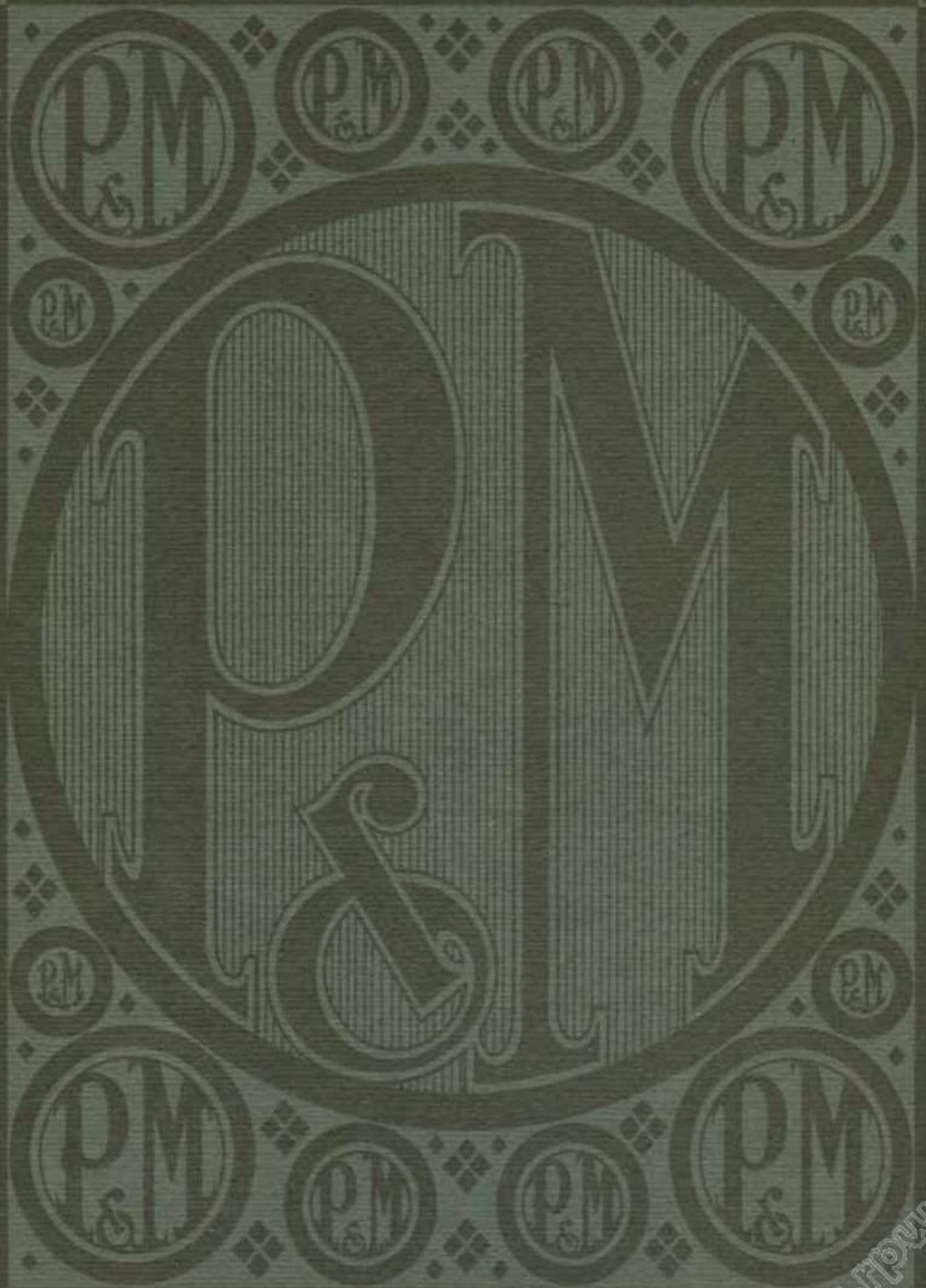


1913



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CLECKHEATON
TELEGRAMS:
GEARED CLECKHEATON
TELEPHONE: NO 129

••LONDON••
TELEGRAMS:
PHELMOR. OX. LONDON.
TELEPHONE: 647 CITY

1913

Phelon & Moore Ltd

ENGINEERS

Manufacturers
OF THE

P&M TWO-SPEED
CHAIN DRIVEN
MOTOR CYCLES

REGISTERED OFFICE
AND WORKS
CLECKHEATON
YORKS

LONDON DEPOT

4 PERCY ST TOTTENHAM COURT RD
LONDON. W

www.pmw.org

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Introduction



1900

THE name and fame of the P. & M. machine is now so widespread that we know this booklet will find its way to every part of the earth, for there is hardly a corner of the civilized world where a wheeled vehicle can be driven to which the P. & M. has not found its way.

Sir David Bruce has found it invaluable in his magnificent fight against sleeping sickness in Central Africa. The Post Office in New Zealand find their P. & M.'s indispensable, and an officer in an isolated fort on the North West Frontier of India writes enthusiastically of his only means of keeping in touch with civilization. A planter in Ceylon drives his P. & M. up the 14 hairpin bends of the Ramboda Pass without taxing his machine in the slightest, and a clergyman sends us a photo showing him crossing a 75 yard spruit in South Africa with the water over the crank case, and his engine never missed a single explosion.

Instances such as these could be multiplied indefinitely, but they will serve to show what care and experience are necessary in the building of a vehicle which justifies absolute reliance being placed in it under all conditions, for these men depend upon their machines in a way which it is difficult for those who live in England to realize.

"The strength of a chain is in its weakest link." It would be difficult to find an article to which this saying applies with greater force than a motor cycle. The reliance that can be placed on the complete machine is measured by the strength of the weakest detail, and every link in the P. & M. chain of details is forged strong and true.

In the following pages we have described the features of our 1913 model as clearly as possible, but we feel sure that our customers will realize the difficulty of compiling a booklet equally acceptable to the complete novice and the experienced rider with a knowledge of engineering, and we can only say to those who find the description in any way incomplete, that all the information in our power will be freely and gladly given.



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Terms of Business

Payment

One-third of the amount of deposit with order; the balance to be paid when goods are ready for delivery; this applies to both wholesale and retail trade.

An invoice will be forwarded to all intending purchasers, on settlement of which goods will be forwarded.

Telegraphic orders are only executed when we have an open account or where cash is telegraphed. All prices are nett cash.

Carriage

All goods are sent carriage forward at customer's risk, unless special instructions are given. In case of damage all claims should be addressed to the carriers. Crates for single Motor Bicycles are charged at the rate of 4s. 6d. each, and are not returnable.

Machines packed in export cases, £1. In zinc-lined cases, £3.

SIZE - - 7 ft. x 3 ft. 3 in. x 1 ft. 3 in.

WEIGHT - Gross, 3 cwt. 3 qrs. Nett, 2 cwt.

Delivery

If delivery is delayed more than four weeks after the date given by the Company in the acknowledgment of an order, the Purchaser shall have the right to give notice in writing that the order will be cancelled if the machine or machines is or are not delivered within seven days after such notice shall have been received. In the event of non-delivery within seven days after such notice as aforesaid has been received, the deposit paid in respect of the order shall be returned by the Company, and no claim for damages or otherwise by reason of any delay in delivery or by reason of non-delivery shall be made by the Purchaser against the Company.

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Repairs

Machines or parts to be repaired must be sent to us carriage paid, with sender's name and address attached. All tools and accessories must be removed from machines, as we cannot be responsible for these. All repairs are charged at nett cash prices and can be undertaken at our London Depot, where additional premises for the purpose have recently been acquired. Machines with sidecars attached cannot be accepted either in London or Cleckheaton unless repairs to the sidecar are also necessary.

Guarantee

All new machines are sold subject to and with the benefit of the following guarantee :

Any part or parts which may be or become defective through faulty material or workmanship will be repaired or a new part or parts supplied in exchange free of charge provided such part or parts is or are within three calendar months from the date of delivery of the machine sent carriage paid to PHELON & MOORE, LIMITED, Cleckheaton, Yorks., and providing also that the number stamped on the crankcase of the machine from which the part or parts is or are taken is supplied at the same time.

The cost of fitting any such part or parts will if the machine is sent for the purpose, carriage paid, to PHELON & MOORE, LIMITED, Cleckheaton, aforesaid, be borne by the Company. In all other cases the cost of such fitting shall be borne by the purchaser.

The above guarantee does not apply to tyres, saddles, lamps, bags, horns, electrical fittings, etc., not manufactured by the Company, and is likewise excluded where the defects are caused by misuse or neglect or in cases where the machine has changed hands or been let on hire.

Purchasers of the Company's machines and goods shall be deemed to purchase the same subject to and with the benefit of the above guarantee and all other guarantees, representations, warranties or conditions whether expressed or implied and whether statutory or otherwise, and every liability (if any) for consequential damage by reason of any defect, latent or otherwise, are and is expressly excluded, and every purchaser shall be deemed to waive the same accordingly.

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Parts & Accessories

We recommend the rider to carry the following Spare Parts.
The second list is recommended when the machine is being sent
abroad.

First List

	£	s.	d.
P. & M. Tube Case ...	0	6	6
Spare Butt-ended Tube ...	0	11	9
Valve, complete with Pro- tector	0	7	10
Sparking Plug, with Pro- tector	0	3	10
Magneto Contact Breaker	1	1	3
Repair Outfit	0	3	0
Tyre Levers	0	2	9
Three Spring Clip Links & three Cranked Links	0	2	6
Chain Rivet Removing Tool	0	2	9
Chain, assembled so as to replace either of the three chains	0	12	6
Selection of Nuts, Bolts, Screws, etc.	0	5	0
Three Outfits of Tyre Valve Spares	0	0	3

Second List

	£	s.	d.
Spare Butt-ended Tube ...	0	11	9
Three Outfits of Tyre Valve Spares	0	0	3
P. & M. Tube Case ...	0	6	6
Sparking Plug, with Pro- tector	0	3	10
Two Valves, complete with Protectors	0	15	8
Box of Bosch Spare Parts	2	0	9
Repair Outfit	0	3	0
Tyre Levers	0	2	9

	£	s.	d.
Three Spring Clip Links and three Cranked Links	0	2	6
Selection of Nuts, Screws, Bolts, etc.	0	5	0
Chain, assembled so as to replace either of the three chains	0	12	6
Footrest Board, complete with Brasses & Rubber	0	2	9
One dozen Spokes and Nipples	0	2	0
Carburettor Jet	0	1	0
Carburettor Jet Screw ...	0	0	4
Brake Lining	0	1	0
One pair of Front Brake Blocks	0	1	6
P. & M. Valve Extractor	0	2	6
Chain Rivet Removing Tool	0	2	9
Three Piston Rings ...	0	4	6
Engine Socket Spring ...	0	0	9
Carburettor Float	0	1	9
Large Fork Spring	0	1	6
Small Fork Spring	0	0	9
Six Chain Bolts and Nuts	0	1	6
Petrol Tank Cap	0	0	9
Two Tank Gauge Glasses	0	1	4
Gear Oiler	0	0	6
One pair of Wedge Bars ...	0	3	6
One dozen each $\frac{1}{4}$ in., $\frac{3}{8}$ in., $\frac{1}{2}$ in., $\frac{3}{4}$ in. Balls	0	1	1
Operating Cap Stud ...	0	0	6
Two lbs. P. & M. Chain Lubricant	0	3	0
One gallon Can of Engine Oil	0	5	0
One tin of P. & M. Gear Oil	0	0	6

A Complete Price List of Spare Parts will be forwarded on application.



3½ h.p. Touring Model

Price £65 Nett

Every machine is fitted with stands, a carrier, tool bag, and tool roll, number plates, inflator, horn, oilcan, petrol squirt, and is tested on the road before being sent out.

NOTE.—We reserve the right to deviate from these specifications. When ordering, any departure from the standard specification must be distinctly stated, also whether the machine is to be geared for solo or passenger work.

SPECIFICATIONS

Frame—Built sufficiently strong to withstand the use of a sidecar, and designed to give lowest possible saddle position. Additionally strengthened by our patent method of fixing the engine. Wheelbase 54 in.

Wheels—For 26 × 2½ in. tyres. Back wheel fitted with heavy butted spokes and two security bolts. Extra strong rims. Front hub fitted with removable spindle and waterproof washers.

Engine—3½ in. bore by 3½ in. stroke (84.5 × 88.9) 498 c.c. Interchangeable valves and adjustable tappets. Patent half compression device. Tappet rockers fitted with frictionless rollers. Cylinder has deeper fins giving more cooling surface. Ball bearings to main shafts and additional bronze bushes to give extra support. Piston fitted with hollow gudgeon pin and three rings. Especial attention has been paid to oil retention, and the oil release is conducted to the high gear chain. An exceptionally efficient silencer of entirely new design is now fitted.

Forks—Extra heavy gauge stem and forks. Fitted with extra girders giving enormous strength proof against any possible strain. The suspension is perfect and a checking spring is provided to prevent any bouncing action.

Carburettor—Double control on handle operating brass pistons. All parts (including jet) instantly removable. Adjustable float level. All air taken through dust-proof gauzes.

Ignition—Bosch ball bearing magneto, latest type. Fitted high up behind engine.

Control—Ignition, throttle, air, exhaust lifter and front brake from handlebars. All wires pass inside the bars which have been greatly strengthened. Half compression, engine starter, and back brake operated by pedals. Gear by handle at side of tank.

Gear Ratios—4½ and 8 to 1 for solo work, 5 and 9 to 1 for sidecar.

continued



3 $\frac{1}{2}$ h.p. Colonial Model

Price £70 Nett

Specifications—continued

Transmission—By two Hans Renold $\frac{5}{16}$ in. \times $\frac{3}{4}$ in. chains to the patent P. & M. two speed gear, and one chain from gear to back wheel. All chains fitted with spring clip joint and efficient guards which do not interfere with the quick adjustment of chains.

Weight—195 lbs.

Starting—By pedal acting directly on the main engine shaft, adjustment provided for chain, stop and engaging block. By the use of the half compression and two speed gear, the machine can be started from a standstill on any gradient without effort.

Tank—Holds eleven pints of petrol and one quart of oil. Fitted with oil and petrol gauges, engine petrol injector, quick detachable filler caps, and pump operated drip lubricator. No taps.

Foot Rests—Large rubber covered boards, strongly fixed in a naturally comfortable position.

Brakes—Band brake on back wheel, gradual in action but immensely powerful. Bowden rim brake on front wheel.

Saddle—Specially designed Lycett's padded pan seat, giving exceptional comfort.

Ground Clearance—8 $\frac{1}{2}$ in. from crank case. 5 $\frac{1}{2}$ in. from foot rests.

Stands—Separate stands are fitted for jacking up either wheel. Fixed instantaneously by spring clips.

Tyres—Kempshall 26 in. \times 2 $\frac{1}{4}$ in. Heavy Non-Skid Cover to back wheel and Anti-Skid to front. Michelin Butt-ended tubes to both wheels.

Toolbag—Fitted in the frame, leaving carrier entirely free for luggage. Tool Roll with complete set of tools supplied with each machine.

Finish—The highest possible workmanship and finish is manifest in every detail, the result being an extremely workmanlike-looking and handsome machine.

3 $\frac{1}{2}$ h.p. Colonial Model

Olive green and black finish with absolute minimum of plated parts. Extra large tank. 2 $\frac{1}{4}$ in. tyres. 10 $\frac{1}{2}$ in. footrest clearance. Specially strengthened fork and saddle springs.

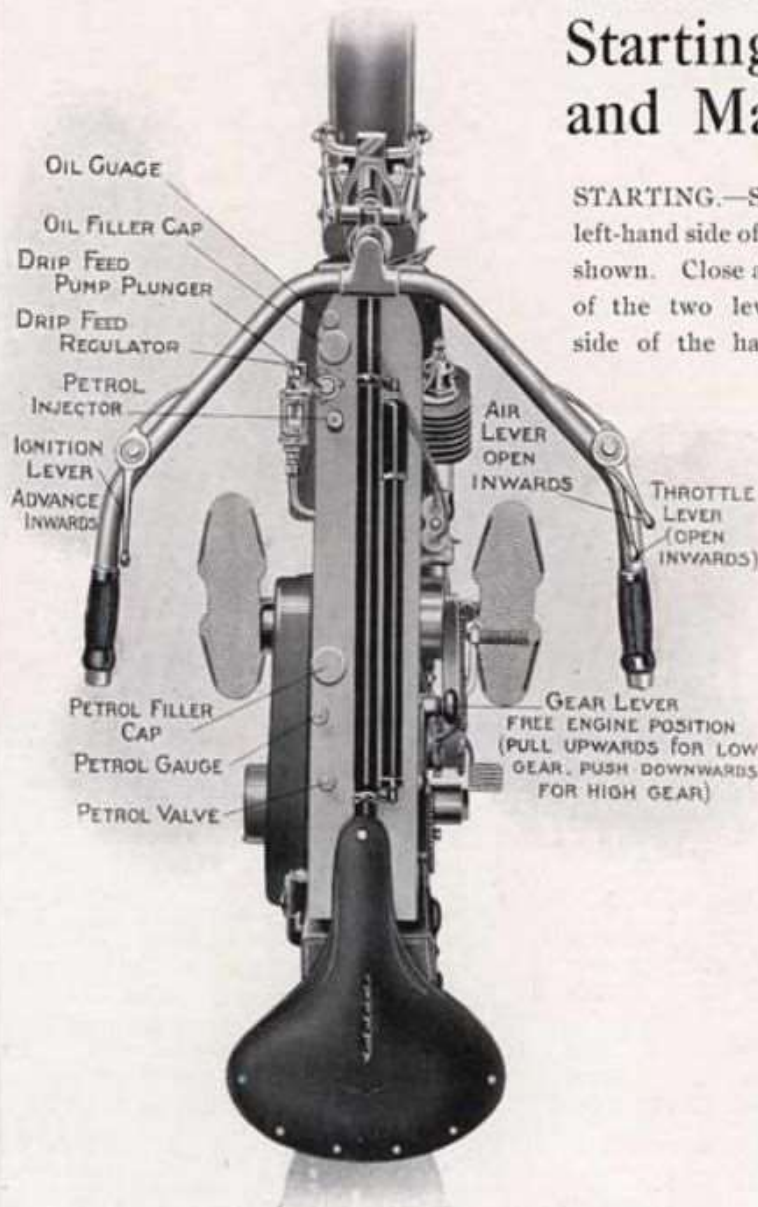
In other respects the Machine is identical with the 3 $\frac{1}{2}$ h.p. Touring Model

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Instructions for . Starting, Driving, and Management.



STARTING.—Set the ignition lever on left-hand side of handlebar in the position shown. Close air by moving the shorter of the two levers on the right hand side of the handlebar as far outwards

as it will go, and open the throttle by moving inwards the longer of these two levers. Fill compression tap cup with petrol by unscrewing a few turns of the needle valve on the front of the tank near the oil pump. Open the compression tap to allow the petrol to go into the cylinder, and if the engine should be at all stiff repeat the operation several times. Place the gear lever in the free engine position, *i.e.*, handle level with the top of the tank. **Bring the half compression into action** by pulling up the small pedal in front of the foot starter. Turn on the main petrol supply by the

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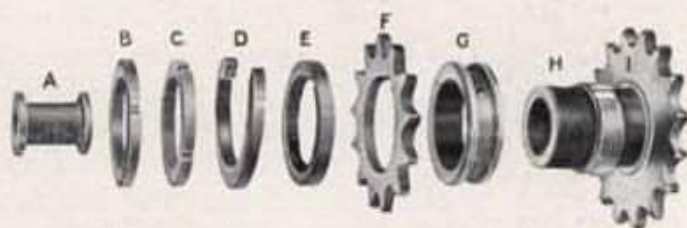


MOTOR
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needle valve at the back end of the tank and flood the carburettor by depressing the needle in the float chamber. Press the foot starting pedal firmly and sharply down with the ball of the foot. When the engine has started, advance the ignition by moving the spark lever inwards, close back the throttle, open the air slightly, and take the half compression out of operation by pressing down the small pedal in front of the foot starter pedal to its limit. Engage the low gear by pulling up the gear lever on the side of the tank very slowly. As soon as the machine has attained a fair speed, change over quickly and firmly to the high gear by pressing the lever right down. Always press the gear lever well home on either gear.

NOTE.—A new engine in cold weather may be stiff, and it is useless trying to start it until it is revolving freely. Do not hesitate to inject several compression tap cupfuls into the engine if it should be found necessary and press the foot starter pedal down several times with the valve lifter raised.

DRIVING.—When fairly going, the throttle and air levers can be manipulated until the desired speed is obtained, bearing in mind that as little gas as possible should be used, and that the gear should never be changed from the **high** to the **low** if the machine is running at more than seven or eight miles an hour. This is important, as an attempt to change down when running at a high speed would slow the machine down so suddenly that a bad swerve would be the result. The change from the low to the high can be made at any speed.



A—Engine Shaft Nut
B—Clutch Locking Nut.
C—Clutch Adjusting Nut.
D—Spring Washer.
E—Keyed Washer.
F—Low Gear Sprocket.
G—Distance Washer
H—Engine Shaft Socket.
I—High Gear Sprocket.

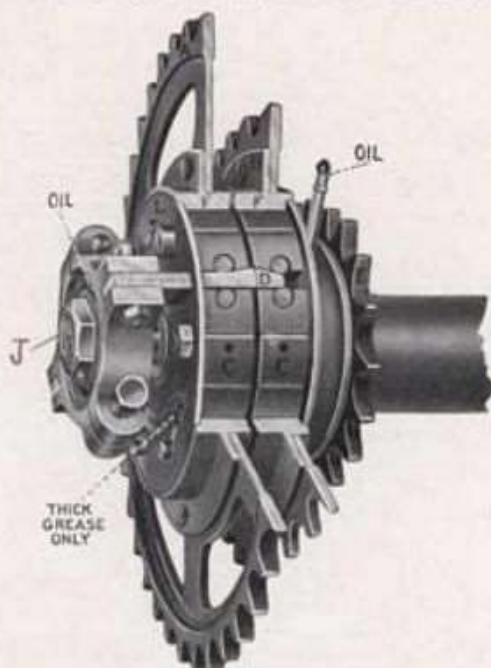
SPRING CLUTCH ON ENGINE SHAFT.—The high gear sprocket is not keyed on, but held by a spring washer and nuts on the engine socket. The dividing washer between the two engine sprockets is hollowed out and



a hole drilled. Oil injected at this point is conducted by grooves cut for the purpose to each side of the high gear sprocket, giving an extremely elastic drive. Each rider should adjust this to suit his own requirements, but it should not be left too slack or the engine will race on hills and give the impression that the gear is slipping. The amount of slip taking place can be seen by removing the front chain cover, placing the machine on the stand, putting in the high gear, and pulling the back wheel over full compression. The spring washer can be tightened up to any extent and locked by means of the two ring nuts.

Two Speed Gear

The sketch of the gear shows more clearly to the novice its action than a complicated drawing to scale. It will be seen that the spring bronze rings "C" are expanded by the movement of the wedge bars "D."



When the thickest point of the wedge bars lies between the rings "C," neither ring is expanded, and therefore both the gear wheels run free instead of with the body of the gear. As the small sprocket "E" driving to the back wheel is part of the gear itself, it follows that when neither of the gear wheels is gripped by the expansion of the rings, the power of the engine is not communicated to the driving wheel. It is also obvious that the movement of the wedge bars "D" in either direction will cause one of the bronze rings "C" to expand and transmit the engine power to the driving wheel, the drive being direct on both gears. The solid spindle operates the

wedge bars "D," the thrust being taken by the ball bearing "J."

ATTENTION TO GEAR.—Practically the only parts of the gear liable to wear are the bronze rings "C," and as wear on these simply means a slightly



greater movement of the hardened steel wedge bars "D," the gear will run thousands of miles without any adjustment or attention, except **regular lubrication**. Full instructions with regard to this are given on page 14.

Transmission

CHAINS.—All three chains should be lubricated with P. & M. chain lubricant, which we can supply in small tins, and which can be applied with a brush. Thick engine oil will also serve, but is not so clean as solid lubricant. A more thorough method is first to clean the chains thoroughly in paraffin, heat the lubricant until it becomes liquid, then let the chains lie in it until it has worked under the rollers and into every joint. On no account should rust be allowed to form under the rollers, as this will cause them to bind and break off. With regular lubrication, the chains will last many thousand miles. Any **stretch** taking place in the **back chain** can be taken up by the chain adjusters on the hub spindle in the usual way, but it is sometimes necessary to move back brake clip along the fork to maintain correct adjustment when the wheel is drawn back. The gear shaft is in an eccentric shell, and to **tighten** the **two short chains** the eccentric must be revolved. The chains should be placed in their tightest place before adjustment. The gear lever should be placed in free engine position and the operating chains and rods removed. The large nut holding the gear in the bottom bracket should be loosened by the key provided for the purpose. The screw holding the perforated quadrant in position should be removed, and the chains can then be adjusted by means of the bolt projecting from the gear operating body. This bolt should not be loosened, but simply be used as a lever to turn the eccentric.

A few spring clip jointed and cranked links are all the spare parts required by the rider, as by means of these a chain can be joined, lengthened, or shortened.

Control

IGNITION LEVER.—Once the best position for this lever is found, it will seldom be required to be altered, as a magneto gives its strongest spark in one position only. This point is between three-quarters and full advance.

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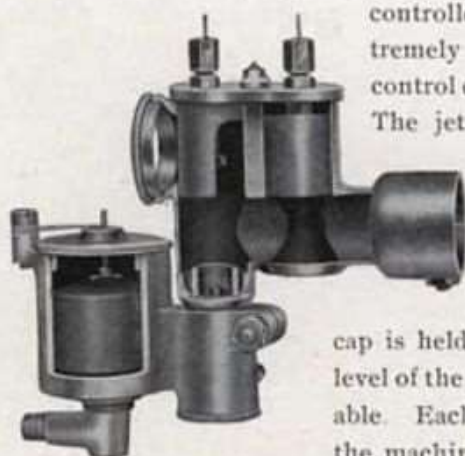
HALF COMPRESSION.—The upward movement of the pedal on the half compression plate interposes a tongue between the main cam and tappet lever, bringing a small cam into action, which raises the exhaust valve slightly on every compression stroke, reducing the compression by releasing a certain quantity of gas without in any way affecting the valve. **It is always necessary to bring this into action when using the foot starter,** but immediately the engine has started and before the gear is engaged, the pedal should be pressed right down again with the heel, and will only require to be used if a good deal of traffic riding is done. The stud must either be right up or right down; there is no intermediate position.

The **exhaust lifter** wire can be adjusted by means of the stop screwing into the small plate on one of the engine side rods. To remove the wire altogether, take out the screw on which the wire end swivels, unscrew the stop piece, and slip wire through slit in plate.

The **throttle and air levers,** on the handle-bar, operate hollow pistons in the jet chamber of the carburettor, giving an extremely sensitive control.

Carburettor

This will be found to be economical and extremely accessible. All the air is taken in through gauzes, and both the throttle and the extra air are controlled by brass pistons, having an extremely sensitive action. The whole of the control can be removed by undoing one nut. The jet can also be withdrawn in a few seconds by removing the gauze retaining ring under the jet chamber and unscrewing the small bolt under the jet. The jet itself will then drop out. The float chamber cap is held in place by a spring clip, and the level of the petrol in the float chamber is adjustable. Each carburettor is carefully adjusted to the machine when sent out, and nothing is to be gained by fitting larger jets or similar alterations.



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Petrol should never be poured into the tank except through fine gauze. To ascertain the exact quantity in the tank, the gauge valve should be unscrewed and lifted. To drain off the tank, the petrol injector pipe should be swivelled outwards.

Magneto

The Bosch Magneto is a highly efficient and reliable piece of mechanism, requiring only regular lubrication of the armature shaft bearings. A few drops of oil should be dropped in each lubricator about every 300 miles.

We draw attention to the sheltered, but at the same time, accessible position in which the magneto is placed. Also the simple method of adjusting the driving chain by loosening the three nuts under the table and giving the screw at the back of the magneto a few turns.

MISFIRING.—Should misfiring develop, and neither the Carburettor or plug is at fault, a piece of stout paper or card should be placed between the platinum points to clear off any oil. The points themselves should be kept perfectly clean and true—if necessary filing them slightly with a very fine file and then adjusting them. The points should only just separate. If misfiring still occurs, unscrew the high tension terminal and clean off any greasy matter on the end of the carbon brush. If this fails to effect a cure, remove brass contact breaker cover, unscrew bolt in centre of contact breaker, and gently prise off contact breaker by means of two screw drivers at opposite points of its circumference, clean carbon brush at back of contact breaker and contact breaker disc itself with petrol, and replace. We have never known a Bosch magneto require attention to any other points than the above, but if the magneto requires completely dismantling we shall be pleased to forward the Bosch Co.'s booklet on application.

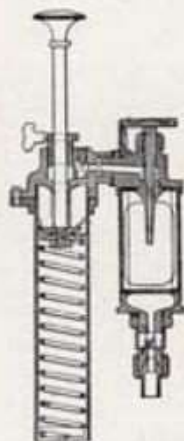
TIMING.—All the removable parts in connection with the driving of the magneto are marked, so the engine need not be re-timed after taking down. To alter the timing all that is necessary is to remove the magneto chain cover, loosen the nut on magneto shaft, tap nut smartly, at the same time pressing with a screw driver to loosen chain wheel. Turn the shaft a fraction of an inch to the left (standing on right of machine) to make the timing faster, tap wheel on to shaft, and tighten up nut. To make the timing slower turn the shaft to the right.



A punch mark is stamped on to the end of the engine shaft denoting the position of the piston. When this mark points to the top of the engine the piston is at the top of the stroke.

The points on the contact breaker should just be separating when the piston is at the top of the stroke and the ignition lever in the midway position.

Lubrication.



ENGINE.—The machine is delivered from the works with sufficient oil in the crank case to run ten miles. It is advisable however to set the drip lubricator in action as soon as the machine has started by releasing the small clip. The valve should be set so that the pump discharges in about 15 miles. On level roads in good condition, the valve can be screwed down slightly but in hilly country and on heavy roads, the drip should be set faster. Sidecar work, calling for more frequent use of the low gear would also necessitate the use of more oil.

Pay the greatest attention to the lubrication of your engine. To run the engine short of oil for even a few miles will cause more wear in the cylinder and bearings than would occur in a 1,000 miles of ordinary running and no amount of subsequent over-lubrication can remedy the harm done.

Oil should never be accepted out of an open vessel of any sort. Only the best air-cooled quality should be used, such as the special oil supplied by us or Price's A.

GEAR.—Revolve back wheel until the tube lubricator at the back of the two chain wheels (see page 10) comes into view. This lubricator leads to the main double ball bearing on which the gear runs. Inject about 12 drops of oil about every 200 miles.

Although the life of the gear depends on the regular lubrication of this bearing, any excess of oil should be avoided as it will tend to make the gear slip.

The thrust bearing "J" (see page 10) need only be oiled when the front chain cover is removed to lubricate the chains. A few drops every 500 miles will suffice.



The recesses in the bronze rings are packed with grease, which can be renewed through the two holes covered by clips, which can be seen when chain cover is removed. This, however, will not be necessary until the machine has run from 3,000 to 5,000 miles.

CHAINS.—The chains should be well plastered with P. & M. chain lubricant before a long ride. It can be applied with a brush on to the chains themselves, but if the chains are boiled in the lubricant no further attention is necessary for about 500 miles. The magneto chain is automatically lubricated from the engine.

About every 300 miles the following parts should be lubricated:—

Hubs, Spring Forks, and Ball Head Bearing.

Gear (see page 14).

Chains (see page 10).

Magneto (see page 13).

Engine Socket (see page 9).

All points of friction on brakes and operating mechanism.

Notes on Lubrication

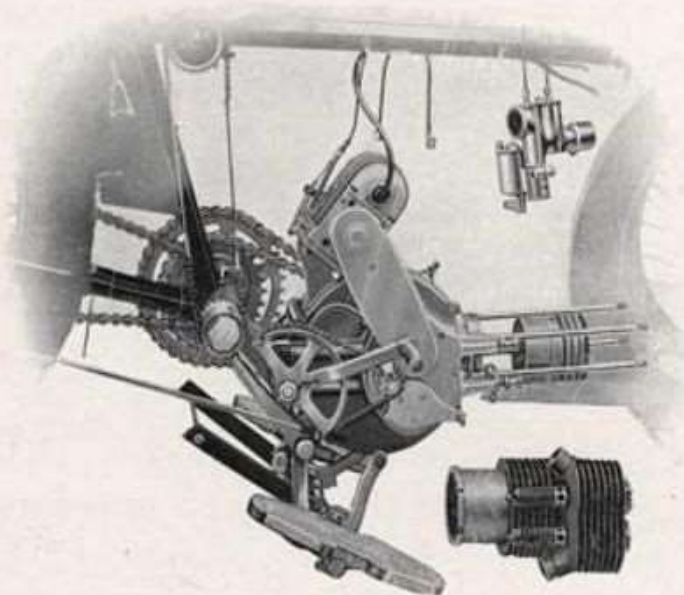
Good quality oil should be used for all parts, and as a certain amount of dust etc., is bound to get introduced into the oil in time, it is advisable to flush out the bearings with paraffin about every 2,000 miles and refill with clean oil. This also applies to the engine. About a cupful should be poured into crank case through the oil union, the engine should be run for a few moments and the mixture of dirt, oil and paraffin drained off. A quick method to oil the chains on tour, if no chain lubricant is handy, is to loosen the oil pipe connections so that the pipe can be swivelled over the chains, and the lubricator used. Riders should note that it is not sufficient to drop oil into the lubricators. The pin in the oil can should be used to make certain that none of the lubricators are choked.

Dismounting and Adjustment of Parts

ENGINE.—To remove cylinder the front wheel must be turned as far round as possible and the engine must be swung down as in illustration. Slacken the screw which clamps inlet pipe to engine. Disconnect petrol



pipe and remove carburettor. Remove exhaust lifter wire. Disconnect oil pipe at crank case end and wire from sparking plug. Remove silencer by loosening clamp at top of pipe and unscrewing nut on end of silencer plate. Slip back brake rod off pedal by removing split pin. Loosen gear locking ring. Withdraw bolt from top engine lug and knock out cups, when the engine will swing down. The top lugs can then be removed and the cylinder will slip off over rods. The whole operation can be completed in about 20 minutes.



TAPPETS.—There should be a clearance of $\frac{1}{4}$ in. between the valves and tappets when the engine is hot. The tappets can be adjusted by unscrewing bottom locking nut.

GEAR.—The only adjustment that the gear is likely to require is the main ball bearing. After the gear has had several thousand miles use, should there be any play on this main bearing, it can be adjusted by screwing up the cup through which the solid spindle passes. This cup has a serrated edge and a grub screw for this purpose. Should it be necessary to entirely remove the gear from the frame, the chains and the operating chains and rods must be removed.

The projecting bolt which holds the operating body on to the shaft on the right hand side of the machine, must then be slackened, and the



large nut on the end of the body removed. The internal nut on the solid spindle can then be removed by the small box spanner provided for the purpose, and the operating body complete with its internal mechanism will slip off the shaft; the ball races being undisturbed. If the locking ring be then unscrewed, the whole gear will push out of the bracket, leaving the engine held in the frame by two large cup washers.

FOOT STARTER.—Slacken the screw which clamps the check arm to the shaft. If it is necessary to set the engaging arm nearer the sleeve, the round milled nut at the back of the check arm must be screwed back a thread or two, and the nut at the end of the shaft must be tightened up. This will have the effect of sliding along the shaft the whole quadrant and the check arm. The nut at the end of the shaft should then be securely fastened, the check arm put in position and tightened up. The check arm can also be revolved if it is found necessary to allow the quadrant to come further back, or vice versa. After the quadrant has once been set, it is of course not likely that it will have to be re-adjusted, unless the lever becomes strained, and the engaging block is not forcing the sleeve fully home.

BRAKES.—To adjust front brake, loosen shoes, which can be slipped up or down on the stirrup.

The back brake is adjusted by means of the two nuts holding the rod to the pedal.

Nuts are liable to work loose on a new machine, although this is guarded against as much as possible by the use of split pins at vital points. At first, after each ride, all nuts should be tightened.

The Steering Head should be kept well adjusted. This can be done by slackening the ball head clip bolt and screwing down the large nut.

CARBURETTOR.—To examine jet, unscrew petrol pipe union nut and clamp on side of jet chamber.

To remove operating mechanism, unscrew small screw on top of carburettor.

To remove jet, unscrew gauze retaining nut under jet chamber, and remove screw.

To alter petrol level, remove float chamber cap, and adjust screws on needle valve.

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To remove needle valve, unscrew union beneath float chamber.

CHAINS.—These are all fitted with a spring clip joint, by which they can be removed in a few seconds without a tool of any description.

BACK WHEEL.—Remove back chain and bolt holding bottom end of brake band. Deflate tyre, loosen axle nuts, and pull wheel out, springing brake band over drum.

When replacing, it is very important to see that the wheel is exactly central.

To adjust hub, loosen locking ring on brake drum side and adjust cup. Both cup and ring are right hand thread.

FRONT WHEEL.—Bring front wheel stand into action and loosen and turn the two brake shoes outwards. Unscrew spindle nut and remove spindle; wheel will then drop out.

To adjust hub, loosen locking ring on left hand side and adjust cup. Both cup and ring are left hand thread.

Both wheel spindles are fitted with closed end nuts to prevent spindles rusting.

VALVES.—Remove cap, push up spring, pressing on top of valve, and remove cotter. Push valve up into guide and remove spring. Valve can then be lifted out at the top.

LAMP BRACKET.—This is detachable to enable a large Lucas lamp to be fitted securely the girders

Difficulty in Starting

It is useless trying to start the engine until it is perfectly free, and it can only be freed in cold weather by the injection of petrol or paraffin through the compression tap in cylinder head. If this has been done, and the engine revolved to a good speed unsuccessfully, verify the positions of the levers, *i.e.*, throttle open, spark lever half advanced, air shut, half compression back; then flood the carburettor well. If engine still will not start, take out plug and clean it, setting points close together before replacing. Make sure magneto is sparking (see page 13). See that the valves are working freely in their guides. If all these points are in order, the engine **must** start.

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Some Advice.

A little difficulty may be experienced at first in starting the machine, but the knack is soon acquired.

Don't start taking the carburettor or any other part to pieces as each machine is carefully tested before being sent away, and it is extremely unlikely that anything is wrong. If you have been injecting a large quantity of petrol, try the effect of opening the air lever slightly. You must not expect to obtain the best results from your machine until you have become thoroughly accustomed to the control, especially in hill-climbing, as the slightest movement of the air or ignition lever may make all the difference. If you have a really steep hill in front, do not wait until the engine is, so to speak, at its last gasp, before changing down. You can do no harm by changing to low gear too soon, but if you leave it too late, you may fail to climb the hill.

Treat your machine considerately, and do not abuse its capacity for continued hard work. For example, do not continually force a machine and sidecar on full throttle against a strong wind, and do not postpone making an adjustment if you know it to be necessary. Pay careful attention to the oiling of the engine and gear. If the gear appears to slip, make sure it is not the clutch on the engine shaft. If it slips out on the hill a turn of the nut on the end of the spindle on which the gear handle works will effect a cure, but if the gear actually refuses to grip, you have probably been over oiling it. You will never have any tyre trouble if you keep your back tyre pumped hard, but the comfort of the machine will be considerably increased if you leave the front tyre a little soft.

Don't hesitate to write to us if you do not find your machine entirely satisfactory. We are anxious that it should give you full satisfaction, and we are always pleased to consider any suggestion you have to make to improve the machine, but let the suggestion be the result of your own experience. If you find a part on the machine which you think has not worn as well as it should; do not under-estimate the mileage when asking for a replacement. It will assist us to trace the trouble if we have an accurate statement of the circumstances, and you can rely on us treating you fairly.

If we have to keep you waiting a day or two for a spare part in the busy season, remember we have been making motor cycles for twelve years and it is difficult to maintain a full stock of all parts for every model, but we appreciate the annoyance caused by delays of this sort during fine weather, and you can rely on our doing our best not to disappoint you.



P. & M. Sidecar

Price £15 15s. Nett

SPECIFICATION

Weight—100 lbs.

Tyre—Dunlop 26 in. × 2½ in.

Wheel—Same size rim as P. & M. machine, making tyres interchangeable. Wide unbreakable hub.

Mudguard—Completely enclosing inside of wheel, keeping passenger and sidecar body perfectly clean in any weather.

Frame—P. & M. registered design, 10 gauge tubing throughout. No telescopic tubes. Maximum strength with minimum weight.

Attachments—Mills-Fulford three point; sidecar can be detached from machine in two minutes.

Springing—P. & M. registered underhung springs, giving a wide range of movement with lowest possible position of body.

Body—Coach built with top hinged detachable flap and door fastened with spring catch. Ample leg room, well upholstered and highly finished in dark green enamel, lined. Deep well in seat, spring cushion, and thick mat supplied.

This sidecar has been designed by us in response to a demand for a neat, strong and comfortable sidecar to suit the P. & M. machine. Being built for our own machine, it can be accurately fitted without the slightest difficulty, and the springing and shape of the body is such that long journeys can be undertaken without the slightest discomfort to the passenger. As it is built for the P. & M. machine only, no adjustments are provided and a great saving in weight and gain in strength has thereby been effected.

EXTRAS.

Kempshall 26 in × 2½ in. anti-skid cover. ...	£1 0 6
Butt-ended tube. ...	2 0
Luggage grid. ...	15 0
Extra large body. ...	10 0

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**A few of the more Important Successes gained
— by P. & M.'s during the 1912 Season —**

A.C.U. 1000 MILES TRIALS.

P. & M.'s awarded the **TEAM PRIZE** for the fourth year in succession—
an achievement without parallel in the records of motor cycling.

Four Gold Medals were also won, this being the eighth year in succession
that P. & M.'s have been awarded Gold Medals in Six Days' Trials.

SCOTTISH TRIALS.

In this, one of the severest trials ever held, the P. & M. again proved
its supremacy by gaining the special prize for the best performance by a
trade rider, and a Gold Medal.

CAPE PENINSULAR RELIABILITY TRIAL.

This competition is the most important competition held in South
Africa, and was won by the Rev. S. B. Priston on his P. & M. Only one
competitor made an absolute non-stop—F. H. Fritchley, 3½ h.p. P. & M.

ENGLISH-DUTCH TRIAL.

The 2 P. & M.'s entered gained the highest possible awards—Silver
Medals.

M.C.C. LONDON TO EDINBURGH RUN.

Best performance of single cylinder with sidecar for Wells Cup, made
by W. Pratt, P. & M. P. & M.'s awarded four Gold Medals.

A.C.U. AUTUMN ONE DAY TRIAL.

The severest one day Trial ever held—two P. & M.'s gained highest
awards—First-class Certificates.

In the M.C.C. Winter Run to Exeter and back, London to Land's End
and back, Devonshire Tour and Team Trials, P. & M.'s were awarded
numerous Gold Medals.

In a host of minor events held all over the country, P. & M.'s have
uniformly been successful, especially in reliability trials and flexibility hill
climbs.

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Testimonials

HALLCROFT,
WILMER DRIVE,
Nov. 9th, 1912.

Dear Sirs,—As with the delivery of my new machine, I shall be entering on my tenth season with a P. & M. Motor Cycle. I think it is a suitable time to write and tell you of the extreme reliability and great pleasure I have had with your machines. I have gone through this season without a single involuntary stop (punctures excepted). My machine has never been in the hands of a repairer, and has not cost me a single penny in replacements. Also, I think you may justly claim to be years ahead of your competitors. To take a few instances, which other manufacturers are advertising as improvements for their 1913 models: adjustable tappets, half compression, chain drive and two speeds, I believe I am correct in stating that these were all fitted to the first machine I bought from you in 1904.

Wishing you every success in the coming season,
Yours sincerely,
(Signed) W. MILNES.

BRECKNOCK HOUSE,
BOURTON, DORSET,
Nov. 7th, 1912.

Dear Sirs,—My 6th season's experience of the P. & M. is now drawing to a close, and has again served to increase the very high opinion I formed of previous models beginning with the 1907 pattern. I wanted a hill-climber. Since then I have the 1908, 1911 and 1912 models, the latter I am now using with the utmost satisfaction, and I recently placed an order for early delivery of a 1913 model with the Bridgwater Motor Co., Ltd.

My experience of motoring includes some of the best known makes of motor cycles and also cars.

If the number of P. & M's, five, which I have personally ordered is not sufficient evidence of my belief, I may mention that a friend of mine whom I induced to try them, has had four and another two, and that altogether I am responsible for, I think, sixteen P. & M's, and I have never heard anything but the highest commendation of them from their owners; I should add, I am not in the motor business and have derived no benefit from these sales.

During the six years I have run your machines, I have only been delayed so as to have to push, **once**; and that was a case of putting down to a choked carburettor that turned out to be a case **not** switching "on," having forgotten I had, or had accidentally switched "off."

I look upon your machine as the "Rolls Royce" among motor cycles, and wish you every success for the future.

Yours faithfully,
(Signed) A. WHARTON METCALFE, B.Sc.
Assoc. M. Inst., C.E., M.I.Mech.E.,
President, Bristol Association of Engineers.

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Testimonials—continued

WILLESLEY HOUSE,
HAWES, S.O.,

Messrs. PHELON & MOORE, LTD.,
CLECKHEATON.

Nov. 6th, 1912.

Dear Sirs,—It is with great pleasure I testify to the merits of your Motor Cycle.

I have now been riding one for upwards of five years in a wild moorland country, and so well satisfied am I that my next mount **must be a P. & M.**

It was my intention to get a new mount for 1913, and yet my old machine is running so well, and being an accumulator model is of so little exchange value, that I have decided to keep it so long as it is efficient. After all, why should I part with such a proved friend? No one knows its value but myself.

It was the pioneer Motor Cycle in this district, and right well has it acquitted itself.

Hoping your well-deserved success may continue,

I remain, yours faithfully,

(Signed) E. W. ANDERTON, M.B., Ch.B.

SUNNYSIDE,

RICHMOND AVENUE, HUDDERSFIELD,

Messrs. PHELON & MOORE, LTD.

Nov. 8th, 1912.

Dear Sirs,—It is three years since I first wrote you to say how satisfied I was with my P. & M. Machine. After having had four P. & M.'s (a new one each year and another on order for 1913) I should again like to add another word of praise and appreciation of your splendid machine. Each year my P. & M. has been better and faster, and I consider there is no $3\frac{1}{2}$ h.p. on the market that can compare with it for all round utility. Your two-speed gear is the most simple and reliable on the market and it is largely owing to the pioneer work of your two-speed gear that has made sidecar riding so popular.

I have been nearly all over the country with my P. & M. and sidecar and never experienced any trouble, and for solo work I have never yet met a hill I could not climb at first attempt on my 1911 and 1912 machines. I might add, I climbed Stackstone Hill (Crankcase Hill) 1 in 2 $\frac{1}{2}$, with the greatest ease in 1911. The cheapness of the upkeep and repairs of your machine is one of its good features, in fact, the two machines of other makes I had before getting a P. & M. cost considerable more in repairs than my four P. & M.'s have done put together. The easy starting, smooth running and reliability of the P. & M. stamps it as the most perfect motor cycle that has yet been made.

With every good wish for your continued and deserved success,

Yours sincerely,

(Signed) T. CANBY.

P.S.—I should like to say the high price I obtain for my second-hand machine indicates how much your machine is sought after.

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Testimonials—continued

25, OAKFIELD ROAD,
STROUD GREEN, N.,
Oct. 22nd., 1912.

Dear Sir,—You will be glad to hear that my machine though now nearly two years old, runs as sweetly and efficiently as when new. In fact, last saturday week, being in a hurry, I made a run of 73 miles in 2½ hours, with sidecar attached but empty.

It will also pull along very steadily at 15 m.p.h. on top gear without any trouble, though of course it requires less looking after if you let her go at 20 to 25 m.p.h. My next mount will assuredly be another P. & M.

Wishing you continued success,

Believe me, yours truly,

Messrs. PHELON & MOORE, LTD. (Signed) PERCY H. MILES.

5, NORFOLK ROAD,
LITTLEHAMPTON,
Dec. 31st, 1912.

Dear Sir,—I have now had my machine over seven years and it has been used very roughly during that time. All the renewals required have been two wedge bars and one spring washer for engine sprocket. I am still using the original back chain, which has done over 12,000 miles, a great deal of which has been done with a sidecar. I think this is a good proof of the splendid material you must put in your gears, and when I am lucky enough to get a new machine, I fancy it will be a P. & M.

Yours sincerely,

(Signed) T. W. NASH.

Messrs. PHELON & MOORE,
LONDON. WILTS AND DORSET BANK,
NAILSWORTH,
2nd November, 1912.

Dear Sirs,—I have had this machine almost two years, and have done say 7,000 miles sidecar and 1,000 solo. I have never had a mechanical breakdown, and the various items as chain, valves, etc., that I have purchased from time to time (with the exception of two piston rings) have not yet been used.

I have only had one new back tyre, and the front is good for some distance yet.

Yours faithfully,

(Signed) ST. M. KEMP FURNER.

Messrs. PHELON & MOORE. A. GAMMON,
24, HIGH STREET, DONCASTER,
May 8th, 1912.

Gentlemen,—I am glad to be able to say that the 1912 machine with which you supplied me is giving quite as good results as the 1911, with the extra and great advantage of the foot starter. This device is proving quite satisfactory, and the engine starts from cold with the first or second push—a great boon.

Yours faithfully,

(Signed) A. GAMMON.

(This gentleman has ordered a 1913 model).

www.powell

