

Motor Cycling

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& Motoring

THE LIGHT SIDE.

Alcohol, say the French, has a great future before it—not only as a motive power, but also as an illuminant and a heater. Experiments recently conducted seem to show that an alcohol lamp is safer, cleaner, and more effective than a petroleum lamp. If this be so, and if alcohol can be utilised as an efficient substitute for petrol in the motorcycle, the advantages to the motorcyclist will be obvious. Compare the cars on the Two-penny Tube, which are run and lighted by electricity, with the carriages on any of the suburban lines, which are run by steam and lighted by gas. Another advantage, suggested by a frivolous correspondent, is that the alcohol-driven bicycle will truthfully record its velocity—in *vino veritas*.

List ye motorcyclists, to the latest tip in hygiene: "Undergarments should be of cellular merino: this allows the watery vapours thrown off through the pores to disperse with very little condensation on the garments; while if they do get damp, as they will sometimes, especially round the waist, they dry very quickly." That is one of the evils of motorcycling: the liability to come in contact with damp, watery vapours; and such damp, watery vapours! An ordinary watery vapour with damp feet would be bad enough, but think of meeting one which had a wet waist!

Tips hygienical I for a penny cull,
Fresh from the pars. of the "Bikists' Gazette,"
Whence it appears it is (somebody fears it is)
Fatal to fool with a vapour that's wet.
Moisture that's watery bicyclists ought to re-
gard as a positive danger to life.
It among bacilli modern is *facile*
Princeps, with ailments rheumatismal rife.
He who in Jaeger is 'gainst summer's vagaries
Wisely and widely and woolily cased.
Sole among bicyclists safely defies sick lists
Soaked though he be to the skin of the waist.

The objection to the "enamelled plate" method of identifying motorcars and motorcycles is, says a contemporary writer, that the motorist would be at the mercy of the police, who would be enabled to note the number of any passing motor vehicle and subsequently formulate a charge—the motorist being, of course, quite unconscious of having offended the law until the summons was issued, and being thereby precluded from preparing a defence. The gravity of this objection is admitted by our contemporary, who, however, asserts that anything is better than the existing state of affairs. To do evil that good may come is at times permissible, but to do evil in order to produce a possible remedy for an imaginary disease is unwise. The "existing state of affairs" is not so very terrible after all. There are, no doubt, a few black sheep among motorists, as in other flocks, but in the main drivers and riders of motor vehicles are a well-conducted crew, and when the legal limit of speed is fixed at something more

nearly approaching to commonsense, and when the prejudice of the non-motoring public, and the opposition of the "vested interest" section has died a natural death, motorists will be found to be quite as responsible and law-abiding as any other citizens.

"Out of sight out of mind," modified into "cut of hearing out of mind," is an excellent maxim for the owner of a nervous horse. We witnessed an incident the other day in the street which emphasised the danger of requiring a motorcar to slow down or come to a standstill in the presence of a restive horse. An alert policeman prevented an accident, but if the motor man had been allowed to run swiftly away out of the horse's hearing, nothing worse than a momentary shy could possibly have occurred.

The fire insurance companies appear to be unanimous in their dread of the motorbike as a temporary article of furniture, both in the West End mansion and in the suburban villa. Some of them will not have the accursed thing in the house at all; others are prepared to admit it on presentation of a police magistrate's warrant certifying it to be free from oil or spirit; but none of them express regret when the lady of the house assures them that "there never was such a thing in the house." So far, *materfamilias* is on the side of the insurance offices; she thinks more about her carpet than about her husband's bike. But wait till she gets one of her own!

Should woman, lovely woman, stoop
To regulate a "motor,"
Woe to the agents who prepare
So foolishly to flout her!
In stock for them lie many rows,
Of words full many a rude war,
When they decline to let her house
That motor in her boudoir!
Of no avail to plead the risk
Of fire, in vain to get riled;
She'll win the day—it's woman's way—
Though hearth and home be "petriled."

[The Surrey magistrates are gradually becoming more lenient towards motorists. The fine, which used invariably to be £5, has now been reduced to £2.]

The careful man of business will reckon the expense
Ere he proceeds a motorcar to buy.
And doubtless there are many who are sitting on the fence
Because they find the cost comes rather high.
But motoring is cheaper now than e'er it was before,
To give the Surrey justices their due,
They used to charge five pounds a time for fracture of the law,
But now the charge has been reduced to two!

RENEWALS AND DETAIL IMPROVEMENTS.

(Concluded.)

The Carburetter.

It is remarkable how efficient the old Werner type of carburetter is when thoroughly understood. There is one improvement, however, that might be adopted by those who have not been able to get uniform results from it, especially in cold weather, and this is to fit a warm-air inlet pipe, somewhat on the lines of the original De Dion carburetter. The best way to fit this is to take out the felt-covered gauze box and drill two holes through the top and base to allow of a U-shaped piece of quarter-inch brass tubing to pass up through the inside and be soldered at the top. This tube is now bent at right angles at the top, so as to come through the cover of the tank and project an inch or so on each side. Slots will have to be cut in the loose cover of the tank so as to clear the tube bends. The next thing to do will be to arrange for warm air from the exhaust pipe to pass through the tube. As the engine moves round with the steering, it will be necessary to use a flexible steel connection. An 18 in. length of flexible steel tube—three-eighths of an inch outside diameter—will answer admirably. This will require fitting to the elbow tube of the exhaust by drilling a hole through the elbow and screwing a short piece of iron tubing into it, and over which the flexible can be forced tightly, the other end of the flexible can be placed over the end of the carburetter tube and fixed with a small band clip if necessary. This arrangement can be made still more efficient if a small tap is fitted at the inlet to carburetter, so as to be able to vary the amount of hot air passing through the carburetter.

The Silencer.

Many readers have asked how it would be possible to make the exhaust box of the Werner (or any other of the cylindrical type) far more effective in silencing the explosions without diminishing the power of the motor. It is really a comparatively simple matter to put another case over the silencer, and this will make the motor run as silently as an explosion motor can be reasonably expected to do. The best thing to do, unless one has had some practice in the working of sheet iron, is to unscrew the silencer off the elbow and take it to a tinsmith and get him to make an outer casing of No. 14 sheet iron, three inches in diameter. This should have 50 small holes drilled in it, close together at the top end of the case (that is to say, the end that screws up to the elbow). The inner exhaust box must be rigidly fixed to the outer one by means of a stout bolt and nut passing through both of them. The holes of the inner box must be on the opposite side to the holes of the outer.

The Compression Tap.

This is a detail of the motor that requires a fair amount of attention to keep its pressure tight owing to the burning action of the hot gases on the plug, which necessitate frequently grinding with oil and emery. To avoid all this worry it will be found the best plan to take the compression tap away altogether, and fit an exhaust lift. The upper part of the tap should be sawn off, and the hole tightly plugged up with a piece of steel wire riveted over top and bottom. Then the hole in the combustion chamber can be closed up permanently with the screw portion of the compression tap.

How to Make an Exhaust Valve Lifter.

The first thing will be to make a lifting lever out of a strip of one-sixteenth of an inch thick steel. This will require to be cut and bent to such a shape so that it can be pivotted at one end on one of the crank case bolts, and pass directly under the valve lifter block, but not quite in a horizontal position. It will be necessary to turn or file a shoulder on one of the nuts of the crank case bolts so that the lever fits perfectly free when the nut is tightened up. A small hole can be made at the free end of the lever to take a wire or cord, which is to be fastened to the handlebar by a small clip, or be attached to one of the brake

wire clips at a convenient position within easy reach of the left forefinger. A wire ring can be fixed to the cord for convenience of raising the valve. It is a very simple matter to adjust the lever so that it just clears the lifting block by one-sixteenth of an inch when valve is quite shut.

The Coil and Accumulators.

Where the coil is fixed in an exposed position, it is always a good plan to seal up the terminals with some good insulating composition such as marine glue; this will prevent wet or damp getting to the connections and causing leakage and a possible breakdown. The wires should be well cleaned and then very firmly screwed down under the terminal nuts. The sealing composition should be made hot and neatly moulded around the terminals and well up to the insulation of the wires, especially so in the case of the high-tension wire. With the coil so treated, there need never be any anxiety whatever about it always working efficiently.

The connections of the primary circuit, where they join the terminals of the accumulator, are considerably improved if, instead of the wire strands being twisted into a hook, a small connecting plate of sheet copper is soldered to each of the wires; this plate should have a slot cut in it so that it can be slipped under the terminal nut without the necessity of having to take it off the shank. A few turns of rubber tape should be solutioned over the soldering and well up to the insulation. This will make the connections absolutely permanent and will altogether remove a source of trouble through broken or corroded connections.

The Tyres.

The idea of getting a puncture in a motor-bicycle tyre is by no means pleasant to contemplate. It is not a difficult matter to solution a tread on to the driving tyre or better on both tyres. It is simply a question of setting about the work on correct lines if the treads are going to remain permanently fixed. Both the tyre and inside of tread must be most carefully cleaned and roughened with a file brush and some petrol or benzoline. At least two coats of solution should be applied to each surface and these must be nearly dry before they are brought together. Care should be especially taken to see that the joint, where the ends of the tread butt together, is firmly solutioned down, as this is generally the first place to work loose.



Gamin: "Well, guv'nor, so they've muzzled yer at last!"

IN TRANSIT.

Some Experiences of a Cyclist in the Transition Stage.

Wise, but Awkward!

The announcement by the South Eastern Railway that, in future, the tanks of motor vehicles conveyed by that line must contain no petrol, will come as no surprise to those who have observed the habits (bad) and customs (dangerous) of the average railway official and of those passengers who are so strangely addicted to riding in guards' vans. The new regulation is almost certain to be introduced in course of time by other railway companies, and it will press unduly hard upon the motor-cyclist who desires to avoid traffic by taking the train through crowded parts. Except in special cases, the car owner does not patronise railways and, whenever he does he can arrange about his petrol supplies accordingly, but the motor cyclist with a long journey before him can frequently save time and inconvenience by training out a portion of the way, and so avoiding congested thoroughfares and getting at once on to smooth roads. The place for his machine is the guard's van, and I think we must all admit that the risk is no light one, unless we can stay by the machine the whole time. A carelessly flung match, or one in the hands of an inquisitive passenger, may—one never knows—bring about a catastrophe, so that we must put aside the selfish view of the matter and make our plans to fit the circumstances. Thus, if the vehicle must be taken by train, only sufficient petrol need be carried in the tank to take the machine to the station, and the rider must be prepared with the name of the dealer nearest to the station at which he intends to alight. One could even, without any risk whatever, carry with one a small flask of petrol, a half-pint of which would take one five or six miles. This new regulation and the almost inevitable outcome impresses this fact upon us all: namely, the importance of carrying in the wallet a list of agents stocking petrol. These lists can be obtained from Carless, Capel and Co., and the Anglo-American Oil Co., and take up little or no room, whilst their utility on emergencies is undeniable.

Treatment of the Idle Machine.

Now is the time of the year when riders are taking their holidays. Some may take their motorcycles with them; the plans of others will necessitate the leaving of the vehicles at home. When a cycle is to be left for any period of say, a fortnight or more, it is as well to leave it so that no harm can come to it or any of its essential parts before it comes into use again. In the first place, the tank and carburettor should be emptied of petrol and the latter stored in a place of complete safety. Then the machine should be cleaned and all oil removed that might be likely to become caked. Particularly should the contact breaker be nicely cleansed. If thought advisable, the bright parts and bare spots on the enamel could be rubbed over with a greasy rag to prevent the attacks of rust but, in this weather, such a precaution is only necessary in exceptional circumstances. Next, the leads from the accumulator should be entirely disconnected, because a long lead, such as is provided on a motorcycle, is bound to give a large amount of surface leakage and, if the battery be at all run down, this means that the plates might sulphate. The current leaks out and then a certain chemical action takes place whereby sulphate of lead forms and is deposited on the plates of the battery. This reduces the capacity of the plates and, at the next time

of charging, it will be found that the battery will not hold a charge. By a process of continual recharging, this sulphate can be re-dissolved, but the process occupies a long time and a lot of trouble is apt to be caused. Hence, it comes about that the best course entirely is to have the battery fully charged if it is going to be left for a fortnight or more, and then the terminals and the bridge piece should be rubbed over with a drop of oil or vaseline to prevent the corrosion of the copper by the acid. Thus, in a very simple way, is the accumulator prevented from coming to any harm. Tyres should be pumped up, the tool bag should be overhauled to see that nothing therein can become damaged, and dust should be blown out of the horn to prevent the reed from losing its proper adjustment. The lamp should be removed in case it should drip oil on the tyre. With just a few simple precautions such as these, the machine can be left with safety and, moreover, it will be all ready, after a few minutes' work, for riding upon one's return.

Belt and Pulley.

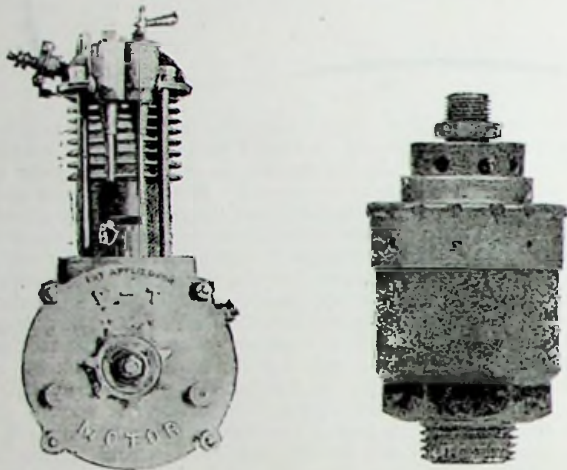
The change from a smooth pulley on the engine to one of the ribbed pulleys introduced by Mr. Calvert has now been effected on my machine, and the new device has received a thorough trial, extending over a hundred miles of give and take roads. And I must say that it seems to be quite satisfactory so far as preventing belt-slipping goes. I have not been able to detect the slightest slip on the engine pulley, but the belt, as was mentioned in these columns last week, is rather thin and I have fancied that it slipped at times on the driving rim. There is one matter in regard to this ribbed pulley that deserves attention. As the belt leaves the pulley it does so with a serpentine action and, consequently, the lower run of the belt has a distinct tremor. If the belt fastener should not be in a perfectly true line with the belt, it will strike the rim with a sharp "ting" at every revolution, and the careful and observant rider will not like the noise. Moreover, a badly placed fastener will strike the ribs of the pulley. Mr. Calvert uses a pair of small, anchor-shaped fasteners, the prongs of which bed into the interior of the belt, whilst the pair are linked together, but I rather fancy that a metal to metal joint, such as this, would soon wear through. However, there is no question but that a fastener that is entirely covered by the belt would run better than an outside one. The next best thing to do is to compel the ordinary hook fastener to keep in a proper line with the run of the belt, and I find that an excellent way is to pass the fastener through a double thickness at each end of the belt (of course, I am speaking of twisted belts). The end of the belt is folded carefully, so that the two edges meet, and a hole is punched right through the two thicknesses, nearly half an inch from the end. The result is that the ends of the belt do not drag or fray out, as they do when the fastener goes through a single hole, and the fastener itself is considerably better behaved. The only thing about the new pulley which is not entirely satisfactory is that it is smaller in diameter than my old one, so that the gear has been reduced and the machine is not so speedy as before. This, of course, is easily remedied by the substitution of a larger-sized pulley. If it is possible, I hope to put the Lincona belt, of which I hear such good accounts, to a trial on my own machine very shortly. CYCLOMOT.

INVENTION.

The latest improvements in motors, motorcycles, and accessories.

A Neat American Bicycle Motor Set.

This is the P. T. Motor Set sold by F. B. Widmayer, 2312, Broadway, New York. The motor is of the usual air cooled pattern and develops 1 to 1½ brake horse power at 1,500 revs. per minute. It only weighs 20½ lbs. The bearings are of



extra good length and the cylinder is of steel and crank case of manganese aluminium. The inlet valve, it will be observed, is arranged rather differently than is usual.

The castings and forgings are also supplied in the rough and these are readily machined upon a 6-inch lathe.

The carburetter—or as this particular type is called—a gasifier, is a very compact one. It requires no heat to assist in the formation of gas and it is claimed that it will work with different qualities of petrol with equal efficiency.

A Valve Lifter for Motor-bicycles.

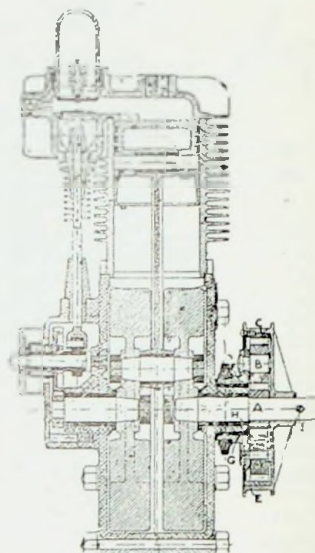
A valve lifter is so useful for motor-bicycles that the news that one has been invented applicable to all machines, at least those of the Minerva type, and costing only 5s. should lead to these useful little things being fitted. The device works as follows:—The rod going down to the compression tap of the motorcycle is taken straight down and made to lift a small lever placed close to the left side of the crank. This moves another lever placed on the other side of the crank case, and which is made to lift the exhaust valve. The actual lifting lever is curved so as to miss the contact breaker. The fitting consists of unscrewing the nuts holding the cylinder down to the crank case, slipping the clips for the "Baines" lifter under the two rear nuts, tightening them up again and adjusting the rod formerly used for the compression. The maker is W. A. Baines, Church Street, Gainsborough.

A Non-short-circuiting Sparking Plug.

This is a recently patented American idea, in which an improved form of construction is adopted, so that short-circuiting from deposits of soot, resulting from imperfect combustion, is avoided. Into the metal shell which screws into the combustion chamber a double porcelain insulator is fitted, with an asbestos packing ring in between. The special feature of the plug lies in the shape of the inside porcelain insulator, which is made in tubular form and clear out of contact with the central wire. A large amount of insulating surface is thus interposed between the two conductors, and as soot is but a poor conductor it is practically impossible to short-circuit the high-tension current over the long insulation path provided, whereas in the usual type of plug this surface is very small indeed.

A Bicycle Motor with Crypto Speed Reducing Gear.

A correspondent has forwarded us the following particulars of a 1½ h.p. motor he makes, and to which he fits a Crypto speed reducing gear. The Crypto speed-reducing gear is operated as follows: A is the main driving gear wheel keyed to engine shaft; B is a pinion wheel, of which there are three; C is the toothed outer ring attached to brake drum, E; F is the pinion plate to which are fixed the three pinions, B; also sprocket D for chain drive or pulley for belt drive can be fixed. The gear wheel, A, the three pinions, B, and toothed ring, C, all mesh into each other. On the brake drive E is a band brake (not shown), which is used to put engine in or out of gear. When the engine is in gear this band brake is held tight on to brake drum E, thus preventing it to revolve. This being so, the pinion wheels B, in order to revolve, take the pinion plate F, round with them, thus transmitting power to sprocket D. To put engine out of gear, the band brake is released on brake drum, as the brake drum is now at liberty and offers no resistance to the pinions B. It revolves instead of the pinion plate, F. Thus your engine is out of gear, and cycle must be pedalled in the ordinary manner, as engine is free. The following are a few of the chief advantages gained by adopting the Crypto gear shown:—(1) The engine



IN CONGESTED TRAFFIC

can be instantly put out of gear without having to stop engine; regulating of speed without altering mixture or sparking lever. (2) Less wear and strain on engine shaft, as the wear and strain are equally divided on the steel bearing on crank chamber cover G and engine shaft bearing H, thus relieving shaft of a deal of strain and wear. (3) Engine can be started before mounting cycle by small handle, which engages with pin I on shaft, thus obviating a deal of frantic pedalling. (4) Chain drive or belt drive can be used. Chain drive I consider best, as it is a positive drive. With chain gear, the engine being put in gear gently, there is no sudden strain on chain. (5) As this Crypto gear reduces speed from 1,700 revolutions down to 500 revolutions per minute it allows of small sprocket chain wheel or small pulley for belt drive, and as the ratio between the pulley is only about four, the belt gets a much better grip, and does not slip. I may say, in concluding this brief description, that I have some very good records from my motors, both for speed, power, and long distance runs. The motor and Crypto is of the E.M. design. As proof of the reliability of these motors, after thirty minutes' run, writes our correspondent, the hand can be held on cylinder without any uncomfortable feeling of the heat. Motor will run up to 3,000 revolutions; at 1,700 per minute it develops, 2 h.p. actual. The maker is Mr. W. Bradley, 175, Grosvenor Road, Tunbridge Wells.

Readers having ideas for Inventions can obtain free advice and particulars as to the best way to protect a patent by communicating with this Journal. All letters should be addressed "Patent," care of "MOTOR CYCLING."

HINTS AND WRINKLES.

How the Accumulator Gets Exhausted Sometimes.

Some riders are addicted to the bad habit of trying their accumulator for a charge by sparking or flashing it with a piece of wire or metal across the terminals. This results in a large amount of the current being taken out of the battery in a short time; hence it is that some batteries will not run their full distance.

Don't Run the Motor for long on a Stand.

To run the motor for more than a minute or so at a time is not a practice to be recommended, because it is important that the motor gets a current of cold air to play on it, which it does when the machine is running on the road. Running the motor stationary for too long may result in a damaged cylinder or piston.

Pay Attention to the Steering-Head Adjustment.

This should always be kept thoroughly lubricated, and even more important is it to keep the adjustment perfect. Once there is a sign of any play or shake in the head—which can easily be tested by taking hold of the two handlebar grips and trying to pull them upwards, when the looseness can be felt—the bolt that passes through the clip should be undone, and then the adjustment ring given a turn or as much as is necessary to take up the shake; then the head clip should be carefully tightened again.

The Value of a Drop of Paraffin Oil at Starting.

No rider should go for a run without having a small oil-can filled with paraffin in the tool valise. It is important that the spout of the oiler is provided with a really sound washer; otherwise the paraffin, being an extremely thin and mobile oil, will leak away. For starting paraffin is better than petrol, because not only does it clean the cylinder, but it also lubricates. If a compression tap is fitted, the oil can be got in easily; if not, it can be got in through the inlet valve. It is not a bad plan to have a small hole drilled in the admission pipe just close to the inlet valve, and a little plug or eyelet cover fitted to keep out dust.

Tighten the Motor Pulley Nut Occasionally.

It has more than once come under our notice that the driving pulley of the motor has worked loose on the shaft through want of an occasional look at the nut that secures it. If the nut gets slightly loose through vibration, the shock and strain of the impulse stroke will all have to be taken by the small key, which will begin to wear the slot in shaft and pulley so much that the pulley gets quite loose, and cannot be tightened again. But this cannot take place if the nut is kept firmly screwed up to the pulley face. If there is enough thread on the shaft, it would be an advantage to put on a thin lock nut, which would render it impossible for the pulley nut to loosen.

If the Connecting Plug Gets Lost.

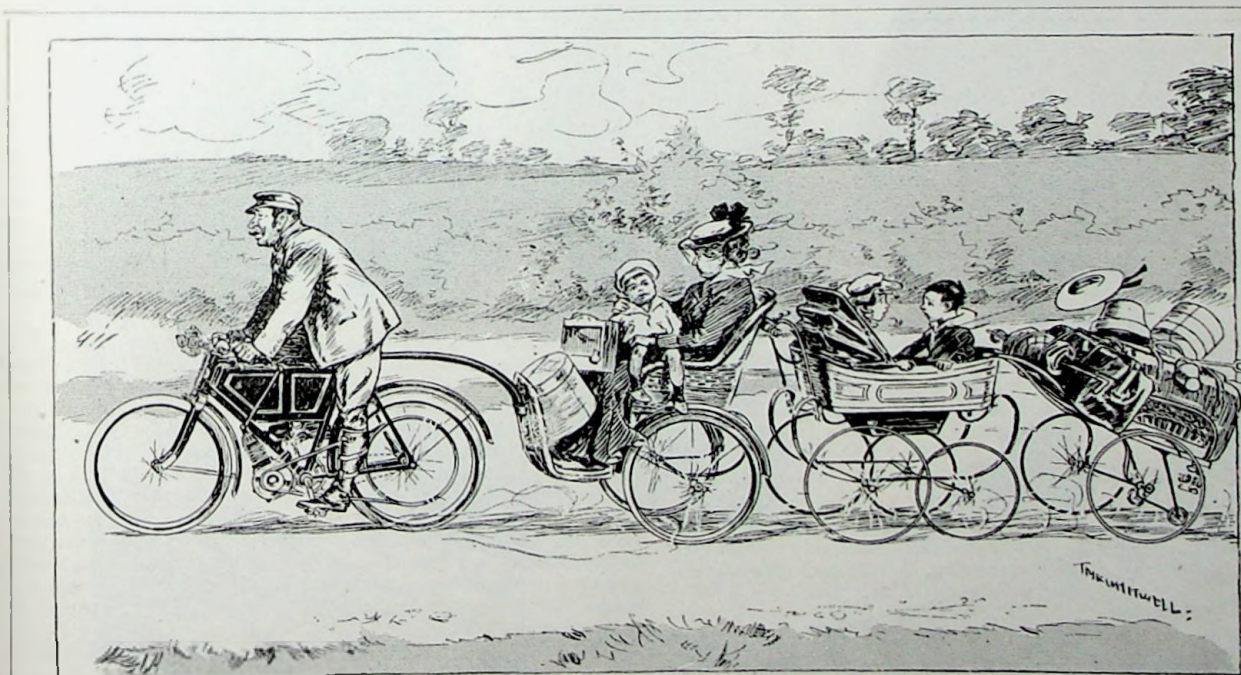
An ordinary wood screw pushed in between the plates of the switch will make a good enough contact, or even at a pinch the two plates can have a piece of copper wire wrapped round them.

Copper Wire always Comes in Useful.

The equipment of a motor-bicycle is not complete without the addition of a yard or so of copper wire to the spare parts, etc., in tool bag. The most useful size is No. 16, and it is better to get this uncovered. It comes in very handy at times to make a connection, temporarily replace a lost nut, wire up a broken saddle spring, repair the brake fittings, etc., etc.

Oil on the Contact-breaker Points.

This is responsible for more misfiring troubles than anything else, and every precaution should be taken to avoid oil getting in the contact-breaker case. The great thing is not to use too much lubricating oil. If the firing becomes intermittent the contact case should be slipped off and it will probably be found that the spring and points are bespattered with oil. Clean this out with a piece of rag and then place a slip of card between the platinum and press the points together whilst you draw the card away two or three times. This will effectually clean the points, and in nine cases out of ten the ignition will be perfect again.



THE HOLIDAY SEASON.

True economy suggests this sort of thing to the motor cyclist with frugal mind.



"THE WIZARD."
What will Thomas Edison do for Automobilmism?

LAND'S END TO JOHN O' GROATS.

A Good Ride on a Werner by Mr. Ernest H. Arnott. The Story of the Ride as told by Mr. Arnott himself.

We have pleasure in devoting considerable space to Mr. Arnott's interesting account of his excellent motor ride believing that performances of this kind accomplished on standard machines as offered to the public are of the greatest value showing as they do the capabilities of the motor-bicycle for practical purposes.

A start was made from Land's End Hotel at 2.55 a.m. on July 13th, just as day was breaking (and here let me say that at no hotel I have ever been to is more attention given, or trouble taken to make a guest comfortable). I went off gaily enough on my Werner, down the narrow and winding road to Penzance, not expecting to find any pedestrians or other impediments to bar the way. I had not gone more than two miles, however, before in the dim light I spied what looked like a man walking in the same direction. I immediately blew my horn and was greatly surprised at the result. The "man" whipped quickly round and suddenly developed four legs and much skittishness. It turned out to be a mule out on its own for an early promenade. I

ONLY JUST MANAGED TO SQUEEZE PAST

by what seemed to be a fraction of an inch. After this little bit of excitement all was plain sailing until after Redruth, when I was suddenly startled to see a milestone bearing the words "St. Agnes 1 mile." Somehow, I had got off the road. Instead of going back the way I had come I tried to work round and join the correct road further on, and finally managed to do this, but encountered some shocking hills and roads en route, and lost quite an hour. I was very thankful my machine was in such good hill-climbing form as, otherwise, I might have had a most killing time of it.

After rejoining the correct road, I pegged along via Bodmin and over the moors to Exeter, Taunton, and Bridgwater, arriving at Bridgwater at 10.45 a.m., having accomplished

THE FIRST 165 MILES IN 7 HOURS 50 MINUTES.

I then had lunch, a rest, and filled up my tanks again. Leaving Bridgwater at 11.55, I journeyed on through Bristol, Gloucester, Worcester, etc., to Whitchurch, which was reached at 7.30 p.m., and decided to stay for the night. This completed the

FIRST DAY'S RUN OF 324 MILES:

On Monday I was on the road again at 3 a.m., and had a splendid run till near Wigan, when I struck the fearful road leading into and through that town. It requires an experience of this road to make it really appreciated. The road continued rather bumpy for some distance and did its very best to shake my machine to pieces. Nothing happened, however, and I may as well say here as later that not even once did I require to make any adjustment whatever except to give occasional attention to the belt. To continue with the run, Kendal was reached at 7.30 a.m., and then I had

THE FIRST TOUCH OF REAL UNPLEASANTNESS,

as I found the streets wet and greasy, and I rode in rather heavy rain till over Shap; whilst the hill itself was in a very bad state. The road, besides being rough as usual, was soft and heavy, and I was heartily glad when, after much hard pedalling up the last steep piece, I got to the top. It is the condition of the road and not the gradient which makes this hill so difficult. I arrived at Carlisle at 11.5 a.m., and having replenished the fuel tanks of myself and machine, proceeded on my way at 1.10. Here rain was very soon encountered, and from then until I reached Edinburgh the roads were greasy and wet in most places. There were dry stretches at intervals, however, and I made the most of these, arriving at Granton Ferry, Edinburgh, at 6.30 p.m. and left again at 7.15 p.m.

The roads from here were dry, and it was

A SPLENDID RUN THROUGH KINROSS TO PERTH,

which was reached at 9.30 p.m., and here I put up for the night. I was once more under weigh at 3 a.m. next morning, and made good running to Dunkeld and Pitlochrie. The state of

the succeeding road over the hills through Dalwhinnie and Kingussie cannot be realised by anyone who has not been over it. I suppose it was intended for a road once, but it now resembles a grass plot with loads of loose flints and stones laid over it. No attempt has been made to roll these in, and as there is no traffic whatever the condition is likely to remain as it is for a long time to come. It is a wonder to me that my tyres stood at all, and still more marvellous is the fact that

I DID NOT HAVE A PUNCTURE.

All the time I was on this road it was raining and very unpleasant. Further on the roads continued very wet, and were in places very greasy and dangerous till past Inverness. From Benley onwards, however, the roads were quite dry, for which I felt duly thankful. Tain was reached at 12.30, and, having lunched, repaired a puncture, and refilled my tanks, I departed at two o'clock on the last stage of the journey, and had a clear run through Golspie and Helmsdale and up

THAT LONG AND STEEP ASCENT

the Ord of Caithness till the descent to Berriedale began. I then slowed right down and descended most carefully, as this is a very dangerous hill, and the steepest both to go up and to go down on the whole journey. Having safely reached the bottom, I switched on again and made for the stiff ascent only to find when I had got properly going that I had to make a sharp right-angled turn; I just managed to get round this and continued the ascent in fine style till I came to

ANOTHER UNEXPECTED AND EVEN SHARPER TURN.

To prevent running into a wall I had to switch off and put my brake on, and this, of course, stopped me altogether, so, slipping the belt off my machine, I prepared for a long walk to the top. After going about 100 yards, however, the hill eased slightly for a few yards, and a strong youth being at hand, I secured his services for a push off. Having got the motor going again, I made a successful climb to the top, and began the long run down to Dunbeath. For the rest of the way there was no hill worth mentioning, and I ran

STRAIGHT THROUGH TO JOHN O' GROATS WITHOUT A STOP,

arriving at 8.45 p.m.

From start to finish the times are:—

SUNDAY.

Left.	Arrived.
Land's End 2.55 a.m.	Bridgwater 10.45 a.m.
Bridgwater 11.55 a.m.	Whitchurch 7.30 p.m.

MONDAY:

Whitchurch 3 a.m.	Carlisle 11.5 a.m.
Carlisle 1.10 p.m.	Perth 9.30 a.m.

TUESDAY.

Perth 2.55 a.m.	Tain 12.20 p.m.
Tain 2.0 p.m.	John o' Groats... 8.40 p.m.

The full time from start to finish, including all stoppages of any description, such as sleep, etc., was 2 days 17 hours 45 minutes. The time, less stoppages at hotels, etc., as above, an actual riding time of 47 hours 55 minutes for the 888 miles.

I do not think that anyone who has not been over this route can have any idea of the difficulties of the road. I certainly expected to find the ride less trying than it proved. The journey includes, I suppose, some of the steepest hills and the roughest roads in the two countries traversed. It is a certainty that no more severe or practical test could be undergone, and the new type Werner has added one more to the long list of honours which it has already secured.

E. H. A.



Conducted by

EDMUND DANGERFIELD
and WALTER GROVES.

Manager :

ERNEST PERMAN.

Proprietors :

TEMPLE PRESS, LIMITED,
7, 9, 11, 13, 15, ROSEBERY AVENUE, LONDON, E.C.

OPINION.

Land's End to John-o'-Groat's Inside Three Days.

It is almost impossible for anyone who has not been over the course to really appreciate all that is conveyed in the sentence that stands at the head of this paragraph. Eight hundred and eighty-eight miles at top speed; opportunities for rest very few; for sleep, very little; hills, numerous, long and steep; rains at all sorts of times in the Highlands; roads as bad as they well could be in many places; the worry and the anxiety of the trial—all these things are enough to try the hardest, to quench the ambitions of the most strenuous of record breakers. They have been the undoing of many a rider in the past, and, so far, few motor vehicles indeed have essayed the journey, and fewer—greatly fewer—is the number which have succeeded in travelling from End to End.

G. P. Mills was the most wonderful man on this record up to the time when he practically put an end to all attempts by going through in 3 days 5 hrs. 49 mins. A marvellous ride that, simply marvellous; and on that last seemingly interminable stretch, the greatest battle was not with time, nor with roads, nor with weather, but with sleep. The motor vehicle brings new conditions with it. The physical fatigue is, maybe, less, but brain fag is greater, and there is not the action of pedalling to help the rider in his fight with the desire to sleep.

Of the motorists who have been over this route, none had succeeded in equalling G. P. Mills's time until the beginning of last week, when J. W. Stocks, on an 8 h.p. De Dion Bouton car, and Ernest H. Arnott, on a 1½ h.p. Werner motor-bicycle started from Land's End in the early hours of Sunday morning. Stocks accomplished the distance in 2 days 14 hrs. 25 mins., and Arnott in 2 days 17 hrs. 45 mins. Stocks had a few hours' sleep on the first evening, but thereafter he went right through without further rest for over 38 hours. Arnott on the other hand, snatched a few hours' sleep; but as 3 a.m. was the accepted hour for starting each day, the rest was by no means adequate.

From the De Dion car and from J. W. Stocks a successful performance might have been expected, because we have now reached that stage of development in which confidence in the machine and mechanism has been established. But even the most sanguine would consider that, for a motor-cycle and a motorcyclist, the task—over those fearfully rough roads and through those pitiless rains—would be almost too much. All the more, then, to the credit of E. H. Arnott and

to his Werner for accomplishing it. The excellent impressions created by this machine in the Paris-Vienna race is confirmed in the Land's End to John-o'-Groat's ride. A performance such as this is, to our mind, worth fifty of a fast five miles on a racing track by a freak machine. It proves something; it teaches us that the motorcycle is not a toy: that it is a really sound practical vehicle, full of capacity and full of possibilities. It also proves this, that although the Holbeins, the Mills, and the Shorlands of one decade have left the sphere of cycle records, the next decade has its Bucquets and its Arnotts, and their influence for good, especially upon a sport and industry so young as is motor cycling, is undoubted.

The Two-Speed Gear for the Motor-Bicycle.

The adoption of a really simple and efficient two-speed gear to the motor-bicycle is undoubtedly a much to be desired feature, and at the present time a good deal of experimenting is being done in this direction.

It is of course well known that the petrol motor has not the range of power or elasticity that are such distinguishing features of the steam or electric motor. With the steam engine, a wide variation of speed and power is always possible by the adjustment of the quantity and pressure of steam. Electric motors for traction purposes are single geared, and yet by means of a simple device known as the controller the power can be easily varied to suit any load or gradient the motor may have to be equal to.

The power developed by small internal combustion engines is largely determined by the rate of speed at which they run, and below a certain point the power is by no means directly proportionate to the speed. Now the problem arises as to whether the weight of the motor-bicycle must be increased as a result of fitting larger motors to get the power for hills, or retain the small dimensioned motor of 1½ h.p. and fit a two-speed gear. The average rider of a 1½ h.p. motor-bicycle is, as a rule, satisfied with its running on moderate roads, but now and again hills are met with that even hard pedalling will not suffice to get the machine up; this is simply because the speed of the motor drops below the critical point, at which point the power falls off rapidly. This is where the two-speed gear will score, viz., by allowing the motor itself to run at constant speed and always develop its maximum power. Some riders may argue that the best plan is to adopt a high powered motor, but the question now comes in that on level roads there is really very little advantage in a high powered motor over a low one. High rates of speed on the road are neither allowable nor desirable in the interests of motorcyclists, in this country at all events. A motor developing a full 1½ h.p., as proved by making a brake test, will, providing it is suitably geared, take machine and rider up a gradient of 1 in 8, and steeper than this is not often met on a rideable road. We have come to this conclusion after an actual trial with one of the smallest motors made and only having a bore of 57 mm. by 65 mm. stroke. This was fitted with an ingenious reduction gear, which could be thrown into action by moving a small finger lever fixed to the forward part of the horizontal tube of frame.

On the level this particular type of motor-bicycle is equal to a good 20 miles per hour, and the ordinary slopes, say up to 1 in 15, it will take directly geared. A little practice soon enables one to tell when the motor is beginning to labour or lose power on a steep hill; then the low gear can be thrown in, the load is immediately taken off, and the heat of the motor becomes rhythmic again, and in a sense the machine gets simply wound up the hill.

Then, again, the question arises, will the motor overheat when running at its highest speed, but actually only moving through the air at a slow rate? Theoretically it should, because the motor cannot lose its heat fast enough; nevertheless this was not noticeable on a run up a hill half a mile long with the low gear in. Overheating, to a large extent, can be avoided by a skilful use of the mixture and throttle control levers, and once the crest of a hill is reached and a run down is available the exhaust can be raised and an effective cooling of the interior of the cylinder obtained.

NEWS.

Motorina.

A contemporary refers to lady motorists as "Motorinas."

When you meet the motist proud
Coming swiftly down the road,
Through the dust that filled your eye,
As the car came whirling by,
At his side you might have seen a
Charming little motorina.

Motorina is the name
Of each fashionable dame;
On the car she loves to spin,
Neatly clad in coat of skin;
Ethel, Mabel, Maud, Christina,
Boasts herself a motorina,
Finding in our winsome Queen a
Model of a motorina.

Every lady longs to claim
Such a sweetly pretty name;
Edwin must—his wife has said it—
Get a car for cash or credit,
So that little Angelina
May become a motorina.

WM. C. BIRT WHITWELL.

Mr. Mark Mayhew is the first Englishman to place an order for the new 1903 type Gordon-Bennett Napier racing car.

"Motor Cycling" will have a fully illustrated report of the Bexhill trials.

Dr. Raw, a medical practitioner, met with a nasty accident while riding a motor-bicycle in Church Street, Whitby.

The Summer Number of "Cycling," which is published this week, is a wonderful issue in every way. It contains a most novel four-page supplement.

The Aero Club of Belgium had arranged a grand meeting for Sunday last, to include a pursuit race on motors, a couple of events for motor-bicycles, and a "balloon chase" on cars and motorcycles.

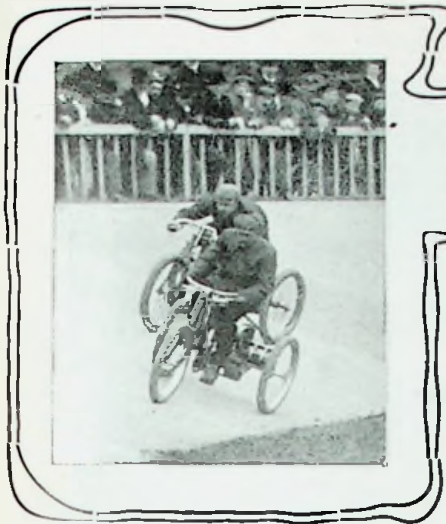
M. Serpollet considers that he has now thoroughly established the strength and reliability of his steam cars by their behaviour in the Circuit du Nord and the Paris-Vienna race, and will now devote his attention entirely to improving their speed qualities.

No Preliminary Trials.

It had been intended that a series of preliminary trials should be made over the Bexhill course on Saturday last, but as it was doubtful at the beginning of the week whether the extension of the track would be completed, it was decided to forego the idea.

The Essex Hill-climb.

As fully reported in the last issue of "Cycling," the contest on Nazing Hill, promoted by the Essex and Middlesex Cycling Union (open to members only), was won by J. Van Hooydonk, who was riding his 1½ h.p. Phoenix. His time for the distance (950 yards; average gradient, 1 in 164) was 1 min. 19½ secs. A. Rivett, riding a 1½ h.p. Blizzard, was second, doing 1 min. 21 secs. G. F. Sharp, riding a 1½ h.p. Excelsior, could do no better than 1 min. 51¾ secs., having had the gear of his engine reduced too much.



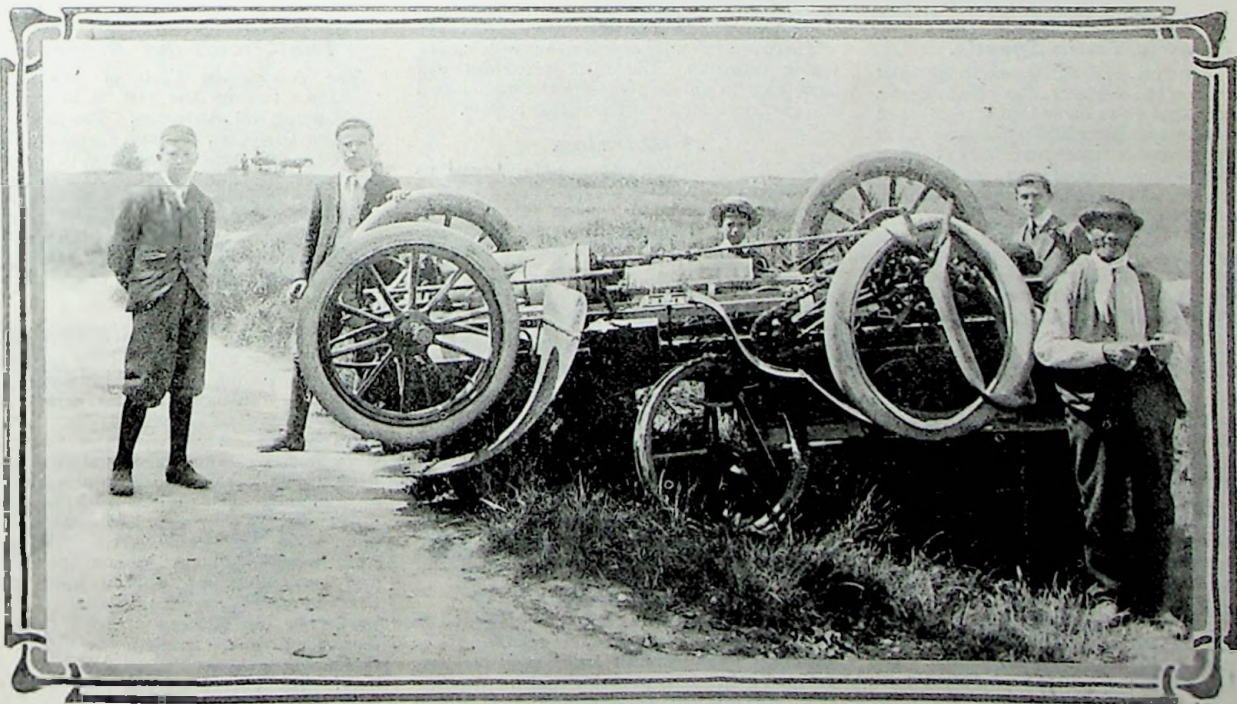
Land's End to John-o'-Groat's Record.

New times for motorcycles and motorcars over a very trying course.

Mr. S. F. Edge is to be entertained by the Automobile Club and also by the Society of Motor Manufacturers.

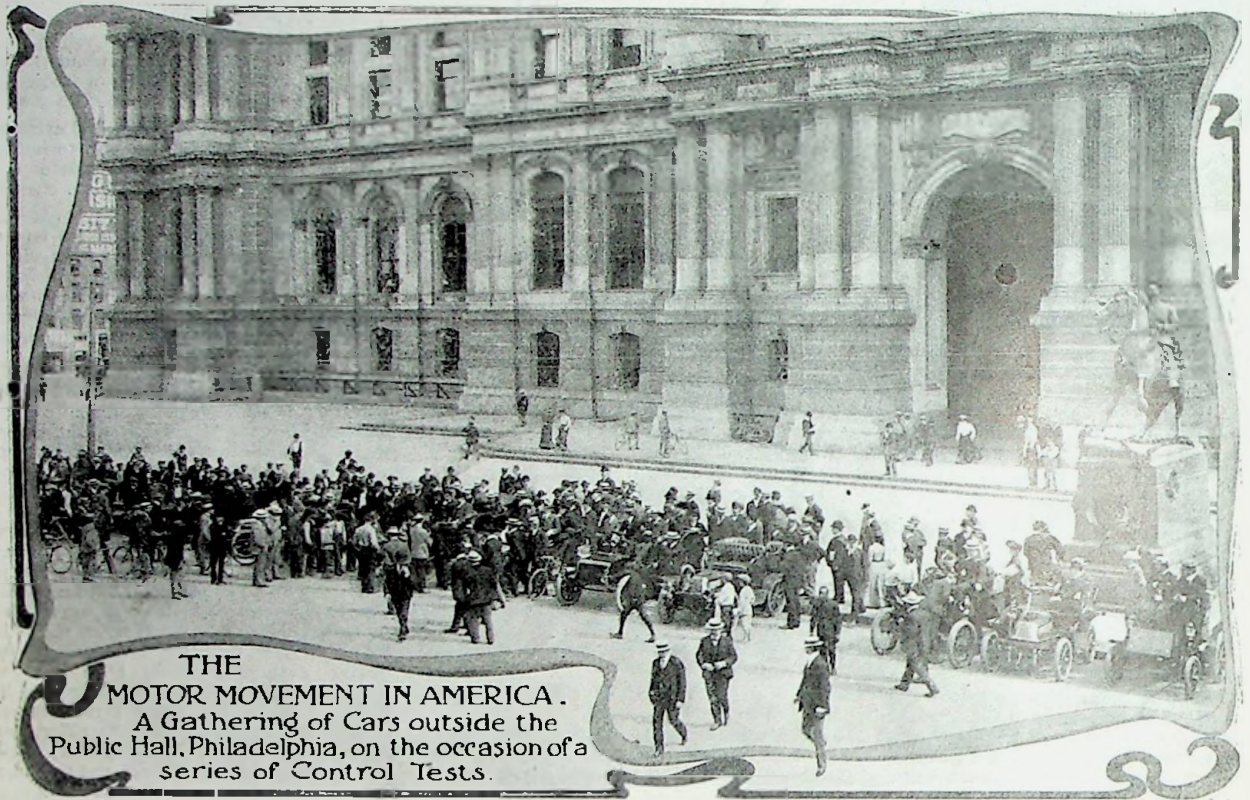
An interesting exhibition of electric motor traction appliances has been held at the Agricultural Hall, London. All the standard types of traction motors were exhibited, and also dynamos and battery plants.

There seems to be an idea prevalent that a car fitted with the new Edison motor battery will compete at Bexhill on August 4th. If such is to be the case, no doubt a considerable amount of interest will be manifested.



AN EXTRAORDINARY SMASH.

This photograph was taken by a correspondent, and depicts a motor-car that came to grief in Beulter's Lane, Banstead, on Sunday last. Two of the occupants of the car were badly hurt, and considering the position of the car, which is absolutely upside down, it is marvellous that they escaped alive. We do not know what caused the accident, but it will be seen that one of the rear wheels has entirely collapsed—tyre, rim, and spokes being separated.



THE
MOTOR MOVEMENT IN AMERICA.
A Gathering of Cars outside the
Public Hall, Philadelphia, on the occasion of a
series of Control Tests.

Electric Train Speeds.

Some conclusive experiments have just been made on the electric railway from Berlin to Zossen, that go to show that a high-speed electric train travelling at 80 miles an hour runs incomparably more smoothly than a steam-driven train does at 60 miles an hour. However, when the speed is raised to 85 miles, the carriages begin to oscillate severely, and the present form of permanent way gets damaged. But it is the opinion of leading engineers and electricians that the electric train can be run at double the speed of the steam-driven train if a special permanent way is designed.

The Bord Motor-Bicycle.

This is a machine that is being put upon the market at a very low figure, and from what we could gather after a brief inspection and run, it is remarkably good value. The motor develops $1\frac{1}{2}$ horse power, and is made by that reputed firm the Fabriques Nationale, Belgium. It is fitted in a vertical position in the large panel of the frame, and drives by a round belt on to the back wheel pulley. An outside fly wheel and De Dion contact breaker are fitted. The coil and accumulator—which, by the way, is a new and highly efficient French make—are carried in a neat case hung from the top tube. The petrol supply is kept in a cylindrical tank mounted on the handlebar, and feeds the motor through an indiarubber tube to the mixing chamber combined in the inlet valve. Regulation is effected by a needle valve on the petrol supply and the spark advance lever. There seems to be plenty of power in the motor, and the total weight is 60 lbs.

There is a splendid opening for really clever motor repairers. The most successful will be those who will deeply study the mechanical and electrical details of the motor-bicycle.

A Warning.

The Begbie Manufacturing Co. advise us that a large quantity of imitation "Aster" motor parts are being sold in this country, causing trouble and inconvenience to owners whose cars are fitted with genuine "Aster" engines. They wish all users to note that all genuine "Aster" parts are stamped with a star.

Hills on the Vienna Route

Westerham Hill is considered pretty stiff as hills on main roads go in England; but when compared with the road over which the motorcars had to go to reach Vienna, it must be considered merely a gentle rise. For instance, the gradient of the Arlberg Pass is at various points 1 in 4—just about twice as severe as the steepest parts of Westerham. Small wonder, then, that several cars threw up the sponge before the summit was reached.

Bexhill Trials.

A good deal of interest is being evinced in the forthcoming motor race meeting to be held at Bexhill-on-Sea on Bank Holiday, August 4th. It is probable that on Wednesday, August 6th, there will be held a hill-climbing contest. We know of at least one firm who are making something very special in the way of motor racing bicycles, and if this can only be got up in time something sensational in the way of speeds may be looked for.

The Circuit des Ardennes.

The Automobile Club of Belgium announces a race for the 31st, to be known as the Circuit des Ardennes. The course will be from Bastogne, through Longlier, Habay-la-Neuve, and back to Bastogne, to be covered six times, making a total of 512 kilometres. The start will be made at 5 o'clock in the morning, and the competitors will be started at intervals of two minutes. Three classes will be for racing cars, one for touring cars carrying four persons, and one for motor-bicycles.

Echoes of the Paris-Vienna Race.

A few of the experiences of the racers from Paris to Vienna are still interesting, and show the difficulties under which these journeys have to be undertaken. A Mercedes car carried seven litres of water from Paris for cooling purposes and arrived fourth, having only to take two litres of water more on the road. The French roads were good, in Switzerland they were bad, and in Austria often quite unrideable. The Swiss people were very hostile, in Austria the controls and everything else worked best, and in France nothing was left to be desired. Those who took the Arlberg in good time rode downhill at a low speed; the others went down at a breakneck speed and risked their lives. The curves on the road were more than dangerous. One driver says: "I saw nothing but a few yards of road, dancing telegraph poles, and trees and houses. The latter I saw best because we had to slow down at every village and town. A motor racer cannot study the landscape. 'Onward' is the tip, otherwise he has lost."

Count Zborowski will be the victor of Paris-Vienna so far as large cars are concerned. He has covered the three distances in the shortest time. The Count drove a Mercedes car.

The Duke of Connaught has recently acquired a 9 h.p. Napier car, with which he has been doing the rounds of inspection of the Coronation camps, in company with Prince Arthur and the Princesses Margaret and Patricia of Connaught.

Doubted.

Maurice Thè's record time at the Paris Buffalo track is doubted by his colleague Lambertjack, who denies that 10 kilometres can be done on a motorcycle at the place in 6 mins. 32 secs. He offers £20 if Thè repeats the time, and a fresh race under strict control has been arranged.

Automobile Club of Great Britain and Ireland.

At a meeting of the Club Committee, which was held on Monday, July 14, exactly 100 extra candidates were elected to membership, the one-hundredth being the Prime Minister, the Right Hon. Arthur Balfour, M.P.

Mr. Balfour was proposed for membership by the Hon. John Scott Montagu, M.P., the Vice-Chairman of the Club, who also was proposer of the following, who were elected on the same occasion:—Sir Savile Brinton Crossley, Bart., M.P., Sir George Newnes, Bart., M.P., Mr. Griffith-Boscawen, M.P. Amongst other candidates elected were:—Sir Daniel Gooch, Bart., Sir William Tomlinson, M.P., Lord Howard de Walden, Sir Henry Bunbury, Bart., Sir G. R. L. Hare, Bart., Lord J. P. Joicey-Cecil, Sir Edward Strachey, Bart.

There are now 1,704 members of the club, and it is expected that there will be further additions before October 1, when the entrance fee is to be raised from four to ten guineas. The next election of candidates for membership will take place on Monday, July 28, at 5 p.m.

Mr. J. D. Siddeley, the Chairman of the Midland Automobile Club, was, at the same meeting of committee, appointed to the Executive Committee.

It was agreed that Mr. S. F. Edge and Mr. M. Napier should be entertained by the Club at a congratulatory banquet, to be held at the Whitehall Rooms, Hotel Metropole, on Wednesday, July 23, when it is expected that the Gordon-Bennett Cup will be formally received from the Automobile Club of France by the Automobile Club of Great Britain and Ireland.

A Warning.

Motists travelling to Skegness, the popular watering-place, should beware of the road between Boston and that town. Although of good surface and fairly level, the road winds about like a maze, and several sharp S turns have to be negotiated; the narrowness of the road, and the fact of there generally being a deep dyke on either side, lends excitement to the steering of a car, especially at night. The writer speaks from experience, as he has had some!

A Correction.

In a portion of our issue last week an unfortunate printer's error occurred in the latter part of the interview with Mr. S. F. Edge. The sentence which was brought out as a cross-head as follows, "He thinks the race could and should be run in England," should have read, "He thinks the race could and should be run in Ireland." This error was corrected in the majority of copies, but some 5,000 were printed before it was detected.

The Clement-Garrard 4-Cylinder Record Breaker.

We are able to give the following general particulars and an illustration of the special four-cylinder racing motor-bicycle made by the Clement-Garrard Co., and of which some big things in the way of high speeds are expected. Considering the power of the motor—12 h.p.—it must be admitted that the design is both mechanically good and symmetrical in appearance. It will be observed that there is an intermediate shaft driven by a large gear wheel on the motor shaft, and from a pulley on the intermediate shaft a belt drives on to the rear wheel. The design of the motor has many features in common with the smaller Clement motors, notably in the valve gear. Ignition is effected from one coil, having four high tension wires leading from it to the four sparking plugs. The four-way contact breaker is on the far side of the motor shaft. The accumulator is carried in a case supported near the handlebar, and the petrol supply tank is fixed between the two horizontal tubes. No pedals are fitted, and presumably the rider starts up the machine by running along with it, and then vaulting into the saddle.

Motorcars are allowed to travel at 10 miles per hour within the business parts of Massachusetts, and 15 miles per hour in the outskirts or main roads. This is considerably above the speeds allowed in European cities.

Trial of Pneumatic Tyres at Bexhill.

The Dunlop Co., the Martin Co., and the Goodyear Co. have already notified their intention of entering tyres for this trial. It has been decided to add a second section to this trial, namely, for tyres of not more than 90 mm. section fitted to a car weighing with its passengers not less than one ton. No entries can be received after Saturday, August 16, at 12 midnight.

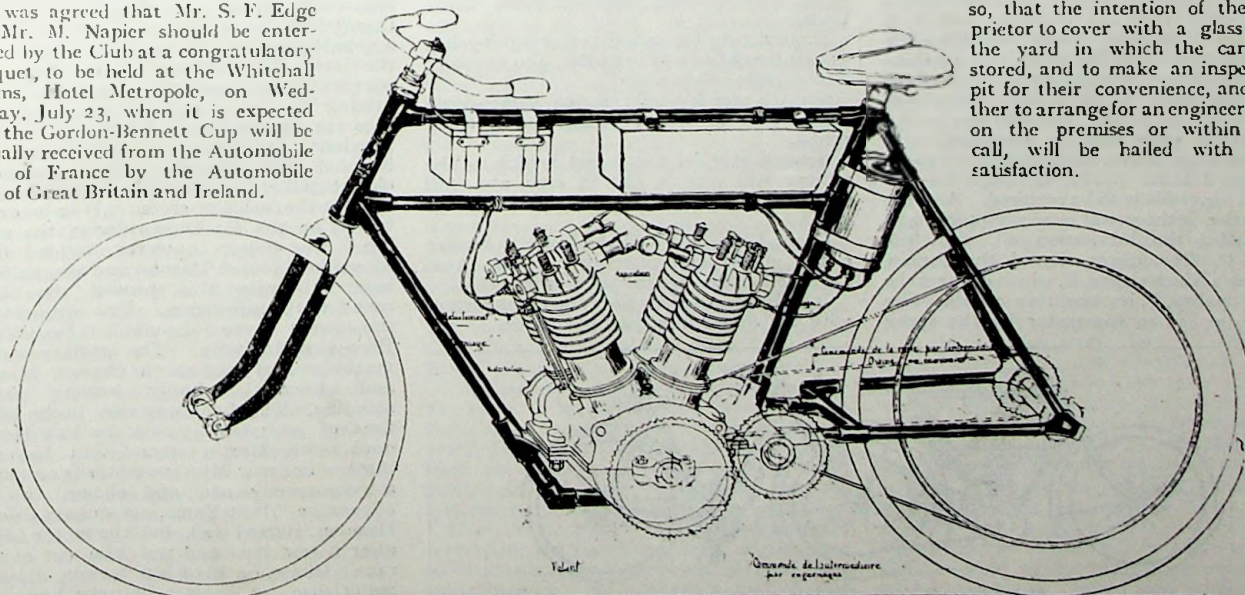
The Manchester Automobile Club.

The seventh run of the season took place under most favourable conditions on Saturday, the 12th inst., the rendezvous being Leasowe, which is situate at the extremity of the Wirral Peninsula, between Hoylake and New Brighton, a distance from Manchester, by either of the two routes available via Chester, a round of about 60 miles, the surface of the roads in either case being all that could be desired.

There was no procession of cars either on the outward or return journey, the members being expected to meet at Leasowe Castle Hotel and Hydro in time for dinner, which was fixed for 7 p.m. At the hour appointed most of the cars had put in an appearance, but two or three members, owing to certain ills which motorcars seem to be heir to, such as tyre troubles and broken springs, were unable to reach their destination until later.

The hotel itself presented an object of the greatest interest, being anciently a baronial residence standing in well-wooded domains, and now presenting a high-class private hotel and hydropathic establishment.

A goodly number of the party were provided with quarters for the night at the hotel, and on Sunday morning they began the return journey by way of Chester, stopping for lunch at the Blossoms Hotel, which is the favourite resort of motorists visiting the city; so much so, that the intention of the proprietor to cover with a glass roof the yard in which the cars are stored, and to make an inspection pit for their convenience, and further to arrange for an engineer to be on the premises or within easy call, will be hailed with great satisfaction.



The latest type of Record Breaking Motor-Bicycle. The 4-cylinder 12 horse-power Clement-Garrard.

An Easy Method of Converting a Motor-Bicycle into a Tandem.

From the illustration it will be fairly clear how an ordinary cycle can be attached to the rear forks of a motor-bicycle, thus making a tandem or forming a convenient trailer. The width of the rear hub of a motor-bicycle is generally greater than the front forks of the cycle, hence it will be necessary to have these set out so as to fit over the axle ends. It would also be an advantage to strengthen the fork ends, as the connection must be perfectly rigid and secure at this point.

The End to End Record.

J. W. STOCKS DOES A MARVELLOUS RIDE ON A DE DION CAR.

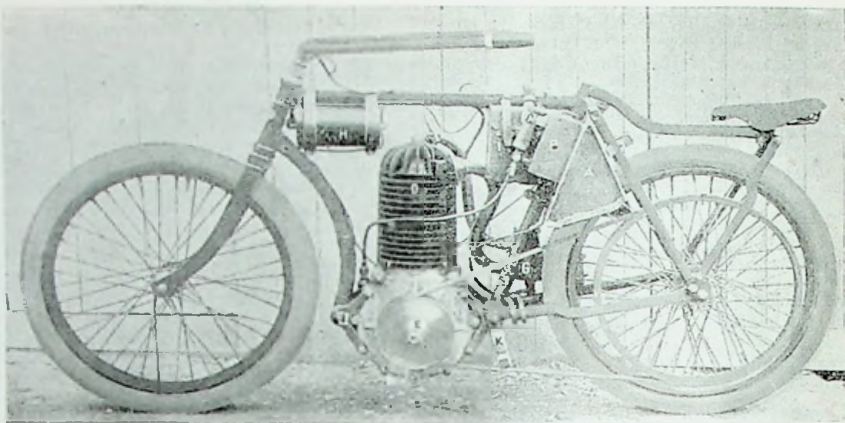
J. W. Stocks, on his 8 h.p. De Dion Bouton car, essayed his task of riding from Land's End to John-o'-Groat's in record time in the early part of last week. The previous motor vehicle performance was scarcely worth considering, because it had not even approached G. P. Mills's wonderful cycle record of 3 days 5 hrs. 49 mins. Stocks intended to do it inside three days, and he succeeded handsomely, despite the bad roads and the heavy rains encountered.

He left Land's End at 2.55 a.m. on Sunday morning, and reached Whitchurch at 7.25 the same evening, being then two hours ahead of his time table. He slept at Whitchurch, leaving again at 3 o'clock on Monday morning, arrived at Kendal at 8.25, or 35 minutes ahead of his day's time table. He reached Perth at 9.30 on Monday night, left again at 11, and reached Inverness at 6.25 on Tuesday morning, after a very wet ride, and arrived at John-o'-Groat's at 5.20 p.m.

The time is quoted complete, including all stoppages. This is important, as many claims for this record have been made after deducting stoppages. This performance beats all records for the course.

Speed Pacers.

The illustration on this page shows the latest kind of motorcycle pacer, which has been used on the Parisian racing tracks the last few Sundays. The machine has attracted great attention, and it contains some novel points of great interest. The illustration gives a good general idea of the construction, which some may call fantastic, but it is useful for its purpose. Until now the highest cycle speed—and for cycles this machine will act as pacer—reached 67 kilometres (41½ miles) per hour unpaced, and when well paced about 55 miles. Hitherto the pacing motorcycles were ordinary machines, with up to 24 horse power, whereas the new pacer develops 8 horse power, although its full speed is never likely to be required. A in the illustration is the petrol or alcohol tank, and B contains the lubrication oil, with the pump. C. The motor, D, of the Soncin type, has a 6 inch pulley, E, which engages the driving pulley, F, on the rear wheel. The gas is supplied to the motor by the spray



One of the Speed Pacers used in France.

carburetter, G, and the spraying dimension is about one inch. H is the induction coil, and I holds the accumulators. The electric current controls the speed of the machine, and is in connection with the foot rests, K, of the driver. This foot rest, if pressed, switches on the current and holds or stretches the flat driving belt, and thus lets either the power of the motor drive at will, or, by allowing the belt to slip, reduces the speed gradually.

Speed Trials at Bexhill.

In connection with the speed trials to be held at Bexhill on August 4, it was announced that Lord De la Warr had placed a sum of £100 in cash at the disposal of the Club to be given as prizes, and it was decided to offer the following:—

In the tourist section medals will be given as first and second prizes unless prizes offered by members are substituted.

In the speed section the following prizes will be given.

Scratch race for motorcycles:—First prize, £10 in cash; second prize, silver medal.

Scratch race for racing voiturettes:—First prize, £10 in cash; second prize, silver medal.

Scratch race for racing cars weighing less than 1,000 kilos:—First prize, £40 in cash; second prize, silver medal.

Scratch race for light racing cars:—First prize, £20 in cash; second prize, silver medal.

Scratch race for the fastest vehicle:—The winner will receive £20 in cash and will become the holder of the Autocar Challenge Cup.

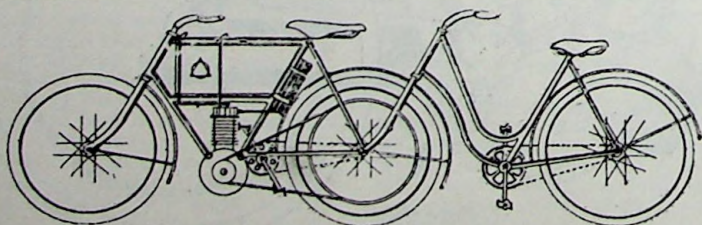
General handicap:—The winner to receive a ten guinea cup presented by Mr. Anzi Lorenzo Barber; second prize, silver medal.

It is also proposed to offer a cup in connection with the competition for appearance.

Motor Racing at Canning Town.

MARTIN BREAKS THE FLYING MILE AND FIVE MILE RECORD.

A capital programme of motor cycle events was run off at the Memorial Recreation Grounds, West Ham, on Saturday afternoon before about 6,000 spectators. An excellent entry was obtained for the 10 mile motorcycle handicap, but undoubtedly the sensation of the meeting was Martin's attempt on the five mile record. The weather was quite ideal for making records, there being practically no wind and the sun not oppressive in the least. The track is a fine one of cement, three laps to the mile, and banked up to 9 ft 6 ins. At 3.45 Martin having got well under way, flashed over the line and began to reel off laps at a sensational speed. The first mile he covered in 1 min. 19 2/5ths secs., being 4 secs. better than record. The second mile he also covered in 1 1/5th sec. less, and the full distance of 5 miles in 6 mins. 44 4/5ths secs., beating the record by no less than 39 secs. This feat is an excellent tribute to the rider's nerve and skill and the excellent workmanship of the Excelsior motor-bicycle. In the 10 miles handicap there were 14 competitors. Leonard rode a new Werner 24 h.p., and Van Hooydonk the latest Minerva, and in contrast one competitor mounted one of the old front-driving Werners of 14 h.p. A remarkable race was witnessed in one of the heats between Moyle on a De Dion tricycle and Barnes on a Mitchell motor-bicycle. These two kept close together lap after lap, but Barnes at last got the inside position only to be overhauled by the De Dion rider in the next lap. The judges, however, decided that Moyle had fouled Barnes and disqualified him, otherwise this proved the best race of the afternoon. The winners of the heats were Leonard, Hooydonk, Barnes, and Martin. The small powered machines had not much chance, Martin and Leonard simply leaving them standing. The final was won in the good time of 16 mins. 46 secs, by Van Hooydonk, with Martin second and Leonard third. The new Minerva motor is certainly a very speedy one and showed up to advantage. Bert Yates, on a chain driven Humber, started well, but the motor failed after a few laps and put him out of the race. Chase, on his 8 h.p. Soncin, did not materialise. A contest between him and Martin would have proved interesting.



Motor-Bicycle converted into a Tandem.

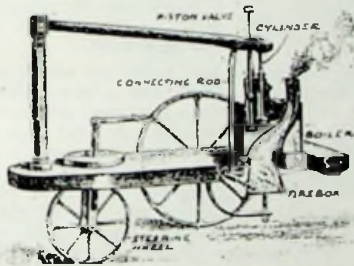
An Historical Model.

There is to be seen at Messrs. Tangye's depot in Queen Victoria Street, London, a relic that cannot fail to be of interest to students of motor history. The model is the actual little road locomotive invented and made by Wm. Murdock, the well-known assistant to James Watt. This machine was the first one that ever ran in England. The date of its construction is, as nearly as can possibly be ascertained, 1781, and it was in possession of the Murdock family till 1883, when it was purchased by the present owners, Sir Richard and Mr. George Tangye.

The model, which is in excellent preservation, possesses some very interesting features in its construction. The dimensions of the little machine are:—Height 14 inches, length 19 inches, and extreme width over the driving wheels 7 inches. It is constructed as follows:—The frame or base consists of an oblong board mounted upon three wheels, two driving wheels at the rear connected by a cranked axle, and a single steering wheel arranged under the board in front, and provided with a swivelling fork and steering handle. The boiler is a rectangular vessel of brazed copper, 3½ inches high, 4½ inches long, and 3½ inches wide. A flue passes through it, contracting from a circular chamber which forms

THE FIRE BOX.

A spirit lamp is arranged to burn within the fire box. The cylinder of the engine is mounted on the top of the boiler, and the



lower part passes into it and is surrounded by the steam. The piston rod is attached to the end of the pivotted beam, and just forward of the piston rod connection is the connecting rod working the crank. An ingenious steam valve is devised for alternately raising and depressing the piston. It is really a piston valve with two pistons working freely, yet pressure-proof in the valve cylinder. The space between the pistons is in constant communication with the boiler, and the steam is admitted by two ports, and is so devised that when

THE PISTON VALVE

is up the steam enters the upper port and drives down the piston, while the exhaust steam from the underside discharges from the cylinder from the lower port into the air through a tube connecting the two pistons of the valve.

A safety valve is let into the boiler close to the cylinder, and it is held down by a little tongue of metal, and this acts very efficiently.

The first experiment with the little engine was made at Murdock's own house at Redruth, when it easily hauled a loaded wagon round the room. The second experiment was made out of doors, on which occasion, small though the engine was, it ran so fast that the inventor could not keep pace with it.

When Watt was informed of Murdock's experiments he feared that they might interfere with his regular duties, and advised their discontinuance. He afterwards said that if Murdock was resolved to continue them,

the firm of Boulton and Watt would advance £100, and would establish a locomotive engine business, with Murdock as a partner, if within a year Murdock succeeded in making an engine capable of

DRAWING A POSTCHAISE

carrying two persons besides the driver, with fuel for four hours and water for two hours, at the rate of four miles per hour. From 1786, however, Murdock, as well as Watt, dropped all further speculation on the subject of road locomotion, although persuaded of its practicability, and it was left to others to work out the problem of the locomotive.

Murdock's model remained but a curious toy, which he took pleasure in exhibiting to his intimate friends, and after his death it was kept by his descendants until it finally came into the possession of Sir Richard and Mr. George Tangye. The model will interest anybody who follows motor matters at all closely. An illustration of it appears on this page.

The Pedersen Motor-bicycle.

Mr. Pedersen, the inventor of the Dursley-Pedersen bicycle, is turning his attention to the production of a light, powerful motor to suit his bicycle. It will have an impulse every revolution, and if it turns out as predicted, will be less than half the weight of any motor-bicycle on the market at present. The influence of his remarkable frame is to be seen in the variety of cross frames so-called feather-weights, which scale about 22 lbs. The Pedersen heavy roadster comes out from 15 lbs. to 18 lbs.; this will be a boon to riders who object to pedal an unnecessary dead weight around. The motor possesses many novel points that will be in keeping with this weird machine. The erstwhile Danish dairy farmer certainly showed English cycle makers it was possible to produce a lighter yet stronger form of cycle frame than those in use, and we shall look forward to his motorcycle with much interest.

Motor-Cycling in India.

At present, the number of motorcycles in India will probably not exceed half a dozen, but there is good reason to anticipate a large demand from this quarter of the Empire ere long. The number of cyclists increases each year with marvellous rapidity, and the majority of them are of the class who could well afford to purchase motorcycles. A few months ago, an application was made by an enterprising engineer to convey by motorcars the mails in Assam, through certain districts not yet provided with railway communication. The Government, with true British conservative spirit, rejected the proposal, and proceeded to renew the contract with the "tonga" proprietor. But, hearing that the offer made by the motorist to convey the mails was R1,000 per month, the wily Mahomedan increased his price from R1,200 to R1,500, and having refused the only alternative open to them, they were compelled to accept these terms.

If the association of ideas has the effect some people claim, the adoption of electric traction on the tramway system of Calcutta, and the proposals to adopt it in Bombay and Rangoon, will also have a beneficial effect on the motor industry. It is remarkable that in a climate where horse traction is attendant with so much risk and suffering, it has taken so long to supersede it; but recent events betoken the beginning of the end. The motorcycle for India will be the one which can be most easily kept in order without expert assistance. Speed and original cost will be secondary considerations.

A rather amusing occurrence came under our notice the other day, in which the rider of a motor-bicycle had seen tiny flames of blue-tongued fire coming out of the combustion head of his motor at night. He was certain this was the electricity escaping out of his ignition battery somehow. It was, however, merely the flame of the ignited charge shooting out from the joint, which had not been tightly screwed down.

Busy (?) Policemen.

The Ripley police have certainly got it bad. Messrs. Griffiths, of London, and Simmons, of Aldrestone, were recently fined £3 and costs each at Guildford for travelling at over twenty miles an hour, and every week this goes on. It appears that in this village the energetic sergeant has a portion of road measured out, and is continually on the watch to catch the unwary motist. It seems curious that the police should have nothing better to do.

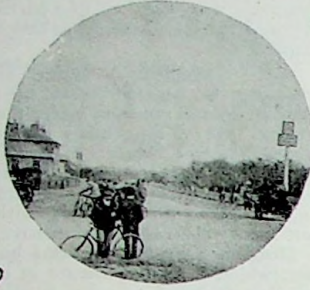
Horn Blowing.

There is no harm in just calling to notice at this period the fact that, although a special by-law exists in Surrey with regard to the blowing of horns by persons travelling in brakes on the highways, yet absolutely no attempt is made by the police to enforce the law. Last Saturday the Portsmouth road was a good example of this oversight. Of course, a brake-load of beanfeasters are not a nice lot to tackle. No wonder the police reserve motors as their special line!

Railway Charges for Tourists' Cycles Abroad.

The charges for railway transport for uncrated cycles differ considerably. The items are of importance to the rider working out his holiday expenses. For him we have compiled the following list: In Germany (excepting Bavaria) the railway transport of an unpacked cycle is sixpence for any distance, when the rider has a ticket for the same distance. Bavaria and Alsace-Lorraine charge the same as for ordinary luggage, but without granting any free luggage. The Austrian railways charge very differently for tourist cycles on different lines, the charges varying between fourpence and sixteen shillings. The Hungarian charges are calculated according to weight and distance, varying from one to twelve shillings. No free luggage allowance is granted for uncrated cycles of any kind.

Holland charges for every cycle as for 44 lbs. luggage, or 2 cents for every 10 kilometres; in Flanders the charge for any distance is about three shillings. Belgian railways make different charges: for bicycles from 8 to 10 pence, for tandems and multi-cycles from 1.2 to 1.8; the steamship lines between Ostend and Dover charge 1.5 for cycles, 2.10 for tandems, triplets and quadruplets, and 4.5 for machines with five or more seats. French railways grant 30 kilos free luggage—they carry a tourist cycle free of charge; the only payment is one penny for the receipt. Italy's railway charges are like the French, but no loose parts are permitted. The railways take no transport guarantees. In Norway the unpacked cycle costs about 3.4 for 50 kilometres, 5.6 for 200, 8.3 for 400, and 11 shillings for over 400 kilometre distance. All parts can remain on the machine. Sweden transports these cycles free of charge. The Russian railways charge for unpacked touring cycles, up to a distance of 600 verst 1/3 kopeck (one kopeck—4 pence) per verst, to 964 versts 1/5, to 1,385 versts 1/4, and to 2,400 and more versts 3/4 kopeck per verst.



OTHER PEOPLE'S VIEWS.

Petrol and Ceylon.

Sir,—I have just arrived here with an Ariel motorcycle, and I find I can't run it, as there is no petrol to be had in the island, and none of the shipping lines will bring it. Could you please let me know if there is any other spirit on the market that I could use out here instead of petrol; if not, I will ship my motor home again and sell it. In the meantime, you might let your readers know, as some might be thinking of bringing a motor out here also. Trusting to hear from you by return,—Yours faithfully,

Ceylon.

A. SIKES.

[It is certainly very unfortunate to be landed in a country with a motorcycle where petrol cannot be got. The only substitute that can be used is benzine or petroleum ether, or a mixture of alcohol and benzoline might be tried.—Ed.]

A Contradiction.

Sir,—I shall be much obliged if you will be good enough to contradict paragraph 2, page 331—"We are informed that the inventions of," etc., the contents of which (though your paper is, of course, not responsible) I must take exception to as calculated to damage my invention. Mr. Griesback's patent No. 23,337 does not cover mine in any way as far as expert opinion can judge, and I should like attention to be called to the title of No. 23,337, which reads as follows:—"Improved Method of Gearing Motor Cars."

In no way do I wish to create a useless controversy in the columns of your valuable paper, but in fairness I shall be greatly obliged if you will kindly contradict the statement in your next issue, if possible.—Yours faithfully, G. A. BUGH LIVESAY.

Passing Horses.

Sir,—Permit me to point out once more the necessity for motor cyclists exercising great care when passing young and uncontrolled horses, which are allowed on the highways before being trained to motors. Recently I was driving a motor tricycle with a friend in a trailer, between Ilkley and Addingham, when we had the misfortune to overtake a young horse and rider. No sign was made by the latter that the horse was different from the rest of his kind, and we were close up when the horse stopped suddenly and commenced to back on to our side of the road, its rider seemingly making no effort to prevent it. By this time we had almost stopped still; the horse backed into the tricycle. No sooner did it touch the front part than it lashed out, one hoof catching the saddle down tube and the other the mudguard. This sent the trike over, throwing me violently on to the footpath. The trailer remained upright,

and my friend was unhurt. The rider of this brute coolly informed me that it was my own fault, as I ought to have seen it was a young horse, etc. He confessed it was out for the first time, and had never had a motor pass it from behind. What good these facts would have been to me supposing the kick had been delivered one second earlier, or to my friend if two seconds later, I leave to the imagination. Motorists are often accused of rushing off after they have done any damage. In this case the man rode away without offering the slightest assistance. In conclusion, I would warn fellow motor cyclists to be extremely careful in overtaking horses with a tendency to occupy the whole road.—Yours faithfully,

"YORKSHIRE MOTORIST."

Horse Power.

Sir,—There is one point on which your readers probably would like to be enlightened just at this stage when stronger engines are fitted to motor-bicycles. A year ago the strength advertised was 1 h.p. or 1½ h.p. nominal. Now the standard is 1½ h.p. actual, but I find report of others up to 2½ h.p. Could you kindly tell me whether a 2½ h.p. will travel faster than a 1½ h.p. on the level, always supposing the respective belt pulleys are of the same size. In other words, does not the speed depend on the rate of revolutions and not on the strength of the explosion? If it is so, it seems to me that in the larger size on all ordinary roads there is wasted power in the larger engines. In climbing hills the case is different. I suppose there is no doubt that the larger and more powerful one would climb the better; yet your contributor, Mr. Fawcett, says, "even with the 2½ h.p. a touch of brisk pedalling is called for."

These things puzzle me, but it seems to me that a large engine cannot excel in both speed and climbing powers, i.e., if it is to go faster it would require to be fitted with a larger engine pulley, and in this case it would lose its advantages up the hills. Would it not, therefore, be better to have the present standard of 1½ h.p. on all ordinary roads and hills, and only go to the higher one if the riding is principally to be done in parts extremely hilly? I feel sure your readers will be thankful for your guidance.—Yours faithfully,

Birmingham.

INQUIRER.

[This question of the most suitable horse-power of engine for average roads is still, from the most important point of view, an unsettled one. It may be taken as a general rule that the smaller the dimensions of the motor the greater the number of revolutions it will have to make to develop its maximum power, as the force of each individual explosion

is so small. Now, large motors—say up to 2½ h.p.—run at rather slower speeds and develop their full power, and the motor pulley is made larger in proportion to the driving wheel; hence a much higher speed is attainable on the level. But if the pulley ratios are the same for both large and small motors, the large motor will actually drive the machine slower, even if it was developing its full power.

In these large motors there is a good reserve of power, and here it is that they score up ordinary hills; but even so they are handicapped by having to climb excessively steep hills, and this is entirely due to the motor-bicycle at present being a single geared machine.

Therefore, a medium has to be struck in the gear ratios if the most is to be made of the increased power of large motors, as it is evident that if they are geared for fastest speed on the level, they will lose power on hills.

The rider of a high-powered and geared machine does not always experience the same ease of control as the rider of a lower-powered machine does when running at a slow speed in traffic. This may be attributed to the power of the impulse strokes, which tend to send the machine along in a series of jerks. At any rate, this is our experience with a heavy 2½ h.p. machine. Of course, once out on a clear road there is undoubtedly a fascination in just advancing the spark a little and feeling the machine bound forward with that characteristic "life" which is absent in small-powered motors. The question of the best average horse power is one that we should be glad to have opinions on from readers who have ridden both high and low powers.—Ed.]

Oil on the Trembler.

Sir,—It is well known to anyone who handles motors with electrical ignition through coil and accumulators that everything possible should be done to keep oil off the trembler which makes and breaks the circuit at the required moment. Whenever the ignition appears faulty, the trembler is scrupulously cleaned, and even some devices have been thought of to keep the trembler free from the objectionable matter.

With the trembling contact blade such as is used on the De Dion principle this is necessary, but with the single make and break, such as is mostly used on motor-bicycles, my experience is that not only is oil harmless, but a good quantity of oil on the contact blade and consequently on the platinum points considerably improves the quality of the spark.

I have lately surprised a good many motor-ing friends by taking my oil can and giving my contact blade a dose of lubricant.

Only last Saturday, while staying at the old haunt of the Speedman, the George at Buckden, a motor cyclist entered the yard saying he had a machine that would not spark, and had been told there was a man in the house who knew all about them (how nice to be found out when on a holiday).

I looked at the trembler, found it dry, and, to his horror, applied the oil can. The man thought he was being played with when, on my asking him to just try again, he was both delighted and surprised for the thing fired at once.

On many occasions a poor spark in the secondary has been turned into a powerful one by the simple application of a little oil on the platinum points. Experience too varied to relate has proved this to me, but to my surprise no electrician I mentioned the facts to could give any explanation until the following was put before me which, now it is pointed out, is quite feasible.

The spark is greatly dependent on the time occupied in breaking the current and in making intensity coils. To give very long sparks many elaborate devices are employed to attain the very quickest make and break.

Now the oil put on the contact points becomes mixed with some of the small metal particles which are always present wherever metal performs any work and becomes a conductor of electricity. On the blade being raised by the cam, the platinum points are pressed together, but on the blade receding a small globule of oil practically bridges over the points. When these become too far apart, the globule suddenly breaks, interrupting the current in a much shorter space of time than would be the case were the points separated in the usual way.

Where a trembler works on the De Dion principle I am afraid the vibration of the blade would not extend sufficiently to sever the oil between the points, but in the single make and break device it not only improves the sparking, but it has been known to produce a spark when none could be obtained with perfectly clean and dry platinum points. Although it appears absurd to say so, when spark is poor my advice is *oil the trembler*.—Yours faithfully, J. VAN HOOYDONK.

[Mr. Van Hooydonk's experience is certainly a startling one, and we recollect another gentleman (Mr. Garrard, of motor fame) a short time ago advancing the same theory. Candidly we must say oil on the trembler—whether of the positive make or vibrating pattern—has been the bane of our motoring existence. However, some of our readers versed in electrical theory may have something to say on this matter.—Ed.]

The Future Motor-bicycle.

Sir,—I have read your paper—"MOTOR CYCLING"—with great interest, and have always shown it to friends who have been interested in the new means of locomotion.

It appears to me, however, that the motor-cycle of the future will be one that can be converted into an ordinary cycle in case of such being required; or perhaps it would be more correct to say an ordinary cycle converted into a motorcycle.

At first sight this appears a very tall order, but I think a little consideration will clear up most of the difficulties. The greatest of these is the vast difference in weight. In the case of the Ormonde motorcycle and others in which the motor is to the rear of the bottom bracket, the main additional strength and weight is to the rear, i.e., in the back stays. If, therefore, a cycle were constructed of somewhat increased strength, I see no reason why the ordinary rear wheel



He: The Colonel has asked me to go for a run on his new car, and my new fur coat has not come home yet.

Wife: Never mind, dear, I'll make up something for you from this!

and stays could not be made detachable, and stays of increased strength, with motor and fittings complete and rear wheels with motor tyres substituted. The front wheel (fitted with ordinary tyres) would in each case be the same. This answers your query under "In Transit," "What will be the Weight of the Motorcycle?"—

I say it will be light. There are many cyclists eager to try motor-cycling, but unable to find room for a cycle and motorcycle too, and also to stand the cost. The cycle would be used for local work in towns and short runs, and the motorcycle for long runs, week-end excursions, and touring.

You will open a discussion on this subject in the course of time.—Yours faithfully, G. WHITE.

"The Motor Cycling Manual"

is now in the Press.

The price of this most complete book of the motorcycle is 1s., and orders should be sent on at once.

Hill-climbing Contests.

Sir,—We notice that a lot has been said and written anent the results achieved by the motorcycle section at the Westerham Hill climb, and the advisability or otherwise of allowing pedalling in such tests. We think we are correct in stating that the idea in organising these trials is to ascertain the exact capabilities of a motor-bicycle of a standard type as sold to the public; but this fact seems to have been altogether overlooked by most of the manufacturers with the result that motors of high power and very low gears were used. As at present there is no law forbidding motor bicyclists pedalling up steep gradients, we fail to see why the rules governing the hill tests should debar a rider from the ordinary conditions that pertain when touring in the usual way. The general rider does not require a freak, but a handy mount that will give him good results under all reasonable circumstances, and one that does not fatigue him with a lot of unnecessary vibration.

The Ormondes used in the Westerham climb were standard machines in every respect, and the fact that none failed in the ascent says something for their consistent behaviour.—Yours faithfully,

(THE ORMONDE MOTOR CO.) A. GOODWIN.

OUR INFORMATION BUREAU.

A large number of replies have been dealt with through the post. Information on all subjects pertaining to Motors, Motorcycles, and Motoring generally will be given to readers who seek such information or advice. Any reader who desires to ask a question with a view of ascertaining the views of other riders based upon actual experience should send his query, which will be inserted, and replies to such questions will duly appear if of general interest; if not, a reply will be sent by post; a stamp, therefore, must always be enclosed.

L.H.M. (Wolverhampton).—We cannot give you the address of a motorcycle storage depot in Taunton, but suggests that you could get to know perhaps through some of the local papers.

W.H.H. (Manchester) asks us for our opinion of the E.I.C. sparking plug.—We have used it on one of our machines, and it has proved very successful, its chief points being its unbreakability and high insulation.

T.M. (Walsall) wishes to know where he can get a Fuller battery as described in No. 2 "MOTOR CYCLING."—A local dealer in electric light supplies could obtain one for him, or he might write to the General Electric Co., Queen Victoria Street, London.

W.B. (Glasgow) asks what are the correct charges for carriage of a motorcycle if taken along with passenger on English and Scottish railways.—Our experience has been to pay ordinary cycle rates, but some lines insist on payment of double or treble rates, or even refuse to take them at all—which is a ridiculous and short-sighted policy.

W.H.T. (Ladbroke Grove, W.).—(1) We have not had an actual trial of the Hewetson machine, but we have heard that it runs very well. (2) You could have every confidence in the magneto-electric ignition. (3) The full distance from Paris to Belfort was ridden on the same machine; in fact, the complete run from Paris to Vienna was.

A.G.W. (Pilton, Somerset) has an ever ready electric torch lamp, and he wishes to know if he can test his motor accumulator with it.—If the lamp is a four-volt one, it would do very well. The battery part must be removed, and the wires from the accumulator joined to the lamp contacts. If the accumulator is well charged, the lamp will glow brilliantly.

The Werner Carburetter.

G.H.S. (Ashton).—Our experience with this form of carburetter has been that it works very well when once properly adjusted and not altered. You would find it best to set it, and then regulate your speed with the exhaust valve lifter. This will give you a very nice gradation of speed, and as slow as you want. Running with an excess of gas will tend to make the motor very hot and char the points of the sparking plug. The fact of your accumulator running down in so short a time is due either to its not being really charged at all—you may have been deceived in this, because a quarter of an hour's current passing through is sufficient to make it read four volts—or else there is a dead short circuit between the plates. Take or send the battery to a good firm of electricians, like Peto and Radford, and let them examine it. The paper wrapping could not possibly cause a leakage.

G.E.H. (Balham) has a Roubeau carburetter fitted to his motor tandem, and finds that the lift valve inside does not close on its seat, but remains about $\frac{1}{2}$ inch open—should this be so?—Our opinion is that it should fit on the seat so that the suction opens it and draws in the mixture into the upper chamber.

Accumulator Troubles.

L.S. (Burton-on-Trent) says he has not been successful with accumulators on his motor-bicycle, and wants to know the best kind of dry battery to get to replace them.—Our advice is for him not to think of fitting dry cells; they take up three times the space of accumulators, and deteriorate even when not in use. You should have your accumulator tested by Peto and Radford, and get them to replace it if it is short circuited.

W. G. Reade (Barrow-in-Furness).—The district being such a hilly one, a machine with either chain or direct drive would be most suitable for you, we should say. Of the former the Humber is an excellent type, and the Singer is very good at hills with the direct gear drive. The prices of the machines you mention are £45 to £50. A 24 h.p. air-cooled engine would be equal to the work.

Noise and Vibration.

B.H. (Brough, Westmoreland) has a certain kind of motor-bicycle which he finds makes too much noise and vibrates a lot. He was interested in a recent account of a run on a Clement-Garrard by one of our staff, and wishes to know if we can recommend such a machine for silent and smooth running.—We know from experience this machine to run very quietly, and there was less vibration than on any machine we have yet tried. There is plenty of power for ordinary hills.

Motors for Doctors.

W.W.S. (Woodford) asks for advice on the choice of a motor-bicycle. (1) He says he is a doctor, and wants to keep clean and cool. (2) He wants a machine to start easily. (3) It must be reliable in all weather, and a good hill climber. (4) Is there a machine that will stand upright in the road? (5) Is there an efficient mudguard for front wheel on the market.—(1, 2, and 3) would be found in the Singer. (4) There is no two-wheeler that will stand up, but we believe you can get a light support for it. (5) Messrs. Blucmel Bros., Crown Works, Globe Road, E., can supply an efficient front mudguard.

Legal Points.

R.M.H. (South Kensington) asks for information on the following points: (1) What is the tax on a trailer drawn by a motor-bicycle? (2) Is six miles an hour the legal limit when drawing a trailer with a motor-bicycle? (3) Is it necessary to have name and address on a trailer or motor-bicycle when using same together? (4) Must one carry a red light at rear of trailer when drawn by motor-bicycle? The answers to these queries are: (1) 15s. for the motor and 15s. for the trailer; (2) 12 miles per hour is allowed; (3) not necessary to have name and address on machine; (4) a good light on the front of machine is required.

Starting Troubles.

R. W. Turner (Charlottenburg) has an American-made bicycle (the Californian), and he finds it starts up after a great deal of work and runs splendidly for about 500 yards and then begins to miss fire, and then will start off again. His batteries are new, and he gets a good spark, and he thinks the trouble is due to the carburetter. Can he have a spray carburetter fitted, also a water-tight magneto-electric sparker?—Our advice to him is to just investigate and solve the trouble before making any such expensive alterations as he mentions. The inlet valve sticking would not be an improbable cause of the motor stopping after running 500 yards. A good spray carburetter is that known as the Roubeau, and which can be got from Brown Bros., Ltd., Great Eastern Street, London, E.C. It would not be possible to fit a magneto to present arrangement of motor.

A WONDERFUL ISSUE OF 'CYCLING'

is the one published this week. It is the Special Summer Number, and constitutes one of the finest penny-worth's ever published. The issue consists of no fewer than

50,000 copies,

and the following are some of the contents of this unique number:—

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Motor Cycling

& Motoring

Vol. 1, No. 25,
July 30th, 1902.

FROM THE RIDICULOUS TO THE SUBLIME. SOME EXPERIENCES OF THE EMBRYO MOTIST.

By E. G. RUCKES.

From the time of my first motor experience (recounted in the pages of "Cycling" some time ago, under the heading of "Three Men and a Motor"), until quite recently, the mere mention of the word "motor" caused a chilly feeling to permeate my spinal column. After my arrival home, from this initial trip, I entered into a solemn league and covenant that from henceforth and for evermore I would never be seen on a motor-driven vehicle again, the aforesaid agreement being duly witnessed by our mutual friends "Johnny Walker," Esquire, and Senor Cigarro Flor Fina de Timbuctoo.

Alas! man is oft-times but a frail mortal. Many are the resolutions — good and indifferent, but the good ones chiefly — formed by him in the course of his existence that are not strictly carried out, when the old Adam becomes assertive and laughs to scorn puerile efforts at reformation.

My taste for moting could not have been entirely eliminated from the system, notwithstanding the first disastrous insight into its pleasures, for frequently have I found myself admiring the rakish lines of a speed car, with the same sort of feeling that overcame the little boy who had gorged himself

with green apples, and having undergone the customary pain and suffering, at a later date was found gazing, with sparkling eyes, on a number of rosy ripe ones.

The exhilaration of a trial spin on a 12 h.p. car led to the undoing of all former resolutions; so that when my friend Johnson (who has got a nice little place near the Crystal Palace) invited me to join him and a party of friends, who were going to Brighton and back, on a new car he had imported from France, I accepted the invitation. I knew very well that I should not be called upon to undergo any more hard labour in the towing line in the event of a breakdown, as the car was too heavy to be towed by the occupants.

The party numbered half-a-dozen both sexes being represented. Although the opinions of my friends may not be identical in many cases yet on one point they are always agreed—viz., that the needs of the inner man should never be left unprovided for. There was consequently plenty of the good things of this life on board, including several bottles of "Fizz" (capital "F," please). The thought of that sparkling '76 causes even now a glow of satisfaction).



Getting Used to It.