, making a big departure from the ordinary set affair after the average club dinner. The Auto-Cycle Club's dinner was also run upon lines somewhat different to the usual, for the whole of the speeches—eight in all—were run off in a solid block, but as the variety was great, and brevity had been ordained, they were by no means a tax on the patience of the guests. The loyal toast was followed by a sketchy speech from the chair, toasting the Club. The brief history of the Club's formation, its career, and a note of its intentions, were dealt with in this and in Mr. Mervyn O'Gor-

man's reply, the latter being quaintly humorous. Professor Boys toasted the kindred associations, Mr. Pennell racily replying for the C.T.C., and Mr. Jackson, in a speech full of good-humoured banter, for the Motor Cycling Club. The toast of the Chairman was well received, as was Mr. Wallace's reply. The medals and prizes won in Ireland were distributed, and then Mr. van Hooydonk gave a lantern entertainment dealing with his motor-cycling reminiscences. Mr. O' Gorman's paper (reproduced in full in this issue, and also referred to in "Causerie") was to have followed, but, as time was short, it was deemed advisable to defer it to another night, otherwise it could not have received the justice demanded for it. The function was enjoyable from beginning to end, the meal itself doing immense credit to the culinary resources of the Automobile Club.



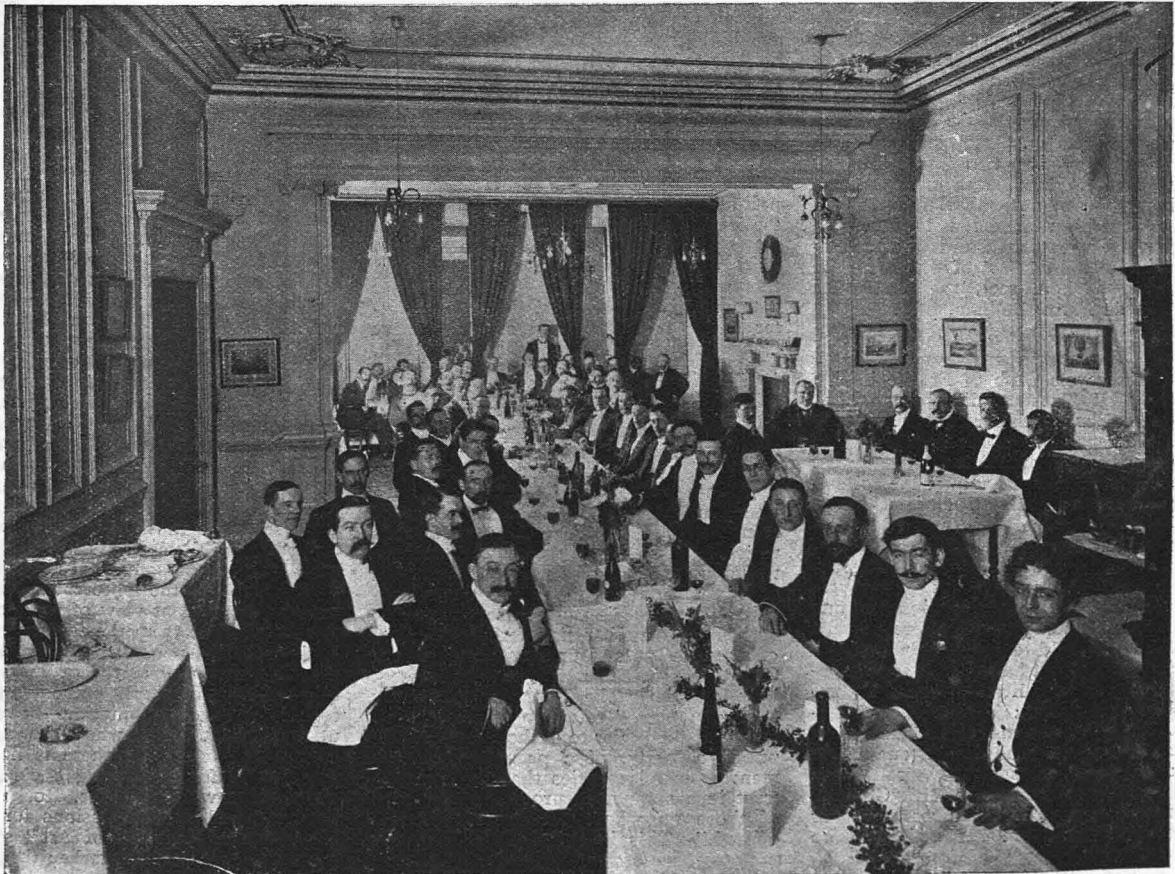
**The Badge of the Auto-Cycle Club.**

The Continental Caoutchouc and Gutta-percha Co. inform us that they have been making motorcycle tyres for some years, but it is only recently they have offered them on the English market.

The makers of the "Mabon" Trimo Motorcycle ask us to state that they fit the 3 1/2 h.p. Mabon Motor to this machine except when specially ordered.

**The Singer Belt-driven Motor-Bicycle.**

As we have previously announced, Singer and Co., Ltd., Coventry, are now building a 3 h.p. belt driven motor-bicycle in addition to their well-known chain and gear types. This new machine created a most favourable impression at the National Show, where it made its debut, and we have no doubt it will be in great demand during the next season. The well-known and well-tried Singer engine is fitted, and this, as will be seen in the illustration which appeared in our issue of November 25th, is placed in a specially designed cradle, which holds it rigidly in a vertical position. A spray carburettor is adopted, and, as on the other models, magneto ignition is employed. The control is exceedingly simple, one lever operating the throttle regulator and exhaust valve lifter. The petrol tank possesses a neat appearance, and has a capacity for spirit for 150 miles. The silencer is rather larger than usual, and it is claimed to be one of the most effective on the market—in fact, is a silencer. A special clutch, permitting the engine to be started before mounting, or freed at any moment, can also be attached at a small extra cost. The machine, which weighs about 150lbs., is like all of the Singer productions, beautifully made and finished, and is likely to add to the company's reputation for reliability and up-to-dateness.



Photo]

**THE AUTO-CYCLE CLUB DINNER AT THE AUTOMOBILE CLUB.**

[Campbell & Gray. 19

Messrs. E. Baedeker ask us to state that the standard pattern Dürkopp motor-bicycle can be seen at their depot, 17, Newcastle Street, Farringdon Street, London. Messrs. Dürkopp have not exhibited at any of the recent Shows. The machine of their name exhibited at the National was by a different maker.

**To Encourage the Industry.**

A considerable amount of frothy indignation was excited last summer amongst a section of Britons who failed to realise the importance of the motor industry and the full meaning of the Gordon-Bennett race, by the closing of a long length of public highway for a space of some twelve hours. How will these little minds, we wonder, bear the intelligence that in Germany—the venue of next year's Gordon-Bennett—not only will a similar length of roadway be closed to the public for at least an equal length of time, but the Circuit des Ardennes course—a stretch of road some 50 miles long—will be open to Gordon-Bennett competitors of all nations and practically closed to the public during the hours of 8 to 11 in the morning and 2 to 4 in the afternoon every day for a fortnight preceding the day of the great race!

**The Motor Cycling Club.**

There will be a Boxing Day run of the Motor Cycling Club at Wisley (Hut Hotel) on the Ripley Road, meeting at the Roehampton Gate entrance to Richmond Park (the shortest route to which is via Priory Lane, Barnes Common) at 11 o'clock. As many members are frequently to be met with on the Portsmouth Road, it is suggested that the "Angel," Ditton, will be a central rendezvous for members to assemble on Sundays about 11 o'clock during the off season. Wet week-ends have, so far, interfered with the attendance. The weekly runs, however, promise to become very popular as soon as the fine weather sets in. Lady supporters of the club are growing, two of the fair sex having recently become members. Will members please note that the annual dinner has been arranged for the 5th January at Frascati's, Oxford Street, London, W., full particulars of which can be had from the hon. sec., 17, Fieldhouse Road, Hyde Farm, Balham, S.W.

**Final Awards in the French Motorcycle Trials.**

The Motorcycle Club of France held a banquet last Tuesday night, December 1st, to celebrate the recent reliability trials, full reports of which have appeared in previous issues of "THE MOTOR." On the conclusion of the banquet the following awards were declared, from which it will be seen that the Werner and Motosacoche machines again headed the list in their respective series. The Gobron-Minerva—the latest type of motorcycle manufactured in France—as winner of one of the special money prizes offered by the club, must be held to have made a triumphant debut. First Series (Cylinder capacity, one-third of a litre)—Werner II., reliability gold medal; Werner I. and Lamandière, silver-gilt medals; Chantemedé bronze medal. Second Series (one-fourth of a litre)—Motosacoche I., reliability gold medal; Motosacoche II., Gobron-Minerva, Bonnet and Pecourt, silver medals. Special money prizes were awarded to Werner II., Motosacoche I., Lamandière, Motosacoche II., Gobron-Minerva and Chantemedé.



—From "The Magazine of Art.

Pierre Roche's automobile masks or false faces.

In refreshing contrast to the petty tyranny of some of the rural district councils, comes the broader-minded policy of our own London County Council who have unanimously approved of the recommendation of the Highways Committee not to close any road to motor traffic at present, nor to attempt to avail themselves of the "ten-miles-an-hour" clause.

"Le Velo" publishes a letter which will have a pathetic and perhaps—in view of certain clauses of the new Act—a personal interest for the English motorist. The letter is from an imprisoned chauffeur who, after complaining that he was identified on the evidence of his number taken whilst passing at an (alleged) furious rate, inveighs bitterly against the treatment he received in prison. He complains of having been bundled in with thieves, burglars and other undesirable members of the criminal fraternity, and of having had all his letters opened by the prison authorities. This, too, after having been taken to gaol in the prison van.

**The Club and the County Councils.**

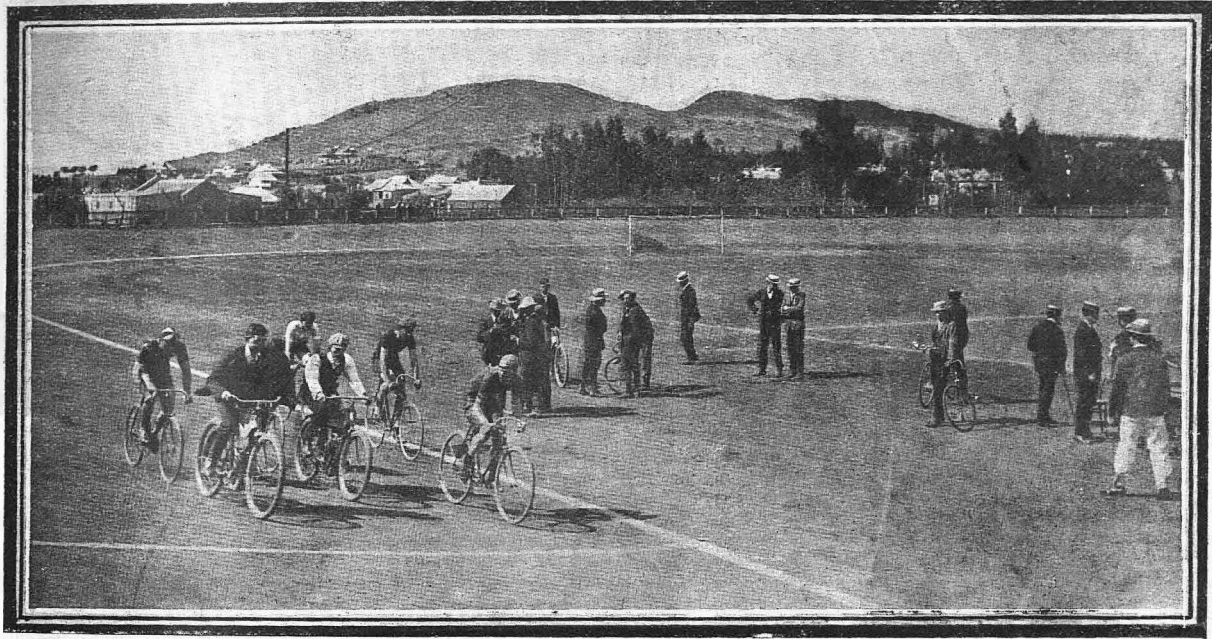
The Automobile Club is becoming painfully notorious for the perpetration of tactical blunders. The curious part about it is that these mistakes vary in being first the result of vacillation, and then, apparently, deliberate. In the latter category must be classed the circular letter which has been sent out to County Councils by the Administrative Secretary, whether with the consent of whichever committee settles these matters we cannot say. This document is extraordinary. It intimates, in the first place, that fees for the registration of cars may be paid in any county which the owner chooses. It then goes on to say that the A.C. have under consideration the desirability of compiling a list of those County Councils which have shown a desire to encourage the development of automobilism, "in order to secure for those counties a considerable proportion of the revenue to be derived from registration fees." The circular then puts four questions to the County Council to which it is addressed. In a letter to "The Times" "A County Council Officer" refers to this communication as "an offer to authorities, in their public capacity, of a pecuniary inducement to exercise duties that are a public trust in a manner to promote the wishes of those on whose behalf the bribe, is offered." This is exactly how it occurs to us, and we cannot think that this latest move on the part of the club will be approved of by motorists generally.

Prince Alexander of Solms-Braunfels has been unanimously elected President of the Automobile Club of Austria. The new President, who is still on the right side of fifty, is a lieutenant in the 8th Austrian Hussars, a keen all-round sportsman and an enthusiastic motorist.

Appropriate tribute was paid to the memory of the late Comte de Chasseloup-Laubat at a meeting of the Automobile Club de France last week, and it was decided to organise a subscription fund for a fitting memorial of his services to automobilism. The late count's brother was elected a member of the administrative council to replace the vacancy.

**Art and the Automobile.**

The new locomotion is engaging a considerable amount of artistic attention. In the domain of poetry the late Mr. Henley's stirring song of "Speed" opened the eyes of a good many people who had till then associated the motor vehicle with nothing but ugliness, noise, smell and danger. Sir W. B. Richmond recently announced his intention of designing a beautiful motor-car to replace what he considers the hideous types now in existence. Mr. Briton Riviere on the other hand sees no potential beauty in automobilism and advocates the retention of the horse-drawn vehicle on the ground of the gee-gee's artistic beauty. But it has been left to a sculptor—and he a Frenchman—to apply the canons of Art to the automobilist as opposed to the automobile. Pierre Roche, a distinguished Breton sculptor, whose work is well-known to visitors at the Paris Salon, has experienced much perturbation of spirit at the unqualified ugliness of the goggles and masks worn by automobilists of both sexes. He has consequently designed a series of artistic masks to replace the strictly utilitarian objects of present day use. The mask is given a broadly-treated resemblance to its wearer, the features being made somewhat larger in view of the speed of the motorcar, which only permits a transient view of its occupants. It can be lifted from the face and pushed back on to the top of the wearer's cap in just the same way as the ordinary goggle type, so that it clearly embodies that exceedingly rare combination—beauty and utility. Next year, when the new Act comes into force and there is no longer any motive for concealing one's features on a motor vehicle, Mous. Roche should be smothered in commissions for masks, if—as "The Magazine of Art" seems to intimate—he has not forsaken the idea for some other manifestation of his profession.



The motor-bicycle and the motorcar are gradually penetrating to all corners of the earth. In this issue we illustrate motoring events in India and Australia. The above photograph depicts a cycle race held at Pretoria, in which it will be observed motor-bicycles are in use for pacing purposes.

**Not a Popular Type.**

A French journal announces a hill-climbing competition for next spring. Motorcars will be divided into four classes, the first class including all vehicles of from "0 to 5" horse-power. It is asserted that manufacturers of the 0 h.p. type are hanging back in an extraordinary way, as not a single entry has yet been received by the promoters.

**A Walking Machine.**

At Liverpool on Saturday, November 28th, Prof. H. S. Hele-Shaw delivered an interesting lecture on the Diplock "Pedrail," which can be best described as a traction engine with feet. In this invention, the ordinary railway method of locomotion is reversed, for a rail, which is attached to the body of the engine is supported by wheels on feet, and these wheels and feet revolve round the axle. By this method a traction engine can mount over any obstacle and proceed on rough ground or up hills just as easily as the ordinary engine can go on smooth roads. The invention, for which great things are predicted, can be readily attached to existing engines.

**Motorcycling Activity in Austria.**

The motorcycling section of the Austrian Automobile Club does not intend to let the petrol in its tanks go stale for want of use. Amongst the many trials and competitions announced for the immediate future and for next season are hill climbing trials at Semmering and Exelberg; an international track race for the Lurion prize over a course of 100 kilometres (62 miles); an international road trial of 300 kilometres (186 miles) on Gordon-Bennett lines; a Vienna to Brunn race; an "express courier" ride; a "balloon pursuit" race; a "fuel consumption" competition; and a "paper-chase." A special excursion to Homburg for the Gordon-Bennett race next June will also be arranged.

Australia has been importing European motorcars and motor accessories largely of late. The most popular tyres out there seem to be the "Continental."

**Hostility from Innkeepers.**

Innkeepers are in some instances manifesting the same spirit of hostility to motorists which they formerly showed towards cyclists. The feeling is nothing like so widely extended, for Boniface shares the popular delusion that all motorists are millionaires. The decision in the Clifton Arms Hotel (Lytham) case, which as our readers will remember came before the court some weeks ago and resulted in the hotel keeper being fined, should serve to remind the licensed victualler that he cannot shirk his responsibility without adequate reason.

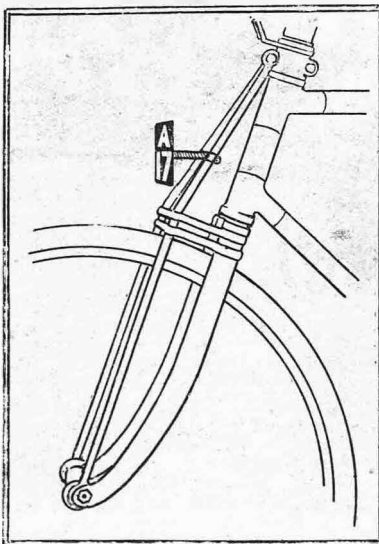
The Recorder of Bristol having decided that a motor-bicycle is not a carriage, and the magistrates of the same city having declined to run counter to that decision, although not agreeing with it, the Inland Revenue authorities will—it is said—appeal against it.

**Military Motoring.**

The latest development in motor locomotion comes from Germany where, it is announced, a petrol motor waggon carrying two field guns is to be constructed: the guns will be protected so that the gunners may be enabled to work them at close quarters with the enemy. The idea may develop into something practical, but it is difficult to realise how adequate protection against hostile artillery can be afforded without making the waggon so heavy as to destroy that mobility which is its chief "raison d'être."

**Assaults on Automobilists.**

Recently many members have complained to the Secretary of the Motor Union that they have been the victims of assaults when travelling upon their cars, but these complaints are seldom accompanied by sufficient evidence to enable the Motor Union to prosecute. At the last meeting of the committee, however, a letter was read from a member stating that when driving through Leyton a boy had thrown a stone which had struck him in the eye, and asking whether the Union would take proceedings. The member stated that he had a witness to the assault. It need hardly be said that the committee immediately agreed to take up the case and to pay all expenses. It is of the utmost importance that the perpetrators of cowardly or thoughtless attacks upon automobilists should be brought to book, and any member of the Union may rest assured that the committee will be only too glad to prosecute in any similar case.



Suggested position for front number on motor-bicycle.



**Motor Racing in Western Australia.**

**AN EXCITING TRACK INCIDENT.**

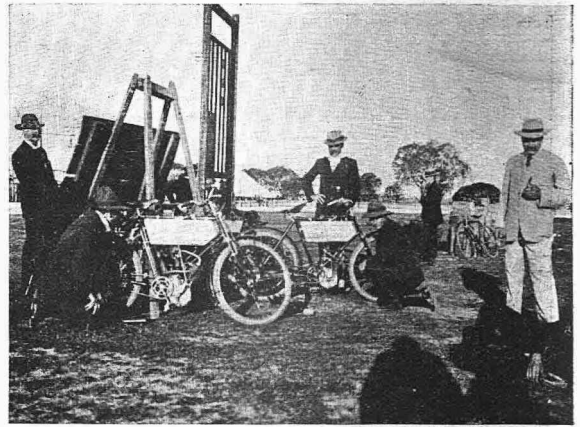
A series of motorcycle races were held at the W.A.C.A. Oval, Perth, West Australia, in conjunction with the eight hours' sports on 24th, 26th and 31st October. The first race was a ten mile handicap, in which seven competitors faced the starter, viz.:—Armstrong (2½ h.p. Minerva), McKnight (2 h.p. Indiana), Gilmour (1½ h.p. Werner), R. Sampson (1½ h.p. Werner), H. Sampson (1½ h.p. F.D. Werner), Woods (2 h.p. Minerva), Singe (1½ h.p. Columbia). Before a couple of miles were run off Woods had to retire with a short circuited battery and a broken oil pump. Shortly afterwards Armstrong, who was going well, doing the mile in 1 minute 40 seconds, broke his advance spark lever and was thereby unable to get any speed out of his machine. Gilmour rode a splendid race, and passed the finishing post first, with R. Sampson second, and H. Sampson third. The three competitors rode Werner 1½ h.p. machines. Time 18 mins. 23 secs.

The five mile race proved a little more exciting than the ten mile. The starters were: Armstrong, Lovegrove, Woods, Gilmour, Jewell, Sampson, H. Sampson, Singe, McKnight. H. Sampson and Singe had to retire as their tyres blew off the rims before going very far. Lovegrove on a 2½ h.p. Minerva made the pace hot from the start, but Gilmour stuck to him. Armstrong again had hard luck; as some of the petrol splashed out of the tank, and was ignited by a spark as a result of one of the electric wires coming in contact with the frame. Before he had gone far he was racing around the track enveloped in a sheet of flame. He quickly pulled up, however, and extinguished the

flame. He was nevertheless burnt about the face and hands a little, but luckily no further damage was done. Lovegrove won the race, with Gilmour second. Time 9 mins. 15 secs.

The five mile race held on the 26th was ridden in the rain, and only three competitors started, viz: Armstrong, Gilmour and McKnight. The latter won from Gilmour by half a lap. Trouble was caused by the belts slipping, resulting from the mud and wet; so McKnight with a chain-driven machine had it all his own way. Great interest is being taken in the coming meetings and it is expected that a largely increased number of competitors will start. As an example of how motorcycle racing is going ahead in Australia the following facts are interesting:—In the eight hours' sports, 1901, two machines started; in 1902, four machines; and this year ten started in the five miles and nine in the ten miles. Motorcycling, though only in its infancy here, is steadily on the increase, but the roads are against it.

W. K. Vanderbilt won the recent one mile hill climb at Eagle Rock, New Jersey, U.S.A., in 1 min. 36½ secs. on a 40 h.p. Mors car; Stevens on a Duryea did the second best time in 1 min. 37 secs.; and a Darracq car driven by Laroche took 1 min. 46 secs. The previous record—held by Stevens—was 2 mins. 42 secs.

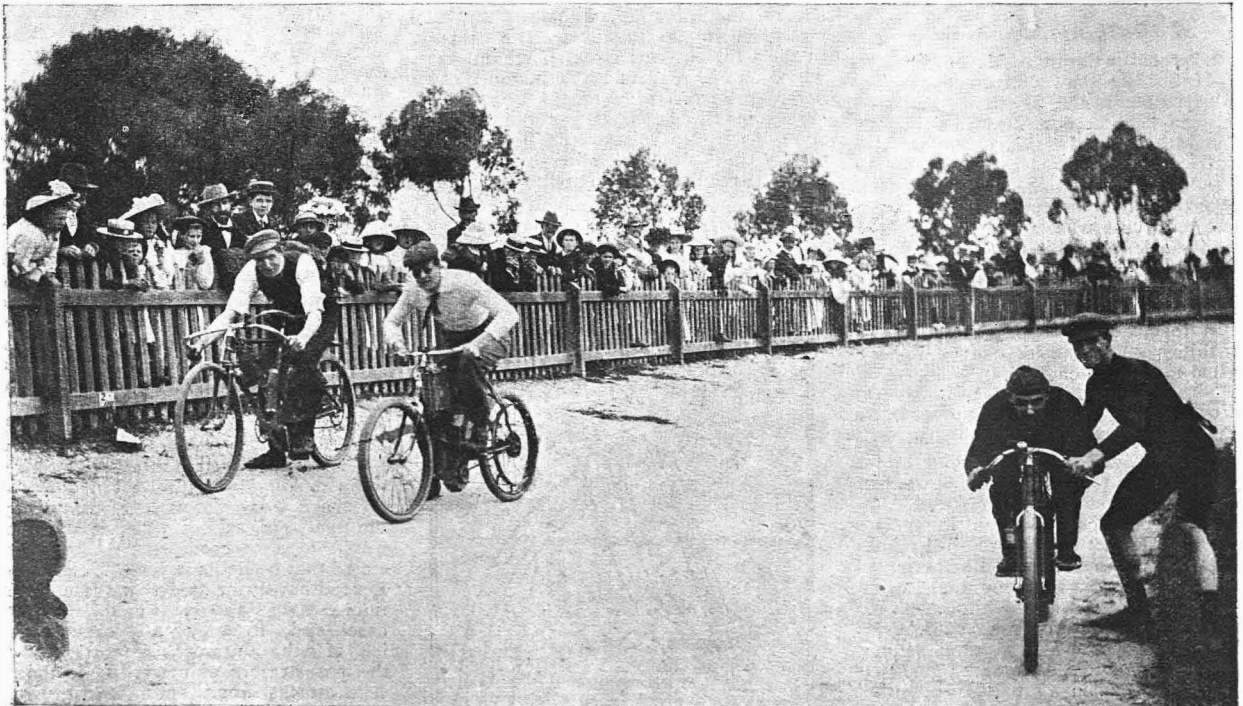


**MOTOR CYCLING IN AUSTRALIA.**  
Fixing up machines in the enclosure prior to a race.

A French motorist has forwarded an account to a Paris paper of a recent run on a motorcar in the Jura Alps through six inches of snow. Although driving at a high rate of speed there was no perceptible side-slip.

**A Long Trip on a Motor-Bicycle.**

Mr. Bramley Moore of the Hulbert-Bramley Motor Co., Ltd., Grand Parade, Putney (late The Booth Motor Company) will, early in the new year, make a round trip, starting from London, visiting the principal capitals of Europe. The journey is undertaken to prove the qualities of the Hulbert-Bramley motor-bicycle, and we are promised reports en route so that our readers will be kept informed of the progress and incidents of this plucky effort.



**MOTORCYCLE RACING IN AUSTRALIA.**  
Three of the starters—Jewell, Sampson and Gilmour—in the Five Miles Race.





**OTHER PEOPLE'S VIEWS.**

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

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

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

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

**Non-slipping Devices.**

Sir,—I read Mr. Douglas Fawcett's letter in a recent issue of "THE MOTOR" with much interest, agreeing with him in all points but one, viz., that a motor-bicycle cannot be ridden in wet weather. Until quite recently, I should have agreed with this, having had several falls through side-slip, each doing more or less damage. As a last resource I had fitted to my machine a device which I had hitherto considered rather impracticable, viz., the "Empire anti-skid and jack." The result has been that I can now ride over any kind of road I have yet come across in absolute safety, never having a semblance of a side-slip, and I daresay it has already saved its cost in preventing the usually costly repairs necessary after a fall. As a jack it is a huge improvement upon my old plain pattern, as it can be securely fixed up even with one leg in the gutter, and also as the machine can be wheeled with the jack in use.—Yours faithfully, F. M. GREEN.

**Remedy for Lost Compression on Humberette.**

Sir,—Having read G. Walker's letter in "THE MOTOR" of November 18th, re trouble with 5 h.p. Humberette inlet valve, and having successfully overcome trouble of a similar nature on one I drive, perhaps a word from me may help him to right the trouble. I found that my inlet valve behaved exactly as he describes, and that leakage of compression also occurred between the cylinder and the valve seating. Taking off the cylinder I ground the valve well into the cylinder and into the dome, round the seating of each I placed a coating of boiled oil. Before replacing the valve I ground it with emery flour, and saw that the shank of the valve was quite free. Next I rubbed the shank of the valve well with graphite, replaced the valve, tried the compression and found it act beautifully. My car will now take almost any hill.—Yours faithfully, W.H.G.

**The Carburetter Question.**

Sir,—At the risk of entering into a lengthy argument I should like to protest against the phrase "the spray type introduces another set of complications," as used by your correspondent W. Walker in his letter in a recent issue. The removal of the inlet valve is not necessary for inspection of the carburetter in nine out of ten machines, and there is no reason that it should be necessary in any machine. Referring to the "complication" paragraph in Mr. Walker's letter, I can only think that Mr. Walker has a poor opinion of the brain capacity of the average motorcyclist if, as he states, the rider finds "the screwing up of joints" a difficulty. The whole question in a nutshell is this. Is a closed tank, which cannot be cleaned or inspected inwardly, better than a simple piece of durable mechanism which can?—Yours faithfully,

T. CLARKE.

**Cylinder Capacity.**

Sir,—I made a point when at the Shows of finding the various cylinder capacities of the engines, and I was surprised to find that to quite half my inquiries the attendant replied that he did not know. However, by consulting the catalogues I have compiled the following list. I think a perusal of this list will furnish some proof that a definite standard is required to indicate what a "horse-power" really is.

2 h.p. :—	Iris ..	65 x 70	mm.
	Minerva ..	69 x 70	"
2½ h.p. :—	Iris ..	65 x 80	"
	Triumph ..	70 x 76	"
	Jap ..	70 x 76	"
3 h.p. :—	Automotor ..	75 x 80	"
	Triumph ..	75 x 80	"
	Ormonde ..	80 x 80	"
	Excelsior ..	80 x 80	"
	Riley ..	80 x 80	"
3¼ h.p. :—	Excelsior ..	84 x 84	"
3½ h.p. :—	Minerva ..	82 x 82	"
	Simms ..	82 x 82	"
	Ormonde ..	85 x 85	"
	Perry ..	86 x 86	"
	Riley ..	86 x 89	"
4 h.p. :—	M.M.C. ..	80 x 85	"
	(water cooled) Automotor ..	80 x 104	"
	Excelsior ..	90 x 96	"

My particular enquiry was for a 4 h.p. water-cooled engine to drive a fore-car, and I found such a difference between the M.M.C. 4 h.p. and the "Excelsior" 4 h.p. that I am now at a complete loss to decide which to have. Will some reader criticise my specification? Engine, 4 h.p. engine; cooling, water; drive, chain; gear, two-speed; clutch, giving free engine; engine to be governed; arc light (Simms-Bosch) magneto ignition.—Yours faithfully,

"SPARKER."

**Accumulator Management.**

Sir,—We have read with interest Messrs. S. W. Thompson and Co.'s recent letter on "Accumulator Management: a Warning." We thoroughly agree with their remarks, and would also like to point out that, apart from the deterioration of the cell by the loss of acid, and the adding of distilled water to make up the deficiency, considerable damage is done by the acid being upset on to the accumulator case and the terminals, which have to be renewed from time to time. To your readers who do not ride Minerva motors it may be interesting to know that the nuisance complained of by Messrs. Thompson and Co. is obviated in the accumulator supplied by us, as the acid contained therein is in the form of jelly. All that is necessary is to keep the plates covered with distilled water, and in the event of this water becoming upset none of the acid is lost, neither are the cases or terminals damaged.—Yours faithfully,

MINERVA MOTORS, LTD.

**Numbering of Motor-Bicycles.**

Sir,—Re numbering of motors, the law in this part of Holland states that "every motor vehicle must be registered, and must carry its number in a prominent position, both in front and rear of such vehicle; and further, the number must be visible at night." I may say that the law is enforced in regard to the first section; but for motorcycles the provision of a visible number at night is not enforced. Evidently the authorities here are men of sense, and see the unreasonableness of asking for such a restriction in reference to motorcycles. After trying various places for carrying the number plates, I at last adopted the following plan:—I fixed the back plate at the end of the rear mudguard. It is thus out of the way of rider, luggage, etc. I first bored two holes in the mudguard, about 1½ in. from end thereof, and then bored two corresponding holes in the plate, and after placing a piece of thin leather between the plate and the mudguard, I fastened them together by means of two small bolts and nuts, and then riveted them slightly to prevent nuts coming off. The nuts are on outside the plate, the heads of bolts being on the inner side of mudguard. The front plate is secured to the front brake rod by means of two metal straps and four bolts (screw heads) and nuts. Here, again, I used thin leather packing. I fixed this plate as low as possible on the brake rod, so that it is out of the way of the lamp, and as there is a square end to the rod it is impossible for the plate to get out of position. I may say that I have, during the last eighteen months, had no trouble with the plates, there is no rattling, and they are always in position.—Yours faithfully,

Amsterdam.

W. CURTIS.

**Fore-Carriage Experiences.**

Sir, I had a fine run with my Excelsior 2½ h.p. machine recently, riding from Streatham to Cromer at an average speed of 18½ miles an hour. I think this is the best run I have done on my 2½ h.p., with fore-carriage, passenger and portmanteau. The first 81 miles was absolutely non-stop, but a puncture necessitated half an hour's rest at this stage. I did over 120 miles on one gallon of Pratt's "A" spirit, which for a surface carburettor I think is excellent. I filled up the carburettor and tank, and took a spare tin (½ gallon), so did not use any other than what I carried. I have never experienced any overheating of the engine, and I usually drive fairly fast. For eleven hundred miles I never adjusted a detail of the machine, with the exception of the belt, which I shortened once, after doing 700 miles. The belt I use is a raw-hide one, supplied by the Bat people, and I find it is really good. I see that "Doctor," in a recent issue, complains of loss of power. I had the same trouble three months ago, and on taking the machine to the M.M.C. they put in a new inlet valve spring, costing 2d., and the difference was wonderful. I think "Doctor" should try this. I might mention that even when using Pratt's "B" spirit I have no trouble in starting off, the only difference being that it takes less air at the commencement. Your correspondent "H.W.L.C." should also see to his inlet valve spring, as his case is identical. My gear is 4½ inch engine pulley, and 20in. back pulley wheel. I think many riders use too much gas and not enough advance on the spark.—Yours faithfully,

A.W.L.A.

**Overheating of Fore-Carriage Engine.**

Sir, In your issue of November 18th a letter appears over the signature of "Competitor in the Trials," which certainly demands attention from all riders of the fore-carriage type motorcycle. The statement is there made that "it is impossible to prevent overheating on machines of this design on hilly roads." I, for one, disagree entirely with your correspondent. I have had considerable experience as a rider, and also as a passenger on several machines, other than my own—which is not one built by Mr. J. van Hooydonk. I have, however, had the pleasure of being a passenger on several occasions, the first of which was the Auto Cycle 1,000 miles reliability trial, on the first day of which I went to Canterbury and back on his machine, which had been entered for the trial, and I state now, as I did then, that his machine made a very fine performance over a most trying course. The next occasion was one of the rounds of the S. E. Edge cup, by which time Mr. Hooydonk had fitted a spray carburettor, the result of which was indeed most surprising. The machine tackled hills, apparently at full speed, even after having run many miles, and I could not trace the slightest tendency of the engine to lag as the result of overheating. The test was very severe, as in order to check the men we had to follow the last batch of riders for at least three-fourths of the journey to Stony Stratford, and then push on in order to check and turn those who had started first. This, therefore, means that the machine was running without a stop for the whole journey, the last part of which had to be performed at top speed in order to

arrive in time. I was particularly interested in the performance, as one hears so much about overheating in air-cooled engines, and I think that on this occasion at least I should have come across some trace of it. This, however, did not happen. I may mention that during the day I rode on that machine for upwards of 100 miles. I have ridden my own machine from Richmond to Oxford with but one stop of a few minutes' duration with an 11 stone passenger.—Yours faithfully,

A. J. CAMPBELL.

**Cleaning Motors.**

Sir,—A few lines in your instructive paper on cleaning a muddy motor-bicycle may be useful to fellow motorists. Water, which is still used by many, I have discarded for paraffin, my method of applying which may be appreciated, and will I think, be admitted to be an improvement on the brush. Get a glass bottle to hold about a gill, and fit it with a nozzle spraying apparatus, with rubber bulb. This will enable you to spray a very fine petroleum vapour, which is very searching, all over the machine, the engine, and all parts, both enamelled and plated. After you have thoroughly soaked it—which will not take more than ten minutes you may leave it until you have a little time to spare, as paraffin will not allow the mud to dry again. Then it will be found that the mud can be very easily knocked off with a rag, and that the enamel and plating will polish very well. It will also be noticed that the force of the spray will dislodge and wash away all dirt from inaccessible corners not otherwise reached; and also, what is more important, any paraffin omitted to be wiped off will not create rust as water would. Hoping this will lessen the labours of many motorists this winter.—Yours faithfully,

J. E. REES.

**Useful Charging Notes.**

Sir,—Having noticed a great many enquiries in "THE MOTOR" with reference to the number of lamps for charging ignition batteries from supply companies' mains, I beg to send you the enclosed table, giving full particulars for charging from mains of any voltage:—

Voltage of Supply.	No. of 160 p. lamps to pass 2 amperes.	Time required to charge 20 amp. hr. accumulator.	Cost per charge, at 4d. per unit.
50-60	2	10-12 hrs.	6d.
100-110	3	10-12 "	9d.
200-210	6	10-12 "	1s. 6d.
220-230	7	10-12 "	1s. 8d.
240-250	8	10-12 "	2s.

Table showing number of lamps required for charging ignition accumulators, and cost of each charge at various voltages.

REMARKS.—The best way to charge is to select a switch controlling the required number of lamps, find the polarity by means of pole finding paper, and join up to accumulator, + to +, and - to -. Keep switch off, otherwise accumulator will be shorted and ruined. In a small installation connect up to one side of the main switch, and turn on the required number of lamps. Continuous current only can be used, not alternating. If

supply is alternating, the only way is to get a small dynamo, and drive it with an alternating motor—a fan motor will do. There is no advantage in using a less number of lamps than stated, as the accumulator will take longer to charge, and the cost will be exactly the same. The actual value of the energy stored in a 20 amp. hr. accumulator is less than ½d.—Yours faithfully,

VOLTAMPERE.

**Motoring in India.**

Sir,—In an issue of some time back a correspondent asks for information as to obtaining petrol and accumulators at or near Jhansi in the united provinces. Petrol is obtainable in Bombay from Turner, Hoare and Co., at Rs. 2.8 per gallon. It is cheaper in Calcutta I believe. The Assam Oil Company distil petrol at Rs. 1.2 per gallon, but it does not seem to be in favour. I have no personal knowledge of it, but intend to try it when my present stock is used up. Instead of accumulators, I would recommend dry batteries of the "Oldsmobile" variety: they are light and compact, and three of them occupy a little more space than an accumulator, and they have a voltage of 4.5. As they take up more room than an accumulator one would have to fix them behind the saddle or diagonal. An electric installation is being put up for the barracks in Jhansi: batteries could thus be charged locally, provided the dynamo is not of the alternating type. Otherwise a charging battery should be taken out, or the accumulator could be sent to Cawnpore, Agra or Lucknow, in which stations the local clubs have installations. Unless the motorist knew someone in any of these stations who understood charging, there would be some difficulty. My experience is that one cannot trust a firm to do the charging at either Calcutta or Bombay. There is a good deal of misapprehension among the general public out here on the petrol motor. I have used a motor-bicycle both at home and out here, and find certain differences due to climatic causes. Petrol naturally turns stale quicker out here than at home, but even with a surface carburettor it will vapourise readily without any appreciable waste. I am of opinion that overheating results in the hot weather, causing loss of power and weakening of valve springs. Unless the lubrication is plentiful, the wear on the motor would soon make it inefficient. Under the circumstances water-cooling is indispensable if the motor is to be used all the year round. Injection of paraffin for freeing the piston rings is unnecessary except in the very coldest weather. Roads in this part of India are flat and the loss of power is not so noticeable: I tried a wind-scoop which counteracted the loss of power and gave an increase of speed of several miles per hour. A higher gear on the motor would be an advantage here. I have had the loan of an Oldsmobile car lately and found that the radiators were not sufficient to cool the water: this is a matter the makers might look to, as well as other car makers who export to warm climates. Another matter that requires attention is the protection of the coil from the sun's rays. I found the paraffin wax from my coil had melted and come out. Pneumatic tyres give trouble; and in a car might be replaced by solids. With proper cooling, the petrol motor is more suited to this

country than the more complicated steam motors. A native here has a Gardner-Serpolet with which he has had a good deal of trouble, especially with the tyres, which have been ruined by the heat from the furnace. I am trying a new automatic carburetter and Eisemann ignition, so as to be independent of accumulators and petrol, and hope to be able to tell your readers the result shortly.—Yours faithfully,

A. C. WALKER.  
Indian Civil Service.

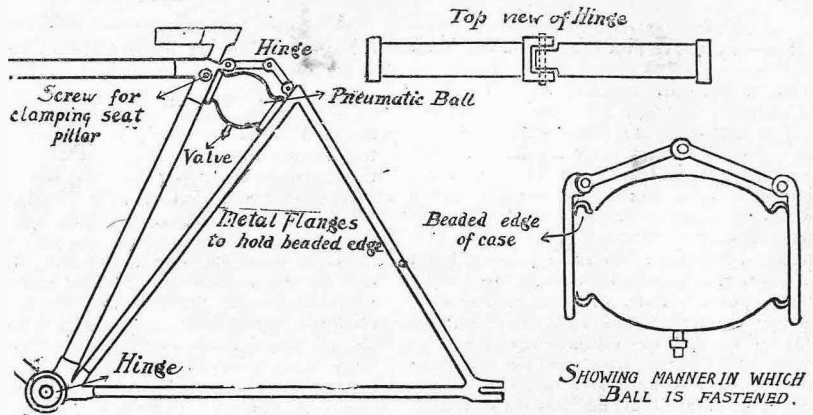
**Is Motor Cycling in South Devon Dangerous?**

Sir,—I was particularly interested in Mr. Fawcett's recent article, entitled, "A Run up to Dartmoor." There are one or two little points on which I beg to differ from the writer. He tells us that it is the general opinion in South Devon that a motor-bicycle cannot be ridden with safety in wet weather. I may say that I ride all weathers, both for business and pleasure, over roads inches deep in grease and mud, and have yet to experience the much-talked-of side-slip demon. On a recent occasion I went into the country on my motor-bicycle, with trailer attached, and towed a gentleman about 70lbs. weight; and in spite of the fact that my wheels could not get any sort of fair grip of the solid surface of the roads, we romped up hill and down dale without side-slip or any other sort of slip. Mr. Fawcett also says motor-bicycles are only suited to doctors for recreation, and not for professional work. I should like to mention that I have supplied 3 h.p. Quadrant machines to several local medical men, who use them regularly for professional purposes with great success. The absence of side-slip on Quadrant motorcycles is due, in my opinion, to the fact of the engine being placed so low down in the frame—to my mind the only safe position.—Yours faithfully,

Tavistock. J. H. HARRIS.

**To Remove Exhaust Valves, etc.**

Sir,—I see that a correspondent complains in a recent issue of the difficulty of removing exhaust valves. If the makers would take the trouble, this knuckle-barking performance could be reduced to a minimum. All that is required is a simple tool, and a little "ridge" of metal on the engine casting to give a purchase for the lever. This little ridge of metal projecting ¼ in., and 1 in. long, should be cast on the outer wall of the cylinder immediately behind the stem of the exhaust valve, and half an inch above the cap of valve when off the cam. The tool is a simple lever, shaped like a tuning fork; the two prongs are slipped round the valve stem, their tips rest on the above-mentioned ridge, the outer end of the lever is raised, and its prongs catch the cap of the spring and compress the coils; then you can pick out the cotter pin with your finger. The method of replacing is obvious and equally speedy. Some existing engines have the necessary ridges to afford leverage; but every engine should be so fitted. It would further be an excellent thing if all makers would countersink the caps of their exhaust springs, so as to prevent the cotter pins dropping out through vibration. I notice you recommend the Auto trembler—and rightly. But I would warn purchasers that they will not give good results with any make of coil. One came into my



Illustrating letter from Chas. E. Beresford.

hands first, after being discarded by the owner of a 6 h.p. De Dion voiturette, who said "he couldn't make the thing work nohow." It was an absolute failure with five coils, but worked splendidly with a Werner coil, and also with a big round De Dion tricycle coil. With a Bayliss Thomas coil it gave a splendid spark in air, but the engine misfired at all speeds.—Yours faithfully, BASIL DAVIES.

**The Vibration Problem.**

Sir,—With respect to "Magneto's" article on "The Vibration Problem" in "THE MOTOR" for November 18th, to insulate the back wheel of a motorcycle from road shocks, and yet preserve the necessary rigidity of the rear portion of the frame, he suggests the method of hinging the rear triangle at the bottom bracket, and interposing springs between the main frame and upper part of triangle by means of telescopic tubes, etc. Now, I have read your excellent journal nearly from the commencement, and although the above subject has been up for discussion many times, and a great many ideas have been put forward with regard to it, I am surprised that mention has never been made of the system invented by the late Mr. S. Farnsworth, of Derby, and adopted by the Doctor Cycle Co., of Birmingham, on their roadster machine a few years ago. This system was practically what "Magneto" suggests, with one important exception however, viz., the use of a pneumatic ball in place of the springs, which, it is obvious, would give better results. It will be noticed from the accompanying diagrams that a strong steel hinge was used to prevent any side movement, and that the ball consisted of an outer case of strong resilient canvas and rubber (similar to a tyre cover), with an inner bag of rubber, very similar to a football bladder, having, of course, an ordinary tyre valve for inflation purposes. This combination gave excellent results on the roughest roads, all who rode these cycles being most eulogistic on the utter absence of vibration. In fact, so efficiently did the device perform its duties that the inventor dispensed with the pneumatic tyre on the back wheel of his own machine, using instead an ordinary solid tyre, and, of course, by this he gained great immunity from side-slip. In conclusion, allow me to say that, in my opinion, "The Vibration Problem" (so far as road shocks are concerned) will never be satisfactorily solved until this idea is adapted to the motorcycle. Apologising for this raid upon your valuable space.—Yours faithfully, CHAS. E. BERESFORD.

**High Tension Condensers on Sparking Plugs.**

Sir,—On reading A. C. Brown's letter in your issue of October 28th I was struck with his remarkable ability to look upon the bright side of things. I myself fail to detect any trace of a blessing invoked upon the H.T. condenser (when applied generally to motorcars) in my letter of August 26th, and would take this opportunity to again state why I disagree with its general adoption. (1) Because of mechanical difficulties attending its manufacture, and hence its liability to break down. (2) Because a properly adjusted gap gives somewhat similar results, and over a wider range. (3) Because the H.T. capacity range is comparatively very limited, i.e., a capacity suitable for accumulators fully charged, or even normally so, would not give efficient results when the accumulators were near their lower limit, and certainly most drivers run their cells pretty fine as regards limits. The Tesla coil is not devised "to give vague nightmares to theatrical audiences," but for use wherever an intensified spark is desirable, e.g., wireless telegraphy, radiography, and possibly in some cases for ignition purposes.—Yours faithfully, N. WELLS, B.Sc.

**Motor-Bicycle for Short Distances.**

Sir,—I think your advice to a correspondent recently in "Information Bureau" should be determined by the circumstances of the case. Personally, I should strongly advise the querist to purchase a motor-bicycle, in preference to an ordinary pedal-propelled machine, especially as apparently he would not encounter much traffic in going to and from business. I live the same distance from my business, viz., four miles, and although for years I used a pedal-propelled machine, I would not now forsake the motor-bicycle (I have ridden various types for two years) under any circumstances. I can do the distance in half the time, without any effort, and with good non-slipping tyres I am not troubled with side-slip, although I ride every day, wet or fine. It is quite an easy matter to keep one's appearance presentable for business with a pair of Dunhill's overalls and a covert jacket in summer, and a heavier or leather one in winter. Another great advantage—which certainly breaks the monotony of the day—is that, with a motor-bicycle, the journey home to mid-day lunch can easily be accomplished.—Yours faithfully, E. HERRINGTON

### A Side-slip Preventer.

Sir,—I observe that a question has been asked recently as to a suitable device to prevent side-slip on a 2 h.p. Quadrant machine. Since I have had Lovelace's patent non-slipping tread vulcanised on to my tyres on a similar machine I have not had the least slip of any sort, although I have ridden over far worse roads in many counties than I dared to with the usual pattern of tread. The tread of the tyre is reinforced with a band of rubber, which is brought up to a very blunt point. This, in addition to practically obviating the risk of puncture, causes the tyre to cut through the mud on to the actual road surface. Every two or three inches along this ridge semi-circular transverse notches are made, which give the tyre a splendid bite of the road on a greasy hill. I do not notice any disadvantage from the running of the machine, either in increased vibration or in slowing. Indeed, I believe the narrower tread to be an advantage. If it were not for private recommendation I should not have heard of this excellent device, as it is not much advertised. I have only to say that I have yet to see better rubber than that used. The patentee is R. S. Lovelace, Henstridge, Somerset. I am not interested in the sale of this tread in the smallest way, beyond the fact that as it has given me such confidence on the greasiest and muddiest roads, I feel it my duty to call other motorcyclists' attention to its merits. A smaller sized tread has been equally satisfactory for years on my pedal machine.—Yours faithfully,

H. O. DICKIN.

### Useful Hints about the Humber.

Sir,—Riders of Humber machines may be interested in the following:—A friend recently brought me his 2 h.p. Coventry Humber for examination, as it was behaving in a very curious manner, and the owner was completely nonplussed as to the cause. Sometimes it would start without any trouble and run well for a short distance, and then either slow down and stop, or increase speed and get nearly uncontrollable in traffic, with the spark retarded. At other times it was impossible to start the machine on account of back-firing, which wrought havoc on the rider's shins. After a careful examination I found the cause of the trouble. The large wheel of the 2 to 1 gear was only an easy driving fit on the sleeve, which also carried the cam for lifting exhaust valve and the ignition cam (brush contact). The exhaust cam was driven from the wheel by one screw, fixed into cam, and like the wheel was only an easy driving fit on the sleeve: it had evidently been pinned to the sleeve at one time, but the pin had disappeared. I pinned the cam to the sleeve with two steel pins, and hardened the cam and tappet with potash, and it has given no trouble since, as the ignition cam is prevented from shifting its position relative to the exhaust cam. After dressing up the cam and tappet, where they were badly worn, and hardening, I found there was a lot of lost motion between cam and exhaust valve which I cured in the same way as related by "J.V." in his recent letter, by putting a small disc inside steel cap on end of tappet rod. The result is a freer running engine, owing to increased lift of exhaust valve.—Yours faithfully,

"GLEASADOIR."

### Misfiring in Humber Bicycle.

Sir,—In a recent issue there is an enquiry on this subject from a correspondent, and, judging from my own experience with the same make of motor-bicycle, I think he is right in attributing the trouble to defective electrical connection between the wiper disc and the frame of the machine. In my case I had regular firing with partial compression, but repeated misfiring as soon as full compression was reached: this proved to be due to the engine oil finding its way rather copiously into the two-to-one gear chamber, and a film of it getting between the spindle and the sleeve that carries the wiper disc, valve lifting cam, etc., so producing a partial—and occasionally complete—insulation. Putting more pressure on the wiper by bending the blade affords some relief, by pressing the barrel against the spindle and squeezing the oil out, but at the expense of rapid wear of wiper and disc. The simplest and most efficacious remedy is to slip a spiral spring made of, say, a couple of turns of No. 20 gauge brass wire on to the projecting end of spindle, so that one end presses against the side of wiper disc and the other against the interior of the aluminium cap, thus assuring a complete circuit from the disc through the spring to the frame. The fact of the machine firing all right at partial compression is due to the tongue of valve lifter being then in contact with cam, and so establishing a circuit, whereas this tongue is drawn away from the cam at full compression.—Yours faithfully,

"BALHAM."

### Electro-catalytic Ignition Plug Experiences.

Sir,—As I have not seen any mention since your Editorial article of this system of ignition in "THE MOTOR," in connection with motorcycles, the following account of my experience may not only interest your readers, but will perhaps elicit other experiences to the benefit of the motoring community at large. I obtained one of Messrs. Bergtheil and Young's electro-catalytic plugs and rheostat, advertised in "THE MOTOR," with the intention of using it on a small car designed by myself, but having an occasion to run a hundred miles and more on my 2½ h.p. De Dion tricycle, I casually put the apparatus in the toolbag before starting. Things went merrily until within 30 miles of my destination, when, inadvertently leaving the main road for a short cut, I found myself on the brink of a ford. In dry weather it would probably have proved no obstacle, but with the heavy rains—it was raining hard at the time—the stream was in flood. Unable to cross the footbridge, I dismounted, and carefully reconnoitred. The water was turbid, so that the depth was a matter of speculation. However, determining not to go back, I re-mounted, and was soon in the middle of the stream—and there remained, with water above the axle. Pedalling to the other side, I opened the tap to the crank chamber, and water poured out; the coil and trembler were thoroughly wet, and for the time I was in despair of continuing the journey, with a long stiff hill before me, rain falling in torrents, and no sign of a house near. In this dilemma I bethought me of my catalytic plug. In two minutes it was connected to a wire, and the other end of the wire to the positive terminal of the battery. Regulating

the mixture—be it noted mine is a surface carburetter—to my joy there was soon an explosion, and off started the machine at lightning speed, until the 30 miles were covered. So much for its practical utility. I would mention that the battery was 4 volts. The plug is said to be effective on 2 volts, but my experience is that 2 volts is not strong enough; but whether the plug is used solely for ignition, or as a stand by, I will never willingly be without one, for should the battery fall below 4, or even 3 volts, or should the coil or trembler fail, you can be sure of getting along with the catalytic plug.—Yours faithfully,

GEORGE A. HALL.

### The Balanced Motor.

Sir,—In connection with Mr. J. T. Towlson's letter in "THE MOTOR" of November 4th, perhaps I may be allowed to pass a few remarks, and to ask readers of your valuable paper what they think in regard to engines for motor-bicycles. I have for some time had an idea that a twin-cylinder motor is what is wanted in order to do away with the jerky impulses which are felt when running slowly, and especially with a chain drive; and I quite agree with Mr. Towlson's idea of a perfectly balanced engine in order to get rid of the vibration. The only thing is that there might be some difficulty in making a practical application of the same. In his Fig. 3, for instance, where would the motor have to be placed on an ordinary motor-bicycle, that is, in a horizontal position? And, again, what about the internal lubrication of such an engine? How could the oil be got rid of? It would collect, to a large extent, at the back end of either cylinder, as they could not, of course, be kept level. Now the kind of motor-bicycle I am thinking of going in for is one fitted with a 3 h.p. engine of the Clement-Garrard type, with a twin-cylinder, which, I think, will get over the jerking motion which I mentioned before, and also the vibration; and which, I understand, will give an impulse at each revolution of the fly-wheel. This, of course, may not come up to Mr. Towlson's ideas, yet I consider that for all practical purposes it will be sufficient. At least, I intend to give it a trial. I may also say that I favour the chain drive, and with a Garrard patent two-speed gear, in connection with a 3 h.p. engine, I believe I shall be able to mount any hill without pedalling—and we have some very stiff ones here in the North country—and have plenty of power to spare. If any readers have had any experience with a twin-cylinder motor-bicycle, perhaps they will give their views on the subject. I think 2in. tyres are too small for motor-bicycles. If, instead of these, there were fitted 2½in. or 2¾in. tyres, we should not hear so much about vibration, especially if machines were fitted with a spring saddle pillar, which, from my experience, I think is a good thing.—Yours faithfully,

"ENQUIRER."

\* \* \* A large number of interesting letters on a variety of subjects have been held over through lack of space, and the Editor desires to inform those correspondents whose letters have not yet been published that they will appear as soon as possible. In consequence of the mass of correspondence it has been found necessary to limit the number of letters on any one subject.—ED. "THE MOTOR,"



## OUR INFORMATION BUREAU.

### SPECIAL NOTICE.

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

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

J.D.W. (Leicester) would be obliged for particulars of the clutch and counter shaft used by "E.R.C." and described in a recent issue.

"Draughtsman" (Bolton).—Your enquiry is quite beyond the scope of our "Bureau." Why not enquire at the G.P.O., where particulars of naval appointments are obtainable as a rule?

"Bicycle" (Bagnalstown).—We should certainly advise you to give the Parsons' non-skid a trial. The other bands you mention are about as effective as a rubber tread can be made for minimising side-slip.

H.W.G.G. (Clifton).—Your idea may have a chance of working as an anti-vibrator. But its appearance and complexity will go greatly against it. You would not be wise in going to any expense in the matter.

### Carburettor Regulation.

W. Wishey (Stoke Newington) writes:—Can you kindly explain the following to me:—I have a  $4\frac{1}{2}$  h.p. De Dion-Bouton car with foot throttle. On a very cold day when I am running with the air lever well over, giving the maximum supply of air, and going at 16 to 20 m.p.h. the car runs splendidly, but when I have to slow down, say, to six or eight miles an hour for traffic, it misses fire and explodes in the exhaust box; and unless I throw the gear out, and wait, it will stop the engine. The ignition is perfect; I have an auto-trembler (which you recommended) and have never had the least trouble in starting since I had it fitted.—The explanation, we think, is that when the speed falls there is too much air at the carburettor to give a perfect mixture owing to the reduction in the petrol supply at jet: hence the charges are mostly very weak, and will not fire. Short of having an automatic carburettor you will have to reduce your air supply in proportion as the speed is lowered.

H.H.J. (Birmingham).—We place the cars in the following order of merit according to your numbers:—1, 6, 5, 2, 8, 7, 4, 3, 9. The first one has a great reputation for durability and symmetrical lines.

"Lucky Jim" (Spennymoor).—The machine has a good reputation, and under very favourable riding conditions might take a 1 in 7 hill without pedal assistance; but under usual conditions slight pedal help would be necessary. On the level it would have a speed of about 32 miles per hour. The chain driver might prove the better for hill work.

"Accumulator" (Uddington) is storing his "Invicta" accumulator away till next season and he wishes to know what treatment, if any, it should receive.—The cells should be very thoroughly charged and the terminals coated with vaseline to prevent the acid creeping. Every five or six weeks the cells should receive a slight charging and the acid kept well above the plates.

J. E. Appleyard (Salisbury, Rhodesia).—The Edison-Lalande battery will answer very well for accumulator charging: the only disadvantage being that it has such a low voltage that it is necessary to use seven or eight cells; unless you couple each of your accumulators (single cells) in parallel, and then a less number would answer. As you say potash is easily obtainable and sulphuric acid in South Africa is very scarce, it would doubtless pay you to adopt the Edison cell. You require to have a supply of the oxide of copper plates on hand.

### Engine Racing.

R.H.D. writes:—Being a reader of "THE MOTOR," I should like your advice on the following:—I have had my  $2\frac{1}{2}$  h.p. engine overhauled recently. On trying it on the stand I found it runs about twice as fast as it did before it was overhauled; in fact, it races with the ignition lever retarded as far as possible. When it is running there is also a catching, clicking sound in the silencer, as if the passage for the exhaust was not clear. Could you tell me how to make the engine run slower, as I dare not attempt to ride the machine at the present speed? The throttle lever was only just open, but it made no difference in the speed.—As the engine runs up to a high speed it shows that the exhaust valve timing is all right. What we think has been done is that the range of movement of the contact breaker has been altered so that you cannot retard the spark sufficiently. You will probably find that you can so adjust the timing lever rod that it allows the contact breaker case to move further back and have slightly less range in a forward direction. Of course, an engine will always race when tried on the stand, because it is running practically free and uncontrolled. On the road it is quite different, as the engine has some resistance to work against.

L. Calvert (Driffild).—Try Brown Bros. or United Motor Industries. The gear is probably not stocked, but could be readily obtained from France.

M.R.C.S.—We can supply bound vols. 2 and 3 and indexes, and some of the back numbers separately. Further details from our publishing department.

D. B. Coldwell (London).—From what we saw of the vehicle we certainly think you could do very much better: the disposition of the engine and gearing is not up to the best practice. You will have to go to a higher figure to get a reliable article.

A. L. Lambert (Brighton).—We do not think you would get so much sparking at the platinum if you used one of the new dry batteries supplied by the U.M.I. We presume you are not using more than a two-cell accumulator. Or you could use the trembler coil and have a brush contact fitted; there is, of course, no platinum used on this contact.

### Ignition Defects.

A.C. (Westcliffe) writes:—I have experienced the following curious feature with my  $1\frac{1}{2}$  h.p. machine. It will stop with a jerk when the spark lever is slightly advanced: after pushing the lever further over it will run well, although even then it occasionally jerks and runs on again; why is this? I have tried a new inlet spring without any better result.—We should certainly suspect failure of the spark, due no doubt to a bad connection between the contact plate and motor: or if not this, it is a short circuit between the contact screw and motor which occurs when the lever is in certain positions. The remedy for the first is to attach a flexible copper wire from contact plate to motor. In the second case inspect the back of the contact breaker and see if the insulated screw fitting touches the crank case in any position: if so, file a small clearance and it should be all right.

### Paraffin Carburettors.

C.S. (Redditch).—(1) We cannot say that paraffin is perfectly satisfactory for driving a motor-bicycle. In an engine having extra good compression and a powerful spark there is no doubt that it gives more power than petrol for a time, but the trouble arises from the fact that it is difficult to get complete combustion, and the combustion chamber and valves get fouled up with soot causing overheating, when the motor will, of course, give off less power. Some riders claim that they can run successfully on paraffin without much difficulty. Personally, we found that a mixture of 50 per cent each of paraffin and petrol worked very well in a single jet carburettor with plenty of heat to vaporise it. With more paraffin sooting up occurred. It is not possible to start on paraffin, but when once the carburettor gets hot it is easy enough to vaporise the paraffin. However, there will always be smoke coming through the silencer.

### How the Two-stroke Motor Works.

G. Shepherd (London, W.).—The action of the usual type of two-cycle motor is briefly this: In the first place there are no valves, but a port is arranged on each side of the cylinder almost at the end of the piston stroke, so that both ports are uncovered when the piston is at its lowest position. The crank case has a connection to the carburetter. A check valve is provided in the supply pipe. Supposing the piston to be at the lowest part of its stroke, and the fly-wheel to be turned by hand, on the piston moving up in the cylinder a partial vacuum is formed in the crank case, and a charge of mixture is drawn in. On the downward stroke, the check valve is closed, and the charge is partly compressed in the crank case. When the piston has completed its downward stroke it uncovers the port, and the compressed charge rushes into the cylinder, and is further compressed by the next up stroke. The compressed charge is then fired in the usual way with the spark; the explosion drives down the piston, and just before it reaches the end of its stroke the exhaust port is opened, and the burnt charge released by its own pressure. During this cycle, of course, a further fresh charge is being compressed in the crank case, and this rushes into the cylinder immediately after the exhaust rushes out. In fact, the incoming fresh charge tends to sweep out the burnt charge. However, to prevent the new charge from blowing right out through the exhaust, a deflection plate is mounted on the top of the cylinder, which deflects the new charge upwards. Of course, there is a certain degree of mixing of the new charge and exhaust, but this is not as serious as might be expected. In the Bichrome two-stroke motor a separate pump is used for

taking in and compressing the new charge. The diagrams show the important operations. The particular engine shown is a well-known American launch pattern.

### Teeth of Quad Gear Stripping.

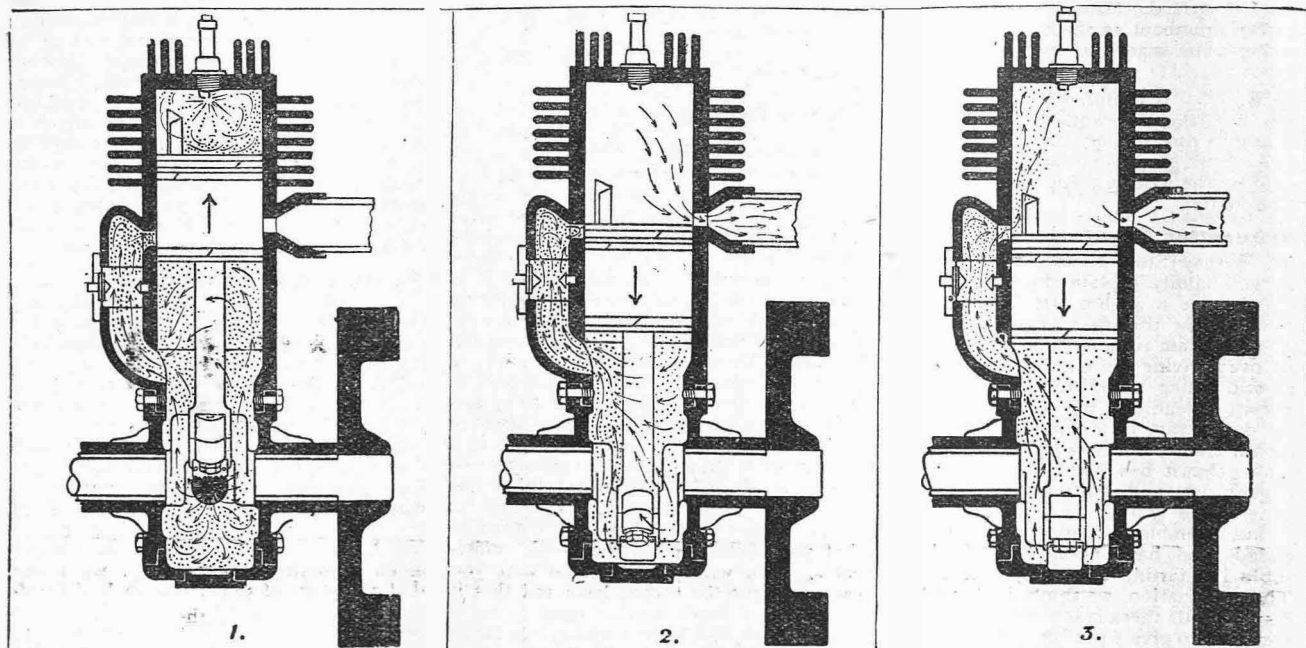
"Scholasticus" (Bedale) writes:—A few months ago I purchased a De Dion quad which gives every satisfaction except that occasionally, when starting by means of pedals, it pulls up dead immediately the compression lever is released, and usually strips two or three cogs off the 104 toothed bronze gear wheel; it has done this half a dozen times, and the expense of a new wheel is, to say the least, becoming monotonous. It is not caused by back firing, as no explosion takes place. It seems to me that the cogs are not sufficiently strong to overcome the compression when running slowly. The compression tap has been replaced by a Bowden exhaust valve lifter. Would it be best to use compression tap in conjunction with lifter for starting? The valves are all right, and everything works well after a start has once been obtained.—It appears to us that the fact of no explosions taking place is the explanation of the trouble. If the carburetter is working properly the engine should start easily with the compression tap open—especially if a few drops of petrol have been first injected into cylinder. Of course, if the compression is very strong, and you have a fair momentum on the machine, it is possible something will give with a positive drive. We have not previously heard of an exactly similar case to this and maybe some quad rider would offer a suggestion on the matter. We presume that the gear wheel and pinion are properly in mesh; if they were only driving from the outsides of the teeth stripping is very likely to occur. It is, of course, a

question of careful fitting. We do not think you would gain anything by using compression tap and valve lifter together: most riders dispense altogether with the compression tap when a valve lifter is fitted.

11. Elvidge would be glad if any reader who has had experience in packing the valve box joints of a 3½ h.p. Benz engine would recommend the best kind of oil to use in combination with the sheet asbestos. He has tried linseed and ordinary cylinder oil, but finds that both of these dry up, causing the asbestos to shrink and cause a leakage.

"Lal" (London) is having a two-speed gear adapted to his 1½ h.p. motor-bicycle Minerva engine, and he wishes us to suggest suitable ratios for the high and low gear.—For the high gear have a 1 to 4½; and for the low gear, say 1 to 7½. (2) In reply to your other query we should say the 4 h.p. M.M.C. would be suitable, although a little over the power you specify.

R.L. (Wolverhampton) writes to say that he notices that the exhaust pipe of his 2½ h.p. motor becomes red hot: he can see this plainly riding at night now, although it was not apparent some time ago. The machine does not now seem to have the same power, and he wishes to know if there is some connection between this loss of power and the heating of the exhaust pipe.—It is very likely there is. If the silencer outlets had got blocked up with burnt oil, for instance, it would throttle the exhaust and overheat the motor. Or it may be that the engine has imperfect compression and has to be run on full throttle continuously. Another possible explanation is that the silencer and exhaust pipe are screened from the air.



CYCLE OF OPERATIONS IN A TWO-STROKE MOTOR. (Reply to G. Shepherd.)

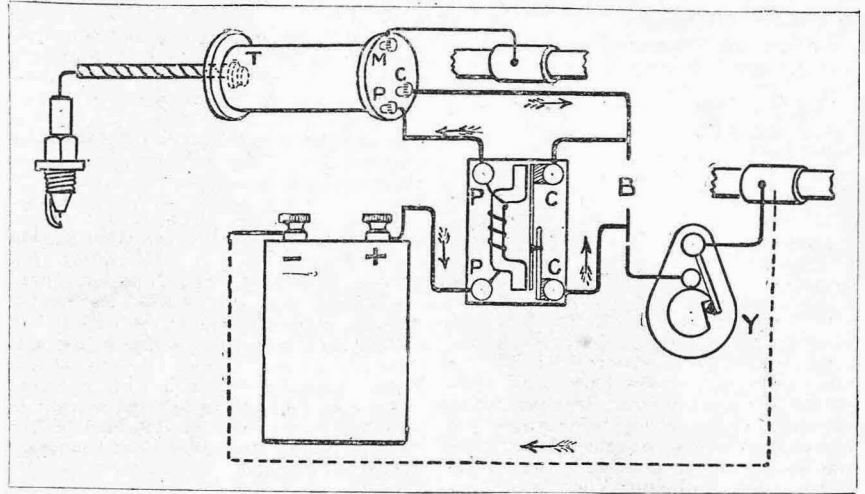
1. Explosion and simultaneous part compression of a new charge in crank case. Inlet and exhaust ports closed by piston. 2. Release of exploded charge through exhaust port opened by the piston. Inlet port still closed. (Exploded charge is released by its own pressure.) 3. New charge enters cylinder as inlet port is now opened by further descent of piston. Deflection plate directs charge upwards and away from direction of exhaust. On the upward movement of piston this new charge is fully compressed, inlet port closed and new charge enters crank case, owing to partial vacuum formed therein, and operations are repeated.

H. J. W. (Essex).—A full description of the two systems of ignition appears in "The Motor Manual." You will also find the relative advantages dealt with in some of the replies in back issues.

R. A. Glen (London, E.C.)—You would not be able to get any current into your accumulator in the way you have it connected up—that is, with three lamps in series: they require to be connected in parallel. If the voltage of the circuit is 220, the 32 c.p. lamps will suit; but if it is 100 volts it would be better to use 16 c.p.; otherwise the accumulator would be charging at too fast a rate.

**Loss of Power.**

"Silk" (Macclesfield) writes:—I should be extremely obliged if you could suggest the probable cause of my new motor-bicycle having no power on hills. I have read your article on "Timing," and have timed the engine accordingly. Compression seems good. The bicycle is a heavy one, 2½ h.p. Automotor engine, fitted with Vours 2½ h.p. carburetter, B. and M. high-speed trembler coil, positive make and break on engine, Lyett's V belt, small pulley 4¼ in. diameter, pulley on back wheel 2 in. diameter. The engine fires after two or three turns of pedals and misfires occasionally although all connections are good, and a return wire is fitted from contact breaker to engine. I get a strong spark. The engine is beautifully made, so I cannot think it is at fault. The carburetter flooded at first, but I have stopped this. Is it likely to have been adjusted too much the other way so that not enough petrol comes through to supply the engine for hill climbing? Ought the engine to get up enough speed with light pedalling at first on a 1 in 14 gradient and then take a long rise of 1 in 14 to 1 in 20 unassisted? I can take slight rises if there is a stretch of level on which to get the engine running quickly; but it is very heavy work getting up a decent hill from standing start, as the engine will not increase speed and gradually stops if pedalling—which is slow in consequence of the weight—is stopped: it also stops if spark is advanced on hill.—We can only suggest a few possible reasons, as it is more a question for practical investigation. (1) In the first place the carburetter must be adjusted to give a regular feed: you will not be able to get anything like full power unless the gas supply is adequate. (2) We should not have advised interfering with the timing gear as at first set by the makers. It is only where it is obviously wrongly set that it is wise to touch it. A single tooth of the gears one way or the other makes a big difference. (3) The gear is undoubtedly too high for general road work in our opinion. You would do better with a 3¼ in. pulley on the motor. (4) Better make quite sure about the ignition: the chief points are to see that the contact breaker is adjusted close—it requires to be more closely adjusted for trembler than a non-trembler coil—and accumulator quite reliable as to being well charged, otherwise you might not be able to advance the ignition although the engine would run fairly well with the ignition retarded. If the engine was running well it should take the hills you mention even with its present gear. You say the compression seems good: you must be certain about this as it is a most important factor.



Fitting an Auto-trembler. Diagram of connections. (Reply to "6 h.p. De Dion.")

E. J. Lomas (Stockport).—By far the better arrangement of the two would be to fit a B. and M. trembler coil; you have the right kind of make and break. You cannot altogether prevent fusing of the platinum with some coils: it results from faulty construction of the coil itself. Coils of unknown make are often troublesome.

R. Grayrigg (Cambridge).—The behaviour of your motor is certainly very puzzling to account for, for the simple reason that if all the details were in as good order as you say, the motor is bound to run properly. The only point we can suggest is either that there is a crack in the insulation of the spark plug or cable, or you have a loose connection somewhere which takes effect when the ignition lever is pushed forward.

**Connections.**

"6 h.p. De Dion" (London).—The idea of fitting an Auto trembler in the circuit is to practically convert a plain non-trembler coil into a trembler. It is largely a matter of opinion whether a trembler coil is very superior to a plain coil. It certainly makes starting easy, and if you have a brush contact maker there is no trouble with adjusting platinum points. The diagram illustrates the connections, from which you will see that the Auto-trembler is connected up with the primary circuit.

**Carburetter Queries.**

"Beginner" (Wolverhampton). — (1) Your sketch of the carburetter shows that it is one of the several varieties of Wick pattern. In the particular instance the air will get in readily enough through the edges of the cover. As to the advisability of fitting a spray carburetter to replace it, it will depend on the results you get from the present one. Some riders can get very good results from a Wick carburetter when the working is thoroughly understood, but as a rule it is a source of much worry to the novice to keep the mixture constant. Of course, it is easy enough to fit a spray, and there is no doubt that they are much more certain in action. (2) If your present wiring works well do not alter it. (3) We cannot say whether the makers' claims for the carburetter you refer to are extravagant or not, as we have not had experience with it; but it works on a sound

principle: we inspected one recently: the fitting of the parts seemed to us decidedly rough.

B. J. C. (Omagh).—It appears to us that the most probable reason for the motor slowing on hills to such an extent is overheating. The rule to obviate it is simple enough—assuming your compression is really good. Use the maximum amount of air with the gas, throttle down as much as possible, and keep the spark well forward on the level: then on coming to a hill open the throttle further and retard the spark. Of course, the misfiring results from the charges taken in to the overheated cylinder being so weak that they will not explode.

E. A. (Northumberland).—The results you obtain are characteristic of the carburetter. You might improve matters to some extent by having a warming tube passing through the vaporiser: this should be connected with the exhaust box, and a regulator be fitted in some convenient position. Of course, the interior of the carburetter gets intensely cold with the continued evaporation, and unless you provide a certain amount of heat you will not be able to vaporise the denser residuum of the spirit.

**Hill-climbing and Knocking.**

"Cheshire" (West Bromwich).—It is very probable that the engine pulls up as a result of the way you change the gears and manipulate the engine regulators. It is important in climbing a steep hill to be ready to change to a lower gear immediately the motor shows signs of labouring: the spark should be advanced fairly well. The knocking you speak of may be caused by your letting the clutch in too suddenly after changing speed: it is very important to manipulate the clutch in such a way that the load is put on the engine gradually, by allowing the clutch to slip a little. Many hills can be taken on the top speed if the clutch is skilfully manipulated to let the engine keep up to its best speed; otherwise it would be necessary to change on to the lower speed. Another matter that requires attention is the keeping of the carburation constant. If the engine speed falls off slightly less air should be given at the carburetter as the velocity of the petrol through the jet diminishes.

**A Power Question.**

K. Cookson (Wylam) writes:—I have a 2½ h.p. tricycle fitted with a De Dion engine. The power varied considerably during the summer months. I took the engine off the frame and made brake horse power tests with following results:—

Very Wk. Inlet.		Moderate Inlet.		Very Stng. Inlet.	
Revs.	H.P.	Revs.	H.P.	Revs.	H.P.
1,500	— 1'56	1,500	— 1'8	1,500	— 1'42
1,700	— 2'03	1,900	— 1'91	1,900	— 1'56
1,900	— 2'07	2,100	— 1'97	2,300	— 1'73
2,700	— 2'76				

Thus you will see that the very weak inlet valve spring gave most power; but the full power was not developed until 2,700 revolutions was reached. This pointed to the timing of the exhaust being wrong, but less power was got when the exhaust valve was in any other position. The carburetter is the ordinary "Viet" spray, but I am doubtful of its quality. I have tried altering the level of petrol, jet, etc. Does a genuine De Dion engine give out 2½ h.p. actual at 1,800 revolutions? And can you suggest from the above data the cause of the lack of power?—With regard to the strength of the inlet spring much depends upon it, and it is only by careful experimenting that the best tension can be found to suit any particular engine. From the tables you give it appears that the weakest spring gave the best result. Of course, a small loss of compression would have less effect on the time of valve opening with a weak than it would with a strong spring. It seems to us as though the engine was short of gas. A speed of 2,700 revolutions is abnormally high. The maximum certainly should not exceed 1,900. You do not say whether your motor was water or air-cooled; if the latter, it would not be wise to put too much reliance on the figures, for the reason that with a hot engine you would not be getting a constant charge in the cylinder, and the faster the engine ran the weaker the explosion would be. Probably if you carefully enlarged the sprayer a small amount it would give you a better supply of gas. The Viet carburetter is considered a good type. The genuine De Dion engines as a rule are rated pretty accurately as to b.h.p.

"Humber" (Brighton).—The driving clutch of your machine is a special article. We can see no alternative to your leaving the matter in the hands of the makers. We know that they are only too willing to make right a bona fide defect in workmanship or quality of material. The rollers may have been left a trifle too soft, although this is a very rare occurrence.

J. A. Maclean (Dundee).—A slight amount of end play on the shaft is probably intentional. A well fitting felt washer or deeply flanged pulley would minimise the oil leakage to a considerable extent. But it would be as well to see that the ball valve in the crank case was acting properly. If there was any up and down movement in the bearing it would show that it had worn to some extent; in which case it should be rebushed, as the oil will get out no matter what temporary remedy is adopted.

**Altering the Direction of Rotation.**

E. J. S. (Winkleigh).—You will have to alter the position of the contact breaker with relation to the exhaust cam to effect a reversal in the direction of rotation of the motor. You can best determine the position from a diagram showing the four operations in a circle divided up into four parts, explained in the article on "Timing an Engine" in issue 73. The cycle of operations would thus be (1) Inlet; (2) Compression; (3) Explosion; (4) Exhaust; with the large gear wheel running from left to right. Then to get the reverse order the inlet stroke must occur at the position of the previous explosion stroke, and the sparking cam must thus be moved through 90 degrees backwards on the shaft. The diagrams will show how this should be done.

**ANSWERS BY POST.**

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

Thursday, November 26th.—D. T. Timmins (Bexhill), T. Eggleton (London), T. H. Willis (Walsall), G. J. Dowse (London), N. Givovich (Fiume, Hun-

gary), A. L. Lambert (Brighton), D. W. Parsons (Liverpool), G. Clark (London), W. P. Chapman (Coventry), H. P. Hedger (Surbiton), M. A. Prickett (Sandy), D. B. Coldwell (London), E. S. Hick (Reading), R. A. Glen (London), H. Matthews and Co. (Bristol).

Friday, November 27th.—T. Scowcroft (Letterston), J. S. Jewell (London), W. Tapley (Paignton), R. H. Lapage (Warrington), E. B. Killen (Bangor), C. B. Moss Blundell (Thornton Heath), E. R. Evans (Ely), V. Brown (Lambeth), W. H. Tribe (Oxford), P. T. (Quorn), H. J. Malins (Rhayader), A. Blake (Barking), F. B. Hurdall (Cairo).

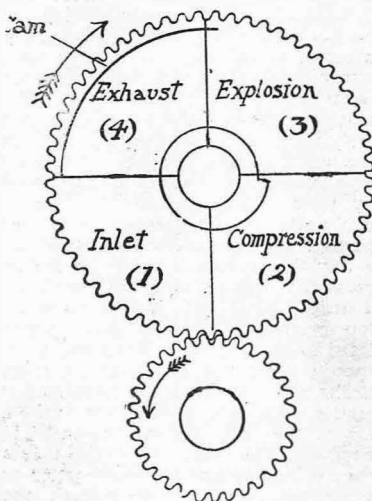
Saturday, November 28th.—A. Elce (Southborough), A. M. Dewing (Bath), T. E. Holman (Waldron), C. Smith (Tuxford), S. R. Edwards (Bridport), A. Brandon (Abbeyleix), S. Morgan (Abergavenny), H. Walker (London), F. Nicholson (Cumberworth).

Monday, November 30th.—H. R. Proctor (Ben Rhydding), E. A. Robinson (Birmingham), W. A. Wortley (Peterborough), S. Shee (Woking), E. W. Roebuck (Holmfirth), T. H. Herbert (Highbury), T. W. Southwell (Peterboro'), L. T. Mallinson (Catford), G. M. Thomas (Wimbledon), W. J. Joyce (St. Leonard's), T. H. Ireland (Rugby), J. H. Curle (London), E. Fawsett (Newcastle-on-Tyne), J. M. Philpot (Southsea), S. Irwin (Stockington), W. H. Porter (Stretford), J. A. Plowman (Sheffield), A. C. Body (Plymouth), C. T. Elmslie (Weybridge).

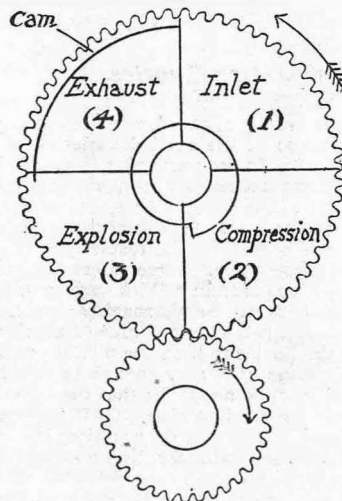
Tuesday, December 1st.—C. Truman (Reading), E. Firth (Bradford), A. Monti (Turin, Italy), C. B. Winzer (Hanley), A. Mackay (Malvern), R. Proctor (Spalding), H. Jones (Stourbridge), T. W. Ebdell (Doncaster), A. Milne and Sons (Montrose), D. Herbert (Ospedaletti, Italy), O. Fries (Portobello), P. J. Sheardown (Dublin), S. W. Cowan (Hove), J. Wood (Oldham), C. Parsons (Hendon), A. G. Shrimpton (Mitcham), E. Ebley (Ogmore Vale), C. F. Ormrod (Birmingham), Richard Bros. (Colyton), J. Huckell (Sydenham), F. Williams (Guildford), A. Norton (London), C. McPherson (Birmingham), H. Williams (Leicester), M. Hawkesworth (Ilkley), R. Mitchell (Wandsworth), E. W. Kitchen (Haddenham), G. Maynard (Roche), H. Garwood (Boxted), J. S. Brook (Lyss), F. W. Billerton (Hull).

Wednesday, December 2nd.—W. J. L. Day (Chippenham), B. H. Davies (Rochdale), V. Brown (Lambeth), W. Copeland (Stone), J. D. Haggie (Sheffield), G. Vickers-Gaskell (Grange-over-Sands), T. K. Yalland (Bristol), W. Johnson (Knaresborough), H. Strange (Heywood), A. P. Beaumont (London), W. E. Axford (South Croydon), R. H. Simpson (Spilsby), J. Cheshire (W. Bromwich), W. Seagrave (Lincoln), F. B. Wilson (Cockermouth), J. Barnes (Southsea), E. Porter (Scredington), F. W. Cato (Perth, Australia).

**LEFT TO RIGHT**



**RIGHT TO LEFT**



Reversing direction of Rotation of Motor. (Reply to E.J.S.)