TRIUMPH MOTORS

1914

TRIUMPH MOTORS

1914

Codes used:
ABC (5th Edition) and Lelbers.
Private Code see page 48.

TRIUMPH MOTORS

DEPÔTS:

LONDON - -	4 & 5, HOLBORN VIADUCT, E.C.
LEEDS - - -	53, VICAR LANE.
MANCHESTER -	160, DEANSGATE.
GLASGOW - -	14, WATERLOO STREET.
DUBLIN (Wholesale only)	26, UPPER ABBEY STREET.

Telegraphic Addresses:	*Telephone Nos.*
"Triumph, Coventry."	342, Coventry.
"Cyclothure, Cent., London."	P.O. Central, 1458, London.
"Triumph, Leeds."	4281, Leeds.
"Triumph, Manchester."	6212, Manchester.
"Cyclothure, Glasgow."	9091, Central, Glasgow.
"Cyclothure, Dublin."	1024, Dublin.

Manufactured by

Triumph Cycle Co., Ltd.,

COVENTRY.

ENGLAND.

ESTABLISHED 1885.

W. W. CURTIS, LTD., COVENTRY.

INTRODUCTION

4 H.P. TRIUMPH. After prolonged and exhaustive experimenting with various kinds and types of engines, we have decided on a larger and more powerful single cylinder machine for 1914 in order to make it more suitable for sidecar work.

At the same time we have kept in mind the requirements of the solo rider, who will find the 4 h.p. Triumph a delightful machine to ride, speedy, and easily controlled in traffic. The capacity of the engine has been raised to 550 c.c. thus providing an ample reserve of power for hilly and difficult country. Every part is perfectly balanced, so that the running is both smooth and flexible at all speeds from 5 to 50 miles per hour; it makes an ideal machine either solo or with sidecar attached.

We are satisfied that there is nothing superior to the Triumph single cylinder Motor, it is reliable under the most strenuous tests; it is efficient, and retains its efficiency for a remarkable mileage; it is economical and light on tyres, and perfectly comfortable.

A number of important improvements have been made in the 1914 models, of which the following are a few :—

ENGINE - - -	85×97 m/m bore and stroke, giving a piston displacement of 550 c.c. rated at 4 h.p. Decompressor to all models, new pattern compression tap, extra crank case air release which prevents oil oozing on to the outside.
FRAME - - -	Curved, giving a very low saddle position.
LUBRICATION - -	Semi-automatic Drip Feed.
TANK - - - -	Wider, and fitted with petrol sump to drain tank to carburetter.
TRANSMISSION - -	Triumph 1″ Belt to Roadster models, ⅞″ to T.T. Racers.

THREE SPEED GEAR	Sturmey-Archer with Triumph improved gear and clutch controls. The back wheel can be readily removed from frame.
HANDLEBAR - -	New pattern, secured by two separate locking devices, positively prevents it turning in the steering stem.
CRANK CASE - -	Spring snap oil vent fitted.
STEERING HEAD -	Improved, larger bearings.
FORK CROWN AXLE	Stronger.
CARRIER - - -	Improved.
FORK ENDS - -	More rigid.
CRANKS - - -	Shorter and stiffer.

Such special features as the following are retained.

- Patent Free Engine Plate Clutch (No. 28490/'07).
- Ball Bearing Engine.
- Ball Bearing Magneto.
- Patent Carburetter (No. 22545/'07), and
- Handlebar Control (Reg. No. 513548/'07).
- Needle Valves to Tank Outlets.
- Patent Kick-up Rear Stand (No. 25014/'09).
- Patent Front Stand (No. 17946/'10).
- Patent Spring Forks Nos. 12165/'05 & 24648/'10).
- Patent Luggage Carrier (No. 17947/'10).
- Adjustable Tappets to Engine.
- Extra Large Valves.
- Heavy Rim Flywheels.
- Pannier Toolbags.
- Variable Pulley (Reg. No. 514250/'07).
- Waterproof Magneto.
- Adjustable Footrests.
- Quick Detachable Filler Caps.

The various Models are :—

- Roadster with Sturmey Archer 3-Speed Gear.
- Roadster with Free Engine.
- Roadster with Fixed Engine.
- T.T. Roadster with Sturmey Archer 3-Speed Gear.
- T.T. Roadster with Free Engine.
- T.T. Roadster with Fixed Engine.
- T.T. Racer.

Triumph Cycle Co. Ltd.
(Established 1885).

COVENTRY,
January, 1914.

Triumph Motor Guarantee.

WE give the following guarantee with our motorcycles, instead of the guarantee implied by statute, or otherwise, as to the quality or fitness of such machines for the purpose of motor cycling; any such implied guarantee being in all cases excluded. In the case of machines which have been used for "hiring out" purposes, or from which our trade mark or manufacturing number has been removed no guarantee of any kind is given or is to be implied.

We guarantee, subject to the conditions mentioned below, that all precautions which are usual and reasonable have been taken by us to secure excellence of materials and workmanship, but this guarantee is to extend and be in force for three months only from the date of purchase, and damages for which we make ourselves responsible under this guarantee **are limited to the replacement** of any part which may have proved defective. We undertake, subject to the conditions mentioned below, to make good at any time within three months any defects in these respects. As motor cycles are easily liable to derangement by neglect or misuse, this guarantee does not apply to defects caused by wear and tear, misuse, or neglect.

The term "misuse" shall include among others the following acts:

I. The attaching of a sidecar to the motor cycle in such a manner as to cause damage, or calculated to render the latter unsafe when ridden.

II. The use of a motor cycle, or of a motor cycle and sidecar combined, when carrying more persons, or a greater weight, than that for which the machine was designed by the manufacturers.

Any motor cycle sent to us to be plated, enamelled, or repaired, whether the repairs are required for the purpose of making good the defect before referred to, or otherwise will be repaired upon the following conditions, *i.e.*, we guarantee that all precautions which are usual and reasonable have been taken by us to secure excellence of material and workmanship, such guarantee to extend and be in force for three months only from the time such work shall have been executed, and this guarantee is in lieu and in exclusion of any common law or statute warranty, and the damages recoverable are limited to the cost of any further work which may be necessary to amend and make good the work found to be defective.

CONDITIONS OF GUARANTEE.

If a defective part should be found in our motor cycles or in any part replaced, it must be sent to us, **carriage paid,** and accompanied by an intimation from the sender that he desires to have it repaired free of charge under our guarantee, and he must also furnish us at the same time with the number of the machine, the name of the agent from whom he purchased, and the date of the purchase, or the date when the alleged defective part was replaced, as the case may be.

Failing compliance with the above, no notice will be taken of anything which may arrive, but such articles will lie here at the risk of the senders, AND THIS GUARANTEE, AND ANY IMPLIED GUARANTEE, SHALL NOT BE ENFORCEABLE.

We guarantee only those machines which are bought either direct from us or from one of our duly authorised agents, and under no other conditions.

We do not guarantee the specialities of other firms, such as tyres, saddles, chains, lamps, etc., or of any component part supplied to the order of the purchaser differing from our standard specification, supplied with our motor cycles, or otherwise.

THE TERM AGENT

is used in a complimentary sense only, and those firms whom we style our agents are not authorised to advertise, incur any debts, or transact any business whatsoever on our account other than the sale of goods which they may purchase from us: nor are they authorised to give any warranty or make any representation on our behalf other than those contained in the above guarantee.

Terms of Business.

Payment.—In all cases where we have no ledger account, an invoice will be submitted to intending purchasers, on payment of which goods will be forwarded, or approved references must be given.

Repairs.—Repairs are charged at nett cash prices in all cases. Machines or parts for repair must be forwarded, carriage paid, to the works, with the sender's name attached.

Carriage.—Carriage in all cases must be paid by the customer. Machines are signed for by the railway companies as being received in good condition, and unless otherwise ordered are consigned at the lowest rates, *i.e.*, at consignee's risk. In case of damage all claims should be addressed to the carriers.

PACKING CRATES AND CASES, BEING CHARGED AT LESS THAN COST PRICE, ARE NOT RETURNABLE.

Crates for single Motor Bicycle ... ... 3/- each.
Cases for export, for single Motor Bicycle ... 15/- ,,

Spare Parts and Replacements.

WHEN ORDERING SPARE PARTS OR REPLACEMENTS, it is advisable, if possible, to send patterns, so as to ensure the order being executed correctly. If this cannot be done, let us have the number of the machine (which will be found stamped on the engine cradle) and also number of the engine (stamped on top left side of crank case).

The despatch should be promptly advised BY SEPARATE POST, and full instructions for repair enclosed, otherwise unnecessary delay and annoyance are often caused.

Customers having no account with us should not fail to accompany orders with remittance, which must include postage.

When making enquiries respecting any part or repair, PLEASE QUOTE OUR ORDER NUMBERS IN EVERY CASE, otherwise it is difficult to trace the order.

When sending machine to our works for repairs, it is advisable to remove all spares and accessories, as we cannot be responsible if any of these parts are missing when the machine is returned.

Price Maintenance.

It is our great desire, while giving the best value for money, to prevent any undue cutting of prices, and our goods are only sold on the strict condition that they will not as any time be re-sold at less than the retail prices set out in our current catalogue.

"Triumph" Gradual Payment System for Motors.

DEPOSIT TO BE SENT WITH ORDER.

	Model.	Instalment Price.	Twelve Payments. Deposit.	Twelve Payments. Eleven Monthly Payments.
		£ s. d.	£ s. d.	£ s. d.
Type C.	Roadster S.A. 3-Speed Model	65 0 0	21 0 0	4 0 0
Type A.	Roadster Free Engine Model	61 0 0	20 6 0	3 14 0
Type B.	Roadster Fixed Engine Model	54 0 0	18 5 0	3 5 0
Type G.	T.T. Roadster S.A. 3-Speed Model ...	65 0 0	21 0 0	4 0 0
Type D.	T.T. Roadster Fixed Engine Model ...	54 0 0	18 5 0	3 5 0
Type E.	T.T. Roadster Free Engine Model ...	61 0 0	20 6 0	3 14 0
Type F.	T.T. Racer	54 0 0	18 5 0	3 5 0

If the purchaser wishes to pay in six monthly instalments, a discount of 2½ per cent off instalment price is allowed. Application forms giving full particulars, post free.

4 HP TRIUMPH TYPE C.

STURMEY-ARCHER THREE-SPEED GEAR MODEL WITH TRIUMPH GEAR AND CLUTCH CONTROL.

Engine 85 × 97 mm.

Extract of letter from Mr. J. Jones, Pontllawfraith, dated Sept., 12th, 1913.

Perhaps it would interest you to know that I have covered between 25,000 and 26,000 miles every year, during the last five years, and as for mechanical stoppage, I don't know what it is. I never even carry a spare plug.

I have been riding your machines since 1906, and have had no other make since. I am a Commercial Traveller, and cover some of the worst roads in Wales, summer and winter. I have already done 17,000 miles with this year's Three Speed Triumph, and have had no hitch whatever with the gears, which I consider a great boon.

IMPORTANT.—A large percentage of engine troubles arise from faulty lubrication. Carefully read instructions on page 34.

SEE SEPARATE CATALOGUE FOR SPARE PARTS AND REPLACEMENTS.

4 h.p. "Triumph." Type C.

STURMEY-ARCHER THREE-SPEED GEAR MODEL WITH TRIUMPH GEAR AND CLUTCH CONTROL.

Specification.

Three-Speed Gear and Free-Engine Plate Clutch.—Sturmey-Archer, operated by special TRIUMPH change-speed lever fitted to right side; and special quadrant having double locking internal plungers; free-engine clutch available on each gear; provision made to facilitate removal of back wheel.

Engine.—Single cylinder, 4 h.p., 85 m/m × 97 m/m bore and stroke (TRIUMPH manufacture throughout); main shaft runs on caged ball bearings; decompressor; registered design variable pulley; large M.O. valves, interchangeable; extra large and heavy rim flywheels; adjustable tappets with vertical lift; effective silencer with extension pipe to rear wheel.

Carburetter and Control.—Patent carburetter, very economical, and easily dismantled; registered design handle-bar control (Reg. No. 513548/'07).

Ignition.—Bosch high-tension ball-bearing magneto, waterproof; handle-bar control; chain driven (Renold), with oil and dust-proof aluminium gear-case for chain.

Frame.—Exceptionally strong, curved at rear, extra low, with long wheelbase; TRIUMPH patent spring forks (Nos. 12165/'05 and 24648/'10); front rim brake; rear foot brake operating from foot-rest lug and acting on belt drum; composition shoe-pad, gives powerful grip, non-glazing.

Wheels.—26 in. × 2¼ in., rims extra strong; 2½ in. Clincher de Luxe studded motor-cycle tyres.

Tank.—Re-designed and improved, made with only one longitudinal seam, sunk and rivetted end; semi-automatic drip-feed lubricating pump; petrol injector; petrol gauge (Cox's patent, No. 9679/'05), tells amount of fuel in tank by registering finger and dial on top of tank; quick detachable and large filler caps; gauze strainers for petrol and oil; needle valves to petrol supply and petrol injector; petrol sump to drain tank to carburetter; strong and neat attachment to frame. Capacity: Petrol, 1¼ gallon; oil, 1 quart.

Transmission.—TRIUMPH 1 in. rubber V belt on deep section pulley (variable pulley, which allows top gear to range from 4¼ to 6¼ to 1; other gears according to ratios; brake drum securely fitted to back wheel.

Stands.—BACK: Fixed to fork ends, does not interfere with removal of back wheel; spring clip with automatic fastening (Pat. No. 25014/'09). FRONT STAND: Fitted to front forks, serve as mudguard stays when not in use (Pat. 17946/'10), independent of hub spinble.

Carrier.—A light and strong tubular carrier (Pat. No. 17947/'10).

Saddle.—Improved Brooks-Triumph, padded top, large size, very comfortable, gives low position.

Tool-bags.—Greatly improved pannier bags, provided with locks and special fastener buttons, securely fixed to carrier; complete set of tools with improved tool-roll.

Mudguards.—Strong and wide; front guard very wide and of special design (Reg. No. 608677), brought backward to protect rider and power unit; back guard wide and carried low.

Handle-bar.—New pattern. Made from high carbon steel, brought well back, stronger, provided with two independent fastenings; ends slightly dropped, giving a most comfortable position.

Foot-rests.—Adjustable; substantial rubbers; give comfortable position.

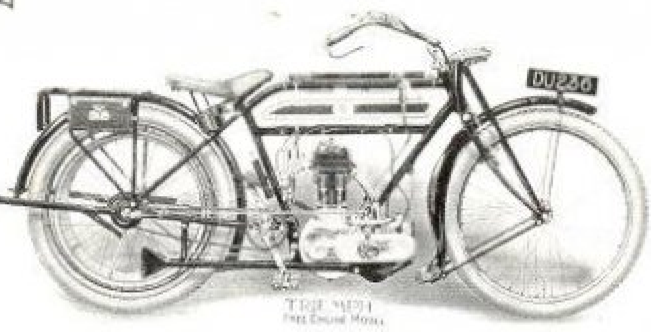
Finish.—Black enamel on Coslettised frame; wheels plated, with enamelled black centres edged with red lines; tank, aluminium with green panels, lined red.

We reserve the right to modify or deviate from Specification in minor details.

PRICE (for the United Kingdom only):	Instalment or Exchange Price.	Cash Price.
Type C.—4 h.p. Roadster S.A. Three Speed Model	**£65 0 0**	**£60 0 0**

Prices include a beautifully-bound leather Log Book, containing many riding hints and other most useful information, and include insurance coupons against accidents, etc.

4 HP TRIUMPH TYPE A.



ROADSTER FREE ENGINE MODEL.

Engine 85 × 97 mm.

Extract of letter from Messrs. Stuart Wilson & Co., Dunedin, New Zealand, dated Aug. 6th, 1913.

We are delighted with the latest model Triumphs, which are best described as masterpieces of mechanical ingenuity.

Starting from the nut on the front wheel and comparing it part for part with similar portions on any other machine, the " Trusty " Triumph stands out as the very perfection of an engineering enterprise. This accounts for the remarkable records made by the Triumph in supreme tests and in every kind of motor cycle competition.

Beauty, symmetry, flexibility, easy running, everlasting reliability, a contempt for hills, has gained for the Triumph a world-wide reputation, and it is practically as much ahead of its competitors to-day as it was in 1905, when your brilliant designers taught the world how to build a motor cycle.

The writer's pen fails to do justice to your wonderful machine.

IMPORTANT.—A large percentage of engine troubles arise from faulty lubrication. Carefully read instructions on page 34.

SEE SEPARATE CATALOGUE FOR SPARE PARTS AND REPLACEMENTS.

4 h.p. "Triumph." Type A.

ROADSTER, FREE-ENGINE MODEL.

Specification.

Free-Engine Clutch.—TRIUMPH free-engine plate clutch (Pat. No. 28490/'07 embodied in back hub, operated by toe and heel pedal.

Engine.—Single-cylinder 4-h.p., 85×97 m/m bore and stroke (TRIUMPH manufacture throughout); main shaft runs on cage ball bearings; decompressor TRIUMPH registered design variable pulley; large M.O. valves, interchangeable; extra large and heavy rim flywheels; adjustable tappets with vertical lift; effective silencer with extension pipe to rear wheel.

Carburetter and Control.—Patent carburetter, very economical and easily dismantled, with registered design handle-car control (Reg. No. 513548/'07).

Ignition.—Bosch high tension ball bearing magneto, waterproof; handle-bar control; chain driven (Renold), with oil-tight and dust-proof aluminium gear-case for chain.

Frame.—Exceptionally strong, curved at rear, extra low with long wheel-base; TRIUMPH patent spring forks (Nos. 12165/'05 and 24648/'10); front rim brake; rear foot brake operating from foot-rest lug, and acting on brake drum; composition shoe-pad, gives powerful grip, non-glazing.

Wheels.—26×2¼ in., rims extra strong, 2¼ in. Clincher de Luxe studded motor-cycle tyres.

Tank.—Re-designed and improved, made with only one longitudinal seam, sunk and rivetted end; semi-automatic drip-feed lubricating pump; petrol injector; petrol gauge (Cox's pat. No. 9679/'05), tells amount of fuel in tank by registering finger and dial on top of tank, quick detachable and large filler caps; gauze strainers for petrol and oil; needle valves to petrol supply, and petrol injector; petrol sump to drain tank to carburetter, strong and neat attachment to frame. Capacity: Petrol, 1½ gallon; oil, 1 quart.

Transmission.—TRIUMPH 1 in. rubber V belt on deep section pulley (variable pulley, highest gear 4¼ to 1, lowest gear 6¼ to 1); brake drum securely fitted to back wheel.

Stands.—BACK: Fixed to fork-ends, does not interfere with removal of back wheel; spring clip with automatic fastening (Pat. No. 25014/'09). FRONT STAND: Fitted to front forks, serves as mudguard stays when not in use (Pat. 17946/'10), independent of hub spindle.

Carrier.—Light and strong tubular carrier (Pat. No. 17947/'10).

Saddle.—Improved Brooks-Triumph, padded top, large size, very comfortable, gives low position.

Tool-bags.—Greatly improved pannier bags, provided with locks and special fastener buttons, securely fixed to carrier; complete set of tools with improved tool-roll.

Mudguards.—Strong and wide, front guard very wide and of special design (Reg. No. 608677), brought backward to protect rider and power unit; back guard wide and carried low.

Handle-bar.—New pattern. Made from high carbon steel, brought well back, provided with two independent fastenings, stronger; ends slightly dropped, giving a most comfortable position.

Foot-rests.—Adjustable; substantial rubbers; give comfortable position.

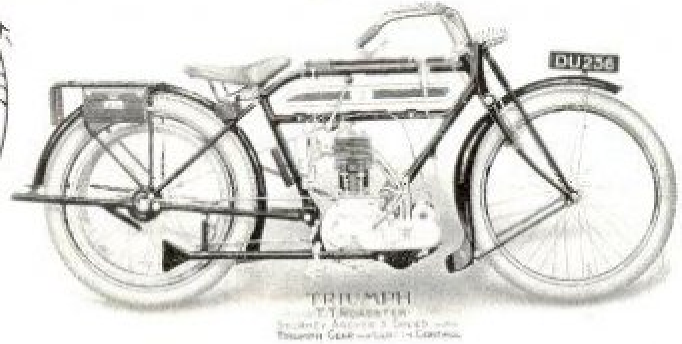
Finish.—Black enamel on Coslettised frame; wheels plated, with enaemlled black centres edged with red lines; tank aluminium with green panels, lined red.

We reserve the right to modify or deviate from Specification in minor details.

PRICE (for the United Kingdom only):	Instalment or Exchange Price.	Cash Price.
Type A.—4 h.p. Roadster Free Engine Model, as illustrated	£61 0 0	£56 0 0
Type B.—4 h.p. as above specification but without Free Engine Clutch	£54 0 0	£49 15 0

Prices include a beautifully-bound leather Log Book, containing many riding hints and other most useful information, and include insurance coupons against accidents, etc.

4 HP TRIUMPH TYPE G.



T.T. ROADSTER WITH STURMEY-ARCHER
THREE-SPEED GEAR.

Engine 85 × 97 mm.

Extract of letter from the Rev. A. C. Measures, West Grinstead, dated Sept. 20th, 1913.

My Triumph is scoring well. I convinced an anti-motorist yesterday of its utility by conveying him in the sidecar to a junction five miles away to catch his train, and in spite of wet, bad roads, etc., we got there in fine style. I have now 9,000 odd miles done this year and the only cost has been for cycleaning and tyres. Not a single repair yet.

IMPORTANT.—A large percentage of engine troubles arise from faulty lubrication. Carefully read instructions on page 34.

SEE SEPARATE CATALOGUE FOR SPARE PARTS AND REPLACEMENTS

4 h.p. "Triumph." Type G.

T.T. ROADSTER WITH STURMEY-ARCHER THREE SPEED GEAR.

Specification.

Three-Speed Gear and Free-Engine Plate Clutch.—Sturmey-Archer, operated by special TRIUMPH change-speed lever, fitted to right side, and special quadrant, having double-locking internal plungers. Free-engine clutch available on each gear; provision made to facilitate removal of back wheel.

Engine.—Single cylinder 4-h.p.; 85×97 m/m bore and stroke (TRIUMPH manufacture throughout); main shaft runs on caged ball bearings; decompressor; TRIUMPH registered design variable pulley; large M.O. valves, interchangeable; extra large and heavy rim flywheels; adjustable tappets with vertical lift; effective silencer with extension pipe to rear wheel.

Carburetter and Control.—Patent carburetter, very economical and easily dismantled, with registered design handle-bar control (Reg. No. 513548/'07); extremely handy and easy of manipulation.

Ignition.—Bosch high-tension ball-bearing magneto, waterproof; handle-bar control, chain driven (Renold), with oil-tight and dust-proof aluminium gear-case for chain.

Frame.—Exceptionally strong, curved at rear; extra low; TRIUMPH patent spring forks (Nos. 12165/'05 and 24648/'10); front rim brake ;rear foot brake, operating from foot-rest lug, and acting on brake drum; composition shoe pad, gives powerful grip, non-glazing.

Wheels.—26 × 2¼ in.; rims extra strong; 2¼ in. Clincher de Luxe studded motor-cycle tyres.

Tank.—Re-designed and improved, made with only one longitudinal seam, sunk and rivetted end; semi-automatic drip-feed lubricating pump; petrol injector, petrol gauge Cox's pat. No. 9679/'05), quick detachable and large filler caps; gauze strainers for petrol and oil; needle valves to petrol supply, and petrol injector, petrol sump to drain tank to carburetter, strong and neat attachment to frame. Capacity: Petrol 1¾ gallon, oil 1 quart.

Transmission.—TRIUMPH 1 in. rubber V belt on deep section pulley (variable pulley, highest gear 3¾ to 1, lowest gear 5 to 1); brake drum securely fitted to back wheel.

Stands.—BACK: Fixed to fork-ends, does not interfere with removal of back wheel; spring clip with automatic fastening (Pat. No. 25014/'09). FRONT STAND: Fitted to front forks, (Pat. No. 17946/'10).

Carrier.—Light and strong tubular carrier (Pat. No. 17947/'10).

Saddle.—Improved Brooks-Triumph, padded top, large size, very comfortable; gives low position.

Tool-bags.—Greatly improved pannier bags, provided with locks and special fastener buttons, securely fixed to carrier; complete set of tools with improved tool-roll.

Mudguards.—Strong and wide, front guard very wide and of special design (Reg. No. 608677), brought backward to protect rider and power unit; back guard wider and carried low.

Handle-bar.—Made from high carbon steel, stronger, provided with two independent fastenings; ends slightly dropped, giving a most comfortable position.

Foot-rests.—Adjustable; substantial rubbers; give most comfortable position.

Finish.—Black enamel, on Coslettised frame; wheels plated, with enamelled black centres edged with red lines; tank, aluminium with green panels lined red.

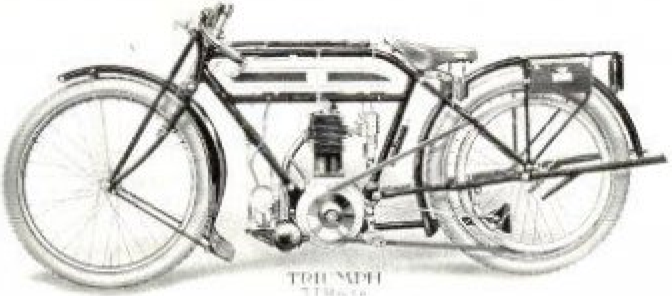
We reserve the right to modify or deviate from specification in minor details.

PRICE (for the United Kingdom only):	Instalment or Exchange Price.	Cash Price
Type G.—4 h.p. T.T. Roadster S.A. Three Speed Model	£65 0 0	£60 0 0
*Type D.—3½h.p. T.T. Roadster Fixed Engine Model	£54 0 0	£49 15 0
Type E.—4 h.p. T.T. Roadster Free Engine Model	£61 0 0	£56 0 0

*** N.B.—Type D will be supplied with 3½ h.p. engine 85 × 88 mm. = 499 c.c. as standard, but can be supplied with 4 h.p. engine 85 × 97 mm. = 550 c.c. to order.**

Prices include a beautifully bound leather log book, containing many riding hints and other most useful information, and include insurance coupons against accidents, etc.

3½ HP TRIUMPH TYPE F.



T.T. RACER FIXED ENGINE MODEL.

Engine 85 × 88 mm.

W. Whittall, writing in "The Observer," says:

In the years 1903 and 1904, it looked as though Motor Cycling had taken a permanent hold of the younger generation of those who used the roads, and that nothing remained to do but to develop the machine, and to built up a sound and permanent industry. But in those days the machine itself was unreliable to a degree, and in spite of all the efforts that were made to improve its dependability, it really began to look as though the task were hopeless.

And at last Motor Cycles almost ceased to be made in the factories of Coventry.

There was one firm, however, which never wavered in its opinion that one day all the difficulties would be overcome, and Motor Cycling would come into its legitimate own. That firm was the Triumph Cycle Company, to whom credit is due for its unwavering faith in the possibilities of the future. The influence for good which the Triumph Company has exercised on motor cycling is almost incalculable.

IMPORTANT.—A large percentage of engine troubles arise from faulty lubrication. Carefully read instructions on page 34.

SEE SEPARATE CATAOGUE FOR SPARE PARTS AND REPLACEMENTS.

3½ h.p. "Triumph." Type F.

T.T. RACER FIXED ENGINE MODEL.

Specification.

Engine.—Single-cylinder, 3½ h.p., 85 × 88 m/m bore and stroke (TRIUMPH manufacture throughout); main shaft runs on caged ball-bearings; Decompressor; TRIUMPH Registered Design Variable Pulley; large M.O. valves, interchangeable; extra large and heavy rim flywheels; adjustable tappets with vertical lift; effective silencer, with extension pipe to rear wheel.

Carburetter and Control.—Patent carburetter, very economical and easily dismantled with registered design handle-bar control (Reg. No. 513548/'07); extremely handy and easy of manipulation.

Ignition.—Bosch high tension ball-bearing magneto, waterproof; handlebar control; chain driven (Renold), with oil-tight and dust-proof aluminium gear-case for chain.

Frame.—Exceptionally strong, curved back, extra low; TRIUMPH Patent Spring Forks (No. 12165/'05), felt buffer and spring; front rim brake; rear foot brake, operating from foot-rest lug and acting on belt rim, made neater and stronger; composition shoe pad, gives powerful grip, and non-glazing; no pedals.

Wheels.—26 in. × 2¼ in.; extra strong rims; 2¼ in. tyres.

Tank.—Re-designed and improved, made with only one longitudinal seam, sunk and rivetted end; semi-automatic drip feed lubricating pump; petrol injector; petrol gauge (Cox's Pat. No. 9679/'05), tells amount of fuel in tank by registering finger and dial on top of tank; quick detachable filler caps; gauze strainers for petrol and oil; needle valves to petrol supply and petrol injector; petrol sump to drain tank to carburetter; strong and neat attachment to frame. Capacity: Petrol, 1½ gallons: oil, 1 quart.

Transmission.—TRIUMPH ⅞ in. rubber V belt on deep section pulley (Variable Pulley highest gear 3¾ to 1, lowest gear 4½ to 1); belt rim securely fitted to back wheel.

Stands.—BACK: Fixed to fork ends, does not interfere with removal of back wheel; spring clip with automatic fastening (Pat. No. 25014/'09). FRONT STAND: Fitted to front forks, serves as mudguard stays when not in use (Pat. 17946/'10), independent of hub spindle.

Carrier.—Light and strong tubular carrier (Pat. 17947/'10).

Saddle.—Semi-racing, very comfortable, low position.

Toolbags.—Greatly improved pannier bags, provided with locks and special fastener buttons, securely fixed to carrier; complete set of tools with improved tool-rool.

Mudguards.—Strong and wide, front guard very wide and of special design (Reg. No. 608677), brought backward to protect rider and power unit; back guard wide and carried low.

Handle-bar.—Racing pattern as illustrated; provided with two independent fastenings.

Finish.—Black enamel on Coslettised frame; wheels plated, with enamelled black centres, edged with red lines; tank, aluminium, with green panels, and lined red.

Position.—Adjustable footrests, allowing for a variety of positions.

We reserve the right to modify or deviate from Specification in minor details.

PRICE (for the United Kingdom only):	Instalment or Exchange Price.	Cash Price.
*Type F.—3½ h.p. T.T. Racer Fixed Engine Model, as illustrated	£54 0 0	£49 15 0

*** N.B.—Type F will be supplied with 3½ h.p. engine 85 × 88 mm. = 499 c.c. as standard, but can be supplied with 4 h.p. engine 85 × 97 mm. = 550 c.c. to order.**

Prices include a beautifully-bound leather Log Book, containing many riding hints and other most useful information, and include insurance coupons against accidents, etc.

Exclusive Constructional Details
of the
4 h.p. Triumph Motor Cycle.

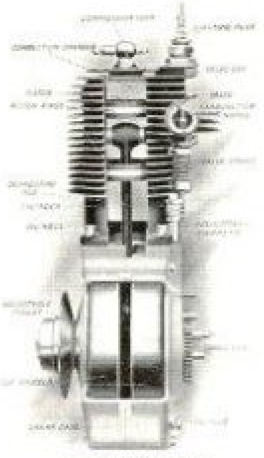
TRIUMPH ENGINE. This is by far the most important unit of a Motor Cycle, and from actual experience, extending over a long period, we know we have obtained the maximum efficiency, reliability, and flexibility in the Triumph Engine. This long experience recorded in the progress of the Triumph Motor, has given our designers and engineers the advantage of thoroughly understanding the air-cooled motor cycle engine, avoiding its weak features, and developing its strong ones.

We were the pioneers of the medium weight single cylinder, and have pinned our faith to this type throughout, and it is proof positive that our developments have been in the right direction, as to-day it is definitely agreed that the single cylinder is the most efficient engine extant.

All Triumph engines are made throughout in our own Works, by the most skilled of our men. Every part is closely inspected and gauged at each stage of manufacture, and finally the complete machine undergoes a test on the road in the hands of experts, who can detect in a moment any fault in the running, and can just as quickly locate the seat of trouble. The consequence is that the Triumph Motor comes into the rider's hands perfect in every respect and can be taken from its packing ready for the road (lamp and horn are extras.)

4 H.P. TRIUMPH ENGINE

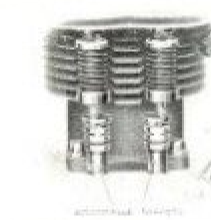
The dimensions are 85 × 97 m/m bore and stroke, giving a piston displacement of 550 c.c. rated at 4 h.p. The compression is such to ensure easy starting, flexibility at all speeds, and to preclude pre-ignition and knocking on hills.



4 H.P. TRIUMPH ENGINE

The valves placed side by side, with the exhaust in the front position, so that air currents impinge direct on it, are of large dimensions. Both are mechanically operated, giving a positive action, and quick opening and closing. The tappets are adjustable to allow for any wear. We are still retaining the solid tappet in preference to the spring one, having conclusively proved that the greater liveliness of the engine with this employed, outweighs the slight advantage of increased silence peculiar to the springs. An extra crankcase air release is fitted which effectively prevents oil oozing on to the outside of case.

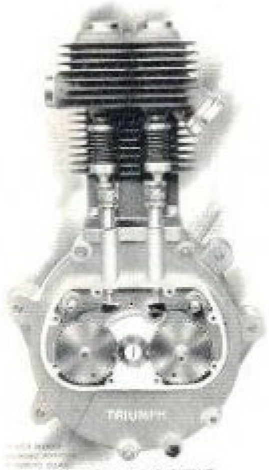
FLYWHEELS. The design of these, is a most important factor in the running of a motor cycle engine. To obtain that desirable flexibility, which is an outstanding feature of the Triumph engine, the flywheels have the majority of the weight in their rims. It is not possible to obtain sufficient weight from a steel forging, without making it unduly large and bulky; in consequence, so as to obtain the neat overall of the flywheels, and crank case as a natural sequence, we drill the steel rims of the flywheels, and then press in a special composition metal far heavier than the steel removed. With this weight in the rims, and all reciprocating parts perfectly balanced, we obtain an engine extremely flexible at all speeds, and with capabilities of quick acceleration, after being retarded on hills and in traffic. Ball bearings are fitted to the main shaft as a further aid to the easy running of the engine.



Some of our customers find it convenient to have their engines overhauled locally instead of sending them to our Works. When this is done, we wish to draw special attention in respect to the trueing up of the flywheels which is a very important and difficult undertaking. As a guide to the adjustment being correct, we have drilled a hole through each of the flywheels, through which the tappet rod stem should pass if they are in perfect alignment. Whilst held in this position the nut of the crank pin should be locked, and the flywheels will be accurately assembled.

We recommend the use of the tappet rod stems for the reason that their diameter coincides with the holes in the flywheels, and to obviates the use of an additional tool.

CYLINDER. This is made in one piece, and consequently is free from the disadvantages inseparable from the detachable combustion head type. It is a beautiful piece of work, with radiating fins cast deep and thin, providing ample and equal cooling surface. The walls are of even thickness ground to an exact size, and present a surface like polished glass.



TRIUMPH 4 H.P. ENGINE

It will be noticed that the radiating fins are not continued right down the cylinder; we find that this is not necessary as the heat generated is negligible lower down and can be effectively dealt with by the plain cylinder walls. This means a cleaner and cooler engine as there are no deep receptacles to harbour dirt and dust which are both non-conductors of heat.

PISTON. The Triumph piston receives most careful attention. A light casting is used, ground most accurately and scientifically treated which gives it ample strength to withstand the heavy explosions and heat without distortion.

Two stepped rings are used, one at the top, and the other at the bottom. This method is superior to fitting both rings at the top, as it ensures more even wear of the cylinder walls, the wear taking place over the whole length of the piston travel, instead of at the top only.

With unequal wear of the walls, adequate lubrication is difficult to obtain, resulting in loss of power, knocking, and undue wear, whereas with the Triumph design, efficient lubrication is certain, compression is retained for a longer period, and more power is obtained.

The connecting rod is made from a high grade steel, light in construction; the gudgeon pin, carrying the connecting rod is a tapered driving fit in the piston, which prevents it rotating, and eliminates any extraneous parts which are likely to come adrift and cause injury to the engine.

This is a detail which shows the accurate and perfect workmanship of the Triumph engine, and it is interesting to note that we are the only makers whose workmanship is sufficiently accurate to enable this simple method of fixing to be used with perfect safety. In every other instance some additional form of locking has been found necessary to ensure security against loosening.

In removing gudgeon pin, care should be observed to see that no undue strain is placed upon the piston, as the latter is light and easily distorted. Tap with a metal punch the side marked "out" and at the same time get someone to hold piston securely the opposite side to prevent connecting rod and other parts being strained. In replacing, the end

marked "out" on gudgeon pin goes into the end marked "in" on the piston. Having completed this undertaking, test same carefully with a pair of calipers, to see that the piston is not oval, if slightly oval tap gently the end marked "out" on the gudgeon pin, and this should bring it true again.

Although giving the above directions, please note that we always prefer overhauling the engine ourselves, and if possible we like to have the complete machine, so that we can thoroughly test it before sending away to see that the machine in general is in good order.

When fitting new piston rings, be careful to thoroughly clean carbon deposit which may have accumulated between the grooves of piston.

TRIUMPH MOTOR FRAME. We have given particular attention to the design and construction of the Triumph frame. Our vast experience of bicycle frame building, of which we have manufactured many hundreds of thousands, has proved a great help in designing our Motor frame adequately strong to withstand the heavy strain of a powerful engine driven under load, the ever varying road shocks met with, and the twisting strains set up by riding over uneven road surfaces. Even the drastic treatment meted out on Colonial roads has failed to detect a single weakness in the design and construction of the Triumph frame.

The rear portion presents a graceful curve and provides a low saddle position. It is an easy matter to sit astride the saddle and reach the ground with the feet. In many cases the carrier obstructs the lowering of the saddle, but with the Triumph, the carrier is coupled to the mudguard itself, and does not in any way interfere with the saddle position. The one piece ball head is very strong and of ample length to ensure easy steering; provision is made for lubricating the top and bottom ball races.

The mudguards are ample and efficient, well fitted to protect the rider from mud splashes. The front guard is of quite a special design (Registered No. 608677) following somewhat on car lines, with the extension piece wide and neatly curved over the front wheel; the guard gradually widens towards its base, and at the bottom slopes backward, thus protecting the rider's feet, magneto, and power unit. The back guard is wide and carried to a point well below the plane of the footrests.

The footrests are adjustable, thus making provision for riders with either a long or short reach, and are so designed that in case of machine falling over accidentally, the footrest takes the brunt of the fall, and protects more vulnerable parts.

Plain bearings are used in the bottom bracket which prevent the cranks rotating when the machine is in motion, and as this bracket is eccentric, the chain is adjusted from this point and does not interfere with the setting of the back wheel.

Short stiff cranks (5½ in.) are fitted which allow the engine to be swung over compression more easily when starting, with the aid of decompressor.

HANDLEBAR. This is made from high carbon steel, which is very strong, and to a certain extent elastic, relieving the hands and wrists of those small vibratory shocks which are not quite fully absorbed by the spring fork. The stem of the handlebar accurately fits the fork stem, and is locked in position at the top by the usual head clip. The stem of the bar is coned out and split at the bottom end and into this is fitted a wedge connected with the top of the handlebar lug by a long bolt. With both of these devices locked, the stems are to all intents and purposes one solid piece, giving no opportunity for the handlebar to twist in the riders' hands, however much strain may be placed upon them. The ends of the bar slightly dip to give a comfortable grip in conformity with the low saddle position. The inverted levers, one for the front brake, and the other for the exhaust valve lifter, impart a feeling of security in acting as a lock for the fingers.

The carburetter and magneto controls are mounted on the handlebar, and can be regulated without removing the hands from the grips.

TRIUMPH PATENT SPRING FORKS. (Pat. Nos. 12165/'05 and 24648/'10). The great advantage Triumph Spring Forks possess over all other designs serving a similar purpose, is that there is but one movable joint, and that is mounted on ball bearings. Freedom of movement is in consequence given full rein, wear is a negligible quantity, and no side-play is possible. The large spring fitted at the top of the forks gives a sufficiently wide range of movement in a fore and aft direction, to insulate the rider from road shocks, and the machine from vibration. The common fault of bouncing inseparable from some spring forks is not present in the Triumph, due to its scientific design and construction, and special form of spring employed.

It will be noticed that this spring fork is free from unsightly fitments, is beautifully symmetrical, and that the mudgaard follows the contour of the tyre instead of presenting an ever varying gap when the machine is driven under load.

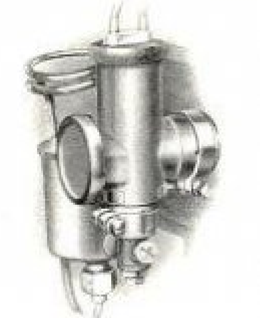
This springing device can be fitted to existing types of Triumph motors, using double springs.

There are no complications in the removal of the front wheel; with stand placed in position, slacken the two spindle nuts, remove the brake pads, which is but a moment's work, and the wheel drops out.

TRIUMPH CARBURETTER (Pat. No. 22345/'07) **and HANDLEBAR CONTROL** (Regd No 513548/'07). The Triumph Carburetter is designed on the float feed principle, with a single jet and air adaptor. A fixed size of jet is used as standard which can be varied by fitting a larger or smaller jet if desired.

Piston valves, operated from the handlebar, control the throttle and air, so that after a little experience the rider is able to obtain a very accurate mixture.

A metal cover, gauze lined is fitted over the air ports which prevents dirt from entering, and the gauze lining catches the petrol sprays which are drawn into the cylinder with the next induction stroke, and thereby economises petrol consumption.



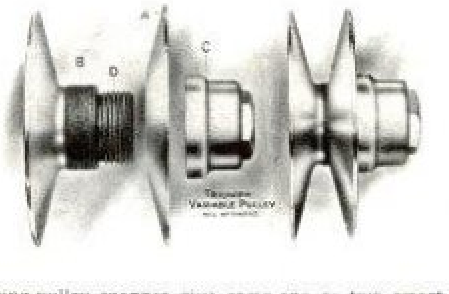
To remove jet and float chamber loosen screw and remove nut which fastens petrol pipe to tank leaving nut which is screwed to float chamber in place. Float and jet chamber will them come away from mixing chamber.

For purpose of dismantling cylinder, remove float chamber as above and detach body from engine.

We are fitting a limited number of Semi-automatic Variable Jet Carburetters, as illustrated on this page. This carburetter can be used as a single lever control if found more convenient for instance, in dense traffic, but it is inadvisable to generally requisition the semi-automatic action as greater economy can be obtained by the proper use of the air lever.

The variation in the size of the jet is obtained by fitting a tapered needle to the throttle. This slides within the jet and provides minute variations between minimum and maximum sizes.

VARIABLE PULLEY (Reg. No. 513250/'07). This device is fitted to all Triumphs, and allows the gear to be varied from 4¼ to 1 to 6¼ to 1, and is extremely useful when used with a single gear or in conjunction with the Three Speed.

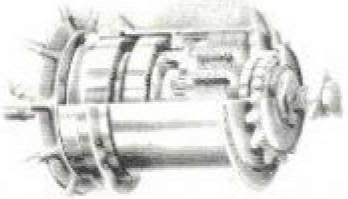


The one view of the pulley shows it assembled as when fitted to the engine shaft, whilst the other depicts the movable or adjustable flange and locking cap separated.

Should it be necessary to remove the pulley from engine shaft, unscrew cap C and nut on end of shaft, place a metal disc on end of shaft, screw cap C on again, and using pulley spanner give same one or two smart taps with a wooden mallet, and the pulley will leave the shaft quite easily.

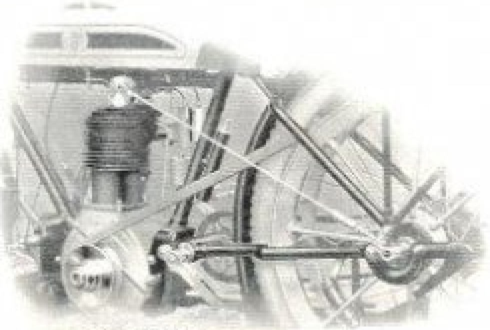
STURMEY ARCHER THREE SPEED GEAR, with TRIUMPH GEAR AND CLUTCH CONTROL.

This gear is embodied in the rear hub: it is designed on the epicyclic principle giving three speeds, with a free engine multiple plate clutch, available on each gear. Two epicyclic trains are used on the top gear, these are both locked and drive solid. On the second gear, only one is locked and the gear is reduced through one train. On the low gear, both trains are in action, and a double reduction is obtained. The gears may be changed without releasing the clutch, although it is advisable to momentarily lift the exhaust valve to effect a smart change.



The choice of the gear is determined by the position of the sliding pinions which may revolve independently, but are always moved together longitudinally. This movement is effected by a hand lever fitted on the right side of the machine, coupled to a quadrant fitted to the lower horizontal tube, having double locking internal plungers.

This lever and quadrant is a special Triumph feature, which simplifies the change of gears. The quadrant is covered in to exclude dust and grit, and is connected with the striking rod of the gear in the usual way.



TRIUMPH
3 Speed Gear Control

The position of the lever is just in front of the driver's knee, the most handy position, and it slips from gear to gear at a touch, without ever changing its position automatically.

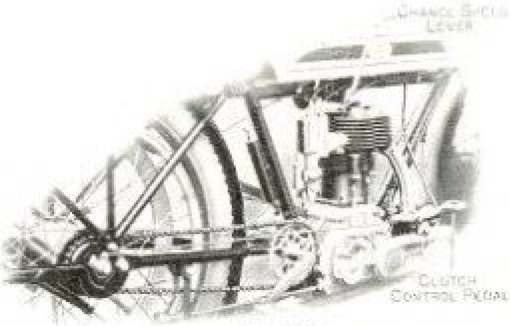
The clutch is operated by a toe and heel pedal—another Triumph feature—on the right side, operated from the footrest.

OTHER IMPORTANT FEATURES OF THE GEAR are—

The engine can be started by a push of the Pedal when the back wheel is on the ground.

The gears can be changed at any time without declutching by a simple movement of the change speed lever. The gears always being in mesh cannot be damaged providing the adjustment is correct.

The top gear is a solid or direct drive, on which most of the running is done, and by a movement of the change speed lever, the gear can be instantly reduced to second or third speed.



TRIUMPH
Gear and Clutch Control.

The clutch, with gentle engagement, enables the rider to glide away from a standing start, and on hills, with the low gear engaged, a start can be easily effected. The low gear also simplifies the control of the machine in traffic.

TABLE OF AVAILABLE GEARS.

Ratios—1 : 1.57 : 2.42.

High Gear.	Middle Gear.	Low Gear.	High Gear.	Middle Gear.	Low Gear.	High Gear.	Middle Gear.	Low Gear.
3¼	5.12	7.85	4½	7.07	10.86	5¾	9.04	13.89
3½	5.5	8.45	4¾	7.46	11.48	6	9.43	14.5
3¾	5.9	9.07	5	7.86	12.09	6¼	9.73	15.1
4	6.29	9.66	5¼	8.26	12.68	—	—	—
4¼	6.68	10.25	5½	8.65	13.29	—	—	—

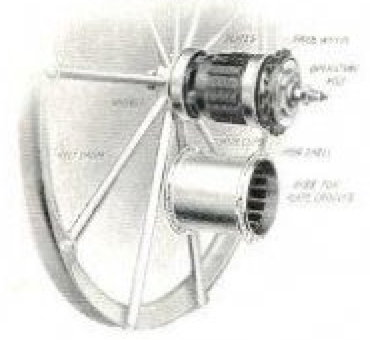
Instructions in respect to "Wheel removal," "Adjustments," "Running troubles," etc., are given later in catalogue, see General Riding Hints.

If any information is required as regards overhaul and adjustment of the 3-speed Gear our Agents as well as the manufacturers of the gear (The Sturmey-Archer Gears, Ltd., Lenton, Nottingham), will be pleased to attend to the matter promptly. An application to the latter Company will in most cases expedite matters.

TRIUMPH FREE ENGINE PLATE CLUTCH (Pat No. 28490/'07). The pleasures of motor cycling are greatly enhanced with the aid of this device. It places at the riders disposal a machine which is quite as handy as a car, and can be started like one, at the same time being infinitely more mobile, and driven at a fraction of the cost.

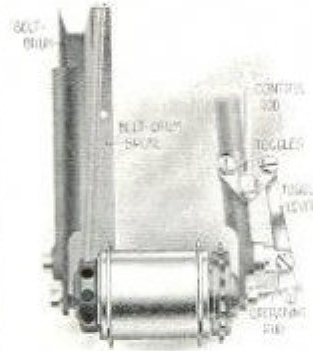
Previous to the introduction of this refinement, the one great objection to motor cycling was the running mount, which demanded a certain amount of proficiency and agility, but with the embodyment of this clutch, mounting difficulties are overcome, as the rider can sit astride the saddle, and with the clutch disengaged start the engine with a thrust of the crank pedal, and it is then only necessary to gently insinuate the clutch by means of the toe and heel pedal, and the engine will take up the load, and machine move away without jar or jerk.

TRIUMPH FREE ENGINE PLATE CLUTCH PAT. No. 28490/'07



It is particularly convenient in traffic, as the clutch can be slipped, or if necessary, entirely disengaged, and the machine brought to a standstill, with the engine running, and likewise re-started without dismounting.

The clutch, which is embodied in the rear hub, has the appearance of a large barrel hub, and adds but little additional weight to the machine. In its construction there are a number of hard steel plates, half of which engage with the hub shell, and the other half with the axle carrying the belt rim. These plates are held in close contact with one anot er by coil springs, the tension of these being regulated by a control rod with external toggle, coupled to a pedal on the right side footrest. With the plates in full contact, the drive is absolutely solid; there is no end thrust, no waste of power, and the clutch will not slip under double load. With the spring tension released the plates are free to revolve, the engine is then free and the back wheel runs on a pair of ball bearings, as in an ordinary hub.

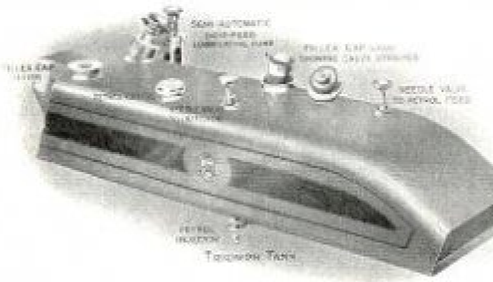


As a brake would be inoperative if applied to the belt rim coupled to the clutch, a brake drum is fitted to the right side of the back wheel, and the usual Triumph foot brake, operated from left side acts on this drum.

For lubricating a good brand of water-cooled oil may be used, such as "Triumph" or "Huile de Luxe" and the oil gun provided is very useful for carrying out this operation.

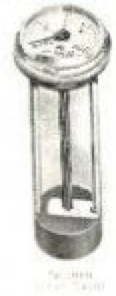
TANK. This is capable of holding $1\frac{1}{4}$ gallons of petrol and one quart of lubricating oil. It is of a very strong construction, with but one longitudinal seam, and the top is nicely rounded off. All fitments are of the very best.

The fixing to the frame is very substantial. Isntead of using clips to hang it to the top tube, two lugs with platforms are brazed to the lower horizontal tube; on these two platforms the tank rests, and it is held in position by locking washers which pass through the lugs and into substantial fittings in the bottom of the tank.

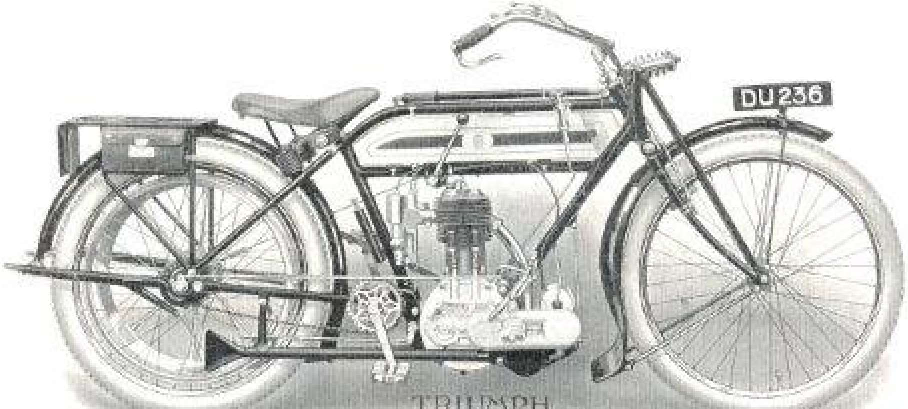


The tank is divided into two compartments, the fore part for lubricating oil, and the rear compartment for petrol. All taps are dispensed with, as they are apt to stick, and needle valves are substituted throughout. Removable strainers are fitted into both the oil and petrol orifices to trap any foreign matter; these orifices are large and have quick detachable caps.

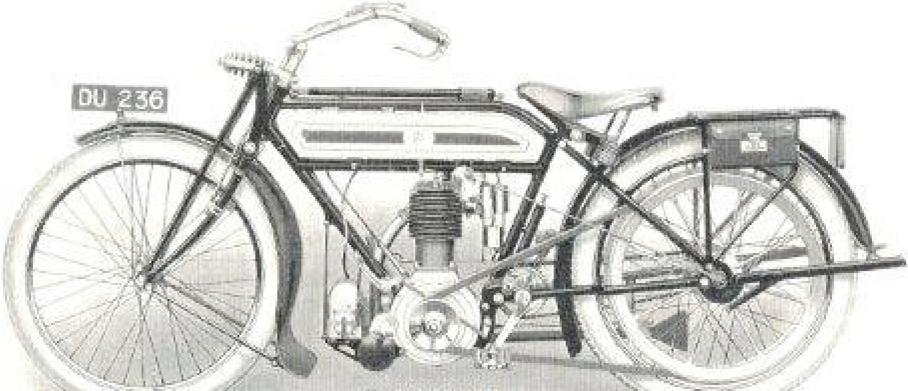
A petrol sump is fitted which allows tank to be drained to carburetter.



AN INGENIOUS PETROL GAUGE. (Cox's Pat. No. 9679/'05) is fitted inside the tank to register the amount of fuel. In the top of the tank is screwed a dial, spaced out in varying quantities, full, half-full, quarter full, empty. The registering finger of this is connected with a spirally shaped spindle, on which is threaded a cork running between suitable guides within the tank. With the rise and fall of the fuel, the suspended cork brings the indicating finger on to the mark of the dial corresponding with the quantity of fuel in the tank. This dial is conveniently placed so that it can be read from the saddle.



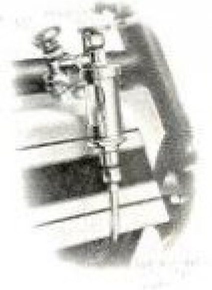
TRIUMPH
STURMEY ARCHER 3 SPEED WITH
TRIUMPH GEAR AND CLUTCH CONTROL



TRIUMPH
STURMEY ARCHER 3 SPEED GEAR WITH
TRIUMPH GEAR & CLUTCH CONTROL.

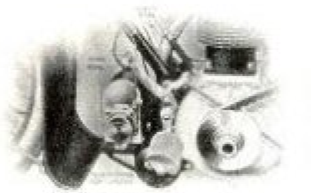
SEMI-AUTOMATIC LUBRICATING PUMP. It is of vital importance that the Motor receives a proper amount of lubrication. With the hand pump so much depends on the driver's thoughtfulness, and then the amount of oil in the crank case is an ever-varying one. With every fresh charge the engine is over-lubricated for the time being, and before the next charge is due, is reaching a point of under-lubrication, instead of the oil being at a constant level.

With the semi-automatic drip feed fitted to Triumphs, a constant supply of oil is fed into the crank case, it being only necessary for the rider to depress the plunger occasionally, to keep the drip feed at work. A sight feed is fitted so that it can be seen that the pump is working properly. After a little experimenting the rider will know the best position for setting the regulator; no hard and fast rule can be laid down, but it can be estimated that a pumpful is required for 15 to 20 miles solo, and 10 miles with sidecar attached, averaging 20 m.p.h.; more or less in proportion to speed.



When it is necessary to give full charges direct, as in the case with a new engine, open regulator fully and depress plunger, which will immediately return.

When the machine is not in use, depress plunger fully, and lock in position with clip. This is a better way then closing the regulator, as the latter causes the oil to ooze through stuffing box on to the outside of tank. Should the nut over the stuffing box, *i.e.*, nut just beneath nob of plunger, require adjustment, care must be taken that this is done without interfering with the action of plunger.



Should the need arise for the plunger to be dismantled, the method is to remove the three screws fixing to tank, disjoint the connection at the sight, thus providing for a complete removal from the tank. The screwed ring in the bottom of the tube should then be removed, and the knob screwed off the plunger, taking care that in this latter operation, the plunger is not damaged or marked in any way.

MAGNETO CONTROL. The magneto is controlled by means of a Bowden wire connected with a small lever fitted to the left side of the handlebar.

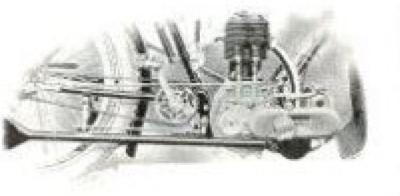
TYRES. Very substantial tyres are fitted to Triumphs. These are 2¾" Clincher de Luxe, which accurately fit 2¼" rims. The tread is thick, and armoured with large rubber studs which very effectively prevent any proclivity to skid. The central row of studs is joined up, giving a continuous running tread which materially increases the mileage. These tyres are made by a firm with the most extensive and lengthy experience in Motor Cycle tyre building, whose reputation for careful workmanship and good material is second to none.

The illustration of section is from an actual photograph, and reduced exactly to half size.

LUBRICATING OIL SQUIRT. This device is supplied with every machine and by its use allows the oil ways to be readily accessible. It is housed in a neat container fitted to the seat column tube.

The illustrations show it closed, and with the spout extended. Closed it measures 6", and extended 10", and it can be easily charged from the oil supply in the tank.

SILENCER. A particularly effective form of Silencer is used. The waste gasses pass to an expansion chamber, placed neatly between the crank case and magneto, through a large pipe free from acute bends. To the expansion chamber is coupled a long pipe, which is carried as far back as the rear wheel. This is widened and splayed at the end, and has the effect of well-nigh silencing the exhaust, and at the same time avoiding any back pressure. Just sufficient noise is heard from the exhaust to indicate the running of the engine. No cut-out is fitted.

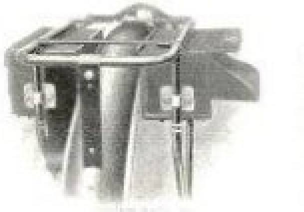


BRAKES. The back brake grips the belt rim, and is operated by means of a foot pedal from the foot rest. Although this pedal is coupled to the same crosspiece to which the footrests are attached, there is no likelihood of its getting damaged in case of a fall, as the footrest would take the brunt of the fall, and the latter being made of mild steel could be easily re-straightened without fear of fracturing.

This brake is extremely powerful, and will keep the machine in perfect control.

The front rim brake is operated by an inverted lever on the right side of handlebar, the brake pads are readily detached when wheel removal becomes necessary. The brake blocks of both back and front brakes are made of non-glazing material, giving a powerful grip in wet or fine weather.

CARRIER AND PANNIER TOOLBAGS. (Pat. No. 17947/'10). The carrier is of a light tubular construction, at the same time being very strong; all joints and crosspieces are brazed throughout, so that there is nothing to rattle loose. It is fitted to the frame so as not to interfere with the saddle position and is coupled to the fork ends independently of the wheel fastenings.



Between the double stays, special brackets or steel shelves are fitted to take the pannier toolbags which are thus protected from mud, and being recessed protrude but little beyond the width of the carrier, and so are of no inconvenience when mounting or dismounting. This leaves the top of the carrier quite free for luggage.

The pannier toolbags are of stout construction, and of sufficient capacity to accomodate tool kit and spares.

SADDLE. This is the most comfortable saddle ever fitted to a motor cycle. The seat is pan shaped, so that you rather sit in it than on it, and the top is padded. Compound springs are used which ride easily, without any tendency to bounce, and the back of the saddle is cut away to give a low saddle position.

It is made for us by the well-known saddle specialists Messrs. Brooks and Co., and the material used throughout is of the highest possible grade.

Bosch Magneto Parts Outfit

CONTENTS:

Contact breaker complete.
Fastening screw for contact piece.
Washer for fastening screw for contact piece.
Long flat spring for bell crank lever.
Two strengthening springs for long flat spring.
Two fastening screws for flat spring.
Fastening screw for contact breaker.
Carbon and spring for contact breaker.
Carbon holder with carbon and spring.
Two fixing screws for carbon holder.
Carbon and spring for carbon holder.
Spring carrier complete.
Two fixing screws for end plate.
Spanner for screw, and platinum screws.

Price - £1 10 3 Postage 3d. extra.

VALVE EXTRACTOR (Pat. No. 26100/'08). This ingenious little tool has been designed to simplify valve removal, and the few following particulars will make its use quite plain. Turn the pulley until the valve is fully lifted and spring compressed. This will allow the extractor to be placed in position, the top jaw clasping the valve guide, with the lower portion hooking under spring cup. Turn the engine pulley further when the valve tappet and stem will fall; the cotter can then be extracted, and likewise the valve, after first removing the valve cap. With the spring and cup remaining in position, it is an easy matter to slip a new valve in position.

Triumph Tool Roll.

BELT PUNCH. This is a hollow steel drill in the form of a cutter, which, when screwed down, will pierce a clean hole through the belt for affixing a fastener screw. A fibre washer is recessed in the base to prevent drill becoming damaged or blunted.

This is an extra. Price 2/3. Postage 2d.

SPEEDOMETERS. We can with every confidence recommend the Isochronous Speedometer (Bonniksen's Patent). We have since its production tested several of these instruments, and they have given every satisfaction. They are made suitable for Triumph Motor Cycles. Price **£4 4 0.** Postage **6d.**

TRIUMPH ACETYLENE HEADLIGHT AND GENERATOR. This is provided with a suitable bracket to clip on the handlebar stem. The headlight is made of rolled brass, and fitted with a genuine Mangin Lens Mirror, ensuring a penetrative light; it is equipped with a Roni burner, and bevelled plate glass convex lens.

The generator is of the drip feed type, the water being regulated by a rotating screw on the top of the water chamber. This can be conveniently manipulated by the rider from the saddle. Price **£1 18 6**

THE LUCAS MOTOR CYCLE PROJECTOR SET. This is fitted with a special Mangin Lens Mirror and Parabolic Reflector, a combination which supplies a powerful penetrative light clearly throwing up objects a considerable distance, at the same time suffusing the light the width of the road near the rider.

Patented side sockets are fitted, which permit the lamp to be swung round for inspection purposes without removing from bracket.

The Generator is of the drip feed type, and the fixing of the carbide chamber is effected by a patented method, a slight turning movement serves to fix or unfix the container. Price **£3 0 0**

THE LUCAS MOTOR CYCLORN. This is a patented and Registered pattern of an extremely neat design, and which it will be noticed from the illustration, lies snugly along side the handlebar. This horn sounds a penetrating but at the same time melodious warning. Price **18/-**

Spare Parts.

Spare Parts specially recommended to be carried.

Sparking Plug	**5/-** each	Belt Fastener with spare links	**1/6** each
Exhaust Valve (complete) ...	**7/6** each	Belt Punch	**2/3** each
1 ft. of Belt 1"	**2/3** each		

See separate Catalogue for Spare Parts and Replacements.

Bosch High Tension

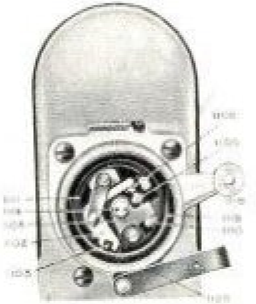
Magneto Electric Ignition.

With Ball Bearings.

HOW TO LOCATE FAULTS.

Should any irregularity in the ignition occur, the following method should be adopted to ascertain the reason for the fault. The conducting wire should first be detached from the magneto, and a fresh wire put into the carbon holder and brought into such a position as to leave a distance of one millimetre between its end and the magneto.

Set the timing lever to position of full advance, and rotate the magneto by pedalling the machine. If a powerful spark passes regularly between the magneto and the end of the wire, it is clear that the magneto is in working order. The fault must them be looked for in the cable or sparking plug. The cable should be attached again to the magneto, and the sparking plug tested, and if necessary replaced by a fresh one. The wire should also be tested, and care should be taken that the terminal on the end of the cable does not come in contact with any portion of the magneto or engine.



The contact breaker cover should now be removed for the purpose of discovering whether, when the fibre block of the bell crank lever enters the opening of the steel segment 1119, the lever 1102 makes contact with the contact piece 1106, and whether the contact is broken when the fibre block passes out of the recess. The distance between the platinum points should then be ·3 mm. Should this not be correct, adjust accordingly. If this is in order, unscrew the screw 1114 by means of the spanner, remove the contact breaker disc, and examine the platinum points to see whether their surfaces are clean and smooth. If they are not, they should be well cleaned with petrol to remove any oil or dirt from them. If the surface of the platinum point is not even, it may be treated with a little fine file. The surfaces between the spring 1128 and screw 1114 should always be kept perfectly clean. Screw 1114 should always be well tightened up.

Briefly, the method of tracing a defect on the magneto is as follows:

First ascertain by attaching the wire to carbon holder whether the machine is in order, then change the sparking plug, examine the cable connected to same, find out whether the lever of the contact breaker works properly, and finally remove the contact breaker disc and examine the platinum points.

It sometimes happens in damp weather that the fibre bush of bell crank lever of contact breaker swells, the result being that the lever does not work freely, consequently no spark is obtainable. Examine this carefully, and if there are any signs of stiffness in its action, detach lever, and alternatively polish the pin with fine emery-cloth or very slightly ease out the fibre bush with a small round file.

CARE AND MAINTENANCE. The armature runs on ball bearings, which should be lubricated once a month by injecting a few drops of oil into the chambers marked "Oil." All the rest of the parts of the apparatus require no lubrication, especially the contact breaker, which is designed to work without oil. It is therefore necessary to prevent any oil from getting on to the contact breaker and its platinum contacts.

HOW TO TIME THE MAGNETO.

The magneto is driven from the engine by means of a Renold chain ($\frac{1}{2}'' \times \frac{1}{4}''$ pitch) running on two sprocket wheels, one being fitted to the engine by means of a key and the other a tapered fit to magneto.

To time the magneto remove the chain cover, and loosen sprocket wheel B by partially unscrewing nut A. Do not take the wheel off, but allow it to lie loosely on spindle. Remove compression tap from top of cylinder, and by means of a piece of wire; or other suitable object, ascertain that the piston is at the top of the firing stroke.

To obtain the firing stroke, turn the engine pulley forward till you see the inlet valve close, immediately this valve closes, the piston is on the ascendant, and when it reaches the extreme limit, this is known as the top of the firing stroke. Next remove the upper portion of the end plate of the magneto (chain wheel side) being careful not to damage carbon brush while doing so.

Then bring the armature into the position shown in the accompanying sketch (first ascertaining that the platinum points are somewhere near the breaking point), and having set the gap E to 7/32" wide, couple up the chain wheel to the spindle.

Anti-Clockwise

N.B.—The magneto illustrated is the improved Bosch, the vulnerable parts of which are enclosed, and thus thoroughly protected from water and dust.

A Few Hints to the Learner.

When the machine first comes into the rider's hands it will be ready for the road, it only being necessary to fill tank with petrol and oil.

Place the machine on the stand, remove the cap farthest away from the head, fill up with petrol, and then remove the cap nearest the head and fill compartment with a good brand of water-cooled oil. It will be noticed that gauze strainers are fitted to each of these orifices to trap any foreign matter in the petrol and oil.

Seeing the engine is new, give three charges of oil—fuller instructions on this point of lubrication are given in a later paragraph—then turn on petrol by opening needle valve, placed at the end of tank, controlling petrol between tank and carburetter, hold up needle valve which is on top of float chamber of carburetter, until the petrol is seen to flow through a small hole on top of the chamber. Open compression tap on top of cylinder, and by opening needle valve just over cylinder head in tank, inject a small quantity of petrol into cylinder: this will facilitate starting. Close needle valve and compression tap.

Mount the machine whilst still on the stand, fully advance the ignition lever, *i.e.*, this is the small lever on the left side of the handlebar, which should be pushed out to advance. The two levers on top of right side of handlebar are air and throttle respectively, the smaller lever controlling the air, and the larger one controlling the throttle (petrol): close the air lever. The throttle lever should be advanced (open) not more than quarter inch from the stop.

Now hold up exhaust valve lifter under left grip, and pedal one or two turns sharply, drop lever, and engine should immediately fire. Repeat if not successful on the first occasion. On the first explosion reduce the amount of gas and give air to suit if necessary. Allow engine to run for a quarter of a minute so as to get it fairly warm.

Disengage clutch by pressing down the toe pedal on right side of machine, just above the footrest, and drop the machine off stand. This can be done with the engine running when a clutch is fitted to the machine, but in this case keep foot on brake to prevent back wheel revolving and wearing tyre.

An alternative way of starting the engine is to stand astride the machine, bring engine over to the compression stroke—easily distinguished by disability to push it over compression—disengage clutch, bring pedal crank to its highest point, and with the exhaust lifter up, depress pedal sharply, instantly dropping the exhaust lever. On the first explosion adjust the levers as before mentioned.

ON THE ROAD. With the engine running, place the right foot on clutch pedal, and gently engage the clutch by depressing heel, at the same time slightly ease with the toe, when the engine feels the load. This will allow the clutch to slip somewhat, and permit the engine to take up the load gradually and smoothly. Should the clutch be dropped in too quickly, it will stop the engine.

To engage the clutch expertly requires a certain amount of practice, and the rider should not be satisfied until he can, at least on level roads, gently insinuate the clutch, so that the machine moves away without any jar or jerk. Until this is thoroughly mastered, it is advisable for the beginner to lower his gear to about 5 to 1, and also assist in starting the machine from rest by pushing off with the left foot.

With Three Speed Gear fitted to your machine, start the engine on top gear, then drop into bottom gear by bringing back the control lever on side of tank. In case the gears do not instantly engage, which is due to the machine being stationary, momentarily lift the exhaust lever, or wheel the machine backwards and forwards slightly, when you will hear them go home. An easy start can be affected on level roads, with or without sidecar attached, and with clutch engaged, by use of the decompressor on the low gear.

Control by means of throttle and air levers: use exhaust lift as little as possible. Do not forget to depress plunger of pump.

The back brake is operated from the left footrest. The front rim brake is applied by raising lever under right grip.

For difficult and dangerous descents, the engine can be made an effective brake. This is effected by retarding the spark, leaving the throttle a little way open, and with the air fully open. The retarding effect is greatly enhanced with a Three Speed, the middle or bottom gear being used.

N.B.—The changes should be made when the machine is travelling slowly, otherwise a very great strain is placed upon the gears and frame, and breakages may occur.

When baulked on a hill by traffic, operate the gears before disengaging the clutch, as the gears will not change correctly with the clutch out of action.

Should you meet with any difficulties during your novitiate, it is advisable to ask an expert's advice, instead of experimenting with the machine. It may be some slight thing you are doing wrongly, so do not blame the machine, as it has satisfactorily passed a severe test on the road in the hands of an expert, before leaving our Works.

LUBRICATION OF ENGINE. Engine lubrication is one of the most important factors in the running of a Motor Cycle, and we are now fitting a semi-automatic sight feed lubricator; with this, it is only necessary to set the regulator so that a pumpful is used every 15 to 20 miles solo, and 10 miles with Sidecar attached, averaging 20 m.p.h., more or less in proportion to speed.

So long as the pump is full, the feed will be regular, therefore it is only necessary to depress the plunger when fully extended. It is not necessary to wait until plunger has reached its limit of extension, as this can be done at any point of its ascent.

With a new engine, give three charges of oil. This can be done by opening regulator fully and working plunger, and the oil will be quickly discharged into engine. After giving the engine this amount of oil, return regulator to its normal position, *i.e.*, to drip one pumpful as per particulars mentioned above.

After emptying crankcase of oil, it is advisable to give two full charges.

IMPORTANT.—Do not forget to keep the pump working by depressing plunger.

When the machine is not in use, depress plunger fully and lock in position with clip. This is better than closing the regulator as this latter causes the oil to ooze through stuffing box on to outside of tank. Should the nut over stuffing box *i.e.*, nut just underneath knob of plunger, require adjusting, care must be taken that this is done without interfering with the action of plunger.

Should the need arise for the pump to be dismantled, the method is to remove three screws fixing to tank, disjoint connection on the side, thus providing for a complete removal from the tank; the screwed ring in the bottom of the tube should then be removed, and the knob screwed off the plunger, taking care that in this latter operation the plunger rod is not damaged or marked in any way.

Regularity is the keynote of successful lubrication and to haphazard oiling may be attributed such troubles as carbon deposit on top and sides of piston and the cylinder head, thus it will be found that the drip feed lubricator is far superior to the plunger pump worked by hand.

If ever in doubt as to whether the engine requires more oil, give the engine the benefit of the doubt. The worst that can happen will be a smoky exhaust, while the consequences of insufficiency are much more serious. Equally disastrous are the effects of using cheap and unsuitable oil, which is responsible for loss of power, burnt piston and rings, over-heating generally, and stiffness in starting. When on tour, insist on sealed cans of oil, Triumph, Prices' or Vacuum T.T. and absolutely decline any oil offered from an open tin or drum.

In Winter use water-cooled oil such as Triumph, Price's or Vacuum T.T. In Summer the air cooled quality of these brands will tend to cooler running, and a cleaner engine, especially when using a Sidecar. Remember that even with the best brands it is a good plan occasionally to drain off dirty oil in crank case, and re-lubricate with two fresh charges.

LUBRICATION OF TRIUMPH FREE ENGINE CLUTCH. We consider Triumph, Huile de Luxe or Vacuum T.T. good lubricants for clutch (not 3-speed clutch) but the rider must be careful not to oil too freely, otherwise the oil will ooze through the bearings and filler cap, run down the wheel spokes, and finally settle on tyre. Roughly speaking, a teaspoonful about every 250 miles should be sufficient, but should the clutch at any time get fierce, give a

little more. On the other hand, the remedy for a slipping clutch is to inject a few drops of paraffin through filler cap.

Should the clutch become stiff or gummy in the course of time, and the engine tend to propel the machine after the clutch is withdrawn, the remedy is to give the hub a thorough flush out, proceeding as follows:—Place the machine on stand, squirt petrol into the oil hole, close same, and spin the wheel by means of the tyre, while the belt drum remains stationary (clutch disengaged). Repeat until petrol runs clear when released. Re-lubricate with a couple of squirts full of oil.

LUBRICATION OF S.A. THREE SPEED GEAR AND CLUTCH. Sperm oil is best, but any good brand of thin cycle lubricating oil may be used. Do not use cylinder or other thick oils, and do not starve the gear. A little and often is the most successful method instead of big charges at given periods.

LUBRICATION OF BICYCLE BEARINGS. Remember to oil the bicycle bearings, *i.e.*, bracket, steering head, pedals, and in particular hubs and free wheel. Undue wear and unsatisfactory service are oftentimes attributable to the neglect of this important matter.

OVER LUBRICATING ENGINE. After having run the machine for a considerable time, should the rider find that the engine requires oil more frequently than when new, it is advisable for him to discover the cause and remedy it, instead of adopting the unsatisfactory method of giving more oil. The following may be causes of over-heating, and consequently a more constant call for additional lubrication: Deposit on top of piston and cylinder, faulty plug, platinum points of magneto dirty or worn, accumulation of dirty oil on the back of contact breaker or on armature. Tappet clearance not correct, the stem of the valves should just clear the head of tappets. Valves not lifting sufficiently—the correct lift for each valve should be $\frac{1}{4}$". Too rich a mixture, silencer pipe choked with carbon deposit and requiring to be cleaned.

FREE ENGINE CLUTCH. This is embodied in the rear hub, and is manipulated by a toe and heel pedal placed conveniently over the right footrest. This device allows the engine to be started while in the saddle, and with the road wheel down, thus eliminating the running mount.

Do not leave the clutch out of action when machine is at rest, as this places unnecessary strain upon the springs.

Always see that the screw at the end of operating lever is so adjusted that the point of the screw travels about 3/32" before commencing to compress the main clutch springs, *i.e.*, before a heavy resistance is felt to the movement of the lever.

Looseness between the outer and inner portions of the clutch hub, if very slight may be disregarded; if excessive, the wheel must be adjusted at the works, as the operation entails the use of special tools.

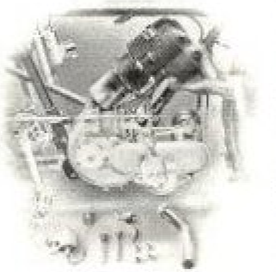
Sometimes when ascending a steep gradient, or when riding at high speed the engine suddenly commences to race while the speed of the machine does not increase. The cause is due either to the belt or clutch slipping. To find out which is the culprit, place the machine on the stand with the clutch in action, and against compression of engine, endeavour to turn back wheel.

In this way the rider can readily see which of the two is at fault. The remedy for a slipping clutch is to inject a few drops of paraffin.

Should the engine be difficult to start, which is sometimes due to the plates of free engine clutch gumming up in cold weather, place the machine on stand, and with the clutch engaged pedal the machine and the revolutions of the back wheel will materially aid the engine being swung over more easily.

We shall always be pleased to give a few instructinos with regard to the manipulation of clutch to potential buyers or present users of clutch models if they will call at our works during ordinary working hours, Saturdays excepted.

DISMANTLING CYLINDER. Remove sparking plug, compression tap, petrol and oil pipes, carburetter, also nut holding exhaust pipe to engine (special spanner provided), and finally the four nuts securing cylinder to crank case.



Lift cylinder, at the same time tilting it towards front down tube. Take care to see that the connecting rod touches the side of the crank case farthest away from the front down tube: the cylinder can then, with a little gentle manipulation, be removed.

It often happens that owners of machines, after having once dismantled cylinder are troubled with oil leaking between crank case and cylinder joints. This is probably due either to the surfaces not having been cleaned, or else they have been damaged in removing cylinder. The remedy in either case is the fitting of a paper washer soaked in oil.

In slackening off, or tightening the four nuts holding the cylinder, care should be taken not to complete any one nut at a time, but each nut should be given a turn successively, otherwise the cylinder is liable to be damaged or warped, and will not bed accurately on crank case.

ENGINE KNOCKING. Engine knocking on slowing down for corners is due to using too high a gear or else to carbon deposit on top of cylinder and piston. Roughly speaking, cylinder should be dismantled for cleaning deposit after every thousand miles. When engine commences to knock, at once reduce the amount of air. Another cause of knocking (noticeable only when running machine down hill) may be due to worn bearings or vertical play between the top ring and groove of piston. See page 37.

VALVES. Send valves to us to reface, instead of grinding them into their seatings. Better results will be obtained, and the seatings will last longer.

A frequent cause of inferior and uneven running, also excessive consumption of petrol due to blowback and sluggishness in picking up is to be found in weak valve springs. The springs both inlet and exhaust, are bound to weaken under continuous use, and should be renewed from time to time.

The following are probable causes of valves breaking :—

1. Under oiling, causing carbon deposit to accumulate on the walls of piston.
2. Valve seatings requiring attention. In this case cylinder should be sent to us to have seatings refaced.
3. Valves having insufficient lift, namely less than $\frac{1}{4}$".
4. Driving on exhaust lifter.
5. Too much clearance between valve stems and tappets, the stem of valves should just, and only just, clear tappet heads.
6. Running on too rich a mixture.
7. Running the engine at high speeds on a low gear.
8. Faulty ignition.
9. Running with spark retarded.
10. Platinum points dirty and incorrectly adjusted.
11. Running with cut-out closed and the holes partially covered with carbon deposit. In later models than 1912, the silencer pipe may be partially choked.
12. Engine being thoroughly out of tune.
13. Valve springs too weak or too strong.

VALVE TIMING OF ENGINE. Exhaust valve opens $\frac{3}{8}$" from the bottom of firing stroke, and closes dead on top. The inlet valve commences to open when the piston is at the top of the stroke and closes $\frac{1}{8}$" down the compression stroke.

HOW TO ADJUST TAPPETS. Release centre lock nut and adjust to the length required by holding bottom nut, and screwing the top nut either up or down to lengthen or shorten. When correct length is obtained lock the centre nut to the top nut securely.

SOOTED PLUG. When running slowly and engine has a liberal supply of oil in crank case, the points of the plug are liable to become sooted. An effective remedy is to open the gap between the points and the body of the plug. Engine misfiring at slow speeds is also an indication that the gap between the points and body of plug is too close, or it may be that the exhaust valve spring is weak.

PISTON RINGS. After some considerable mileage the top ring as well as the groove of piston, shews signs of wear, vertical play being the result. Consequently loss of compression and a peculiar noise ensue. To remedy this we are in a position to supply rings, five, ten, and fifteen thousandths wider than standard.

CARBURETTER AND LOSS OF COMPRESSION. When testing compression see that the throttle piston is open, otherwise a vacuum will be formed in the combustion chamber due to the previous charge having been swept out and no further charge allowed to enter.

SHORT CIRCUITING. If a machine is left out in the rain, before starting, the sparking plug should be carefully wiped dry, as this being wet, may cause short circuiting, and a start cannot be effected. See that high tension wire does not touch the cylinder.

BROKEN PETROL PIPE. If petrol pipe cracks or breaks, a piece of inflator tubing will effect a good temporary repair, or a short length of insulating tape may be wrapped round in several layers. An external binding of fine wire will strengthen the repair.

TYRES. Never ride tyres " board hard." The front tyre should be pumped just so hard that road irregularities are absorbed without striking the rim. The back tyre may safely exhibit a slight bulge when rider is sitting in the saddle with the machine at rest.

SPRING FORKS. Riding an extremely hard front tyre is responsible to a great extent, should a breakage occur to the spring fitted to the spring forks, the reason being that when riding at speed, the front wheel " hits " obstructions in the shape of uneven road surface, instead of rolling over them, which would be the case were the tyre softer. Consequently the blow instead of being partially absorbed by the tyre is transmitted entirely to the spring which naturally suffers.

BRAKES. Keep brakes adjusted close up to their respective rims. Rely upon back brake for regular work, use front one with care as an auxiliary in cases where steep hills have to be descended. Sudden application of front brake in grease, or on a corner, will lead to an accident.

After use the brake pads become shiny and lose a certain amount of their gripping powers. The surface should be roughened occasionally with the aid of a file.

DRILLING BELT. Belt trouble are more often than not caused by careless methods of drilling hole in belt. Care should be exercised in using a belt punch the correct angle and proper fit, so that it is impossible to drill the hole out of centre. We recommend the punch we supply for this purpose.

REMOVING BELT. The belt is more easily detached and replaced over edge of larger pulley. Put it on small pulley first and as far as it will easily go on top of large one. Then wheel the machine backward for a yard, and the belt will replace itself.

It is a good plan to slip belt off the machine when not in use: this relaxation allows it to retain its natural elasticity and prevents excessive stretching.

GEAR RATIO. A simple method of finding the gear ratio between belt pulley and driving wheel is as follows: Place machine on stand, make a mark on driving wheel with a piece of chalk or pencil, and a corresponding mark on belt pulley. Turn the driving wheel one complete revolution, and at the same time count the number of pulley revolutions. If the pulley revolves five or six times to one of the driving wheel, the gear will be five or six to one.

With the Three Speed Model, the gear ratio is found with the top gear engaged, the ratios being as shown on page 21.

HOW TO ALTER GEAR (Variable Pulley). Three pattern pulleys are supplied giving gear ratios of $3\frac{3}{4}$ to $4\frac{1}{2}$ to 1; $3\frac{3}{4}$ to 5 to 1; and $4\frac{1}{2}$ to $6\frac{1}{4}$ to 1 respectively. The outer flange is secured to the boss of the inner flange by means of a left hand thread and locked in position with a screwed cap having a right hand thread. To reduce or raise the gear, remove the belt from pulley, loosen cap and then the outer flange can be easily turned either to the right or left as desired. By doing this it allows the belt to lie higher or deeper in pulley, which thus gives the alteration in gear desirable.

SPARE PARTS. Do not allow spare parts to rattle about. Pack tightly with cloth or leather.

BICYCLE BEARINGS. Keep all bearings correctly adjusted, particularly wheels (see also clutch) and steering head.

ILLUMINATING FRONT NUMBER PLATE. It is required by law that the front number plate on a motor cycle be illuminated at night on both sides. Every rider should therefore see that his lamp is correctly focussed so as to conform to this section of the Act.

THREE SPEED MACHINE.

When changing gear, do so with a quick movement, and it is advisable to raise the exhaust valve momentarily.

Start the engine with top gear engaged, drop to middle or bottom gear for an easy start, particularly upon an up gradient or with Sidecar attached. Should gears not immediately engage this is due to machine being stationary: wheel machine backwards slightly, or momentarily lift the exhaust valve lever and generally the gears will immediately go home.

WHEEL REMOVAL. Remove belt; remove split pin holding silencer pipe in position and withdraw pipe from silencer box. Loosen nut holding brake shoe in position sufficiently far to allow the shoulder of nut to clear the lug, when brake shoe will drop out. Remove split pins from ends of gear and clutch rods. Disconnect both rods without interfering or altering the adjustments of axle fittings. Remove screw from locking plate on gear side. Slacken axle nuts with spanner provided and the wheel will fall out.

ADJUSTMENT OF GEARS. To adjust gears which should occasionally be tested, place control lever in adjustment notch which can be felt between top and middle gear position of gear operating lever, engage clutch, slacken small nut under spring box, then regulate the knurled spring box until the gears are quite free from belt pulley. When nearly in free position or between gears, a grinding or grating sound will be heard; this is caused by the teeth of sun pinions just slipping past faces of clutches; adjust until this has practically disappeared, then lock up the small hexagon nut under spring box.

ADJUSTMENT OF BEARINGS. The bearings are adjusted by the right side cone so that the wheel revolves freely forward without shake. A slight drag when wheeled backwards is not detrimental, being due to the plain bearings inside the free wheel, which is stationary when machine is running.

RUNNING TROUBLES. Should any trouble arise with the gear, it will generally be found due to wear on the operating rod joint, which can be adjusted as described in previous paragraph. A slipping clutch may be caused by the long clutch rod being too tightly adjusted, by stiffness of the clutch operating worm or connection through caked up mud or lack of lubrication, or by wear on the operating rod joint. See next paragraph for adjustment of clutch rod.

FAILURE TO RELEASE CLUTCH. Is due to too slack adjustment of the clutch rod, *i.e.*, too much play between the clutch worm nut and operating clutch rod. This adjustment can be made by releasing nut on axle at back of worm, then screw the worm to the right a little and re-lock nut.

In locking up nut, at the same time press down the operating pedal which will hold the worm, and prevent it from rotating with the nut.

SLIPPING CLUTCH. Is due to the worm nut pressing hard on operating clutch rod, and not allowing plates freedom to compress. Adjust as above, screwing the worm to left instead of right.

Before making the adjustment as mentioned above, wash the hub out with paraffin; this will get rid of the gummed oil which may be causing the trouble. Let paraffin drain away, and then re-lubricate with sperm or cycle oil of good quality.

Failures:

Their Causes and Remedies.

A.—The Motor Develops Fitful Misfiring; Plenty of Petrol in Tank.

(A) Examine sparking plug. If shorting inside, replace with a new one; if sooty, clean thoroughly with an old toothbrush and petrol. Adjust points until an ordinary visiting-card or a finger-nail can just pass between them.

(B) Supposing plug neither broken, sooty, nor badly adjusted, re-connect the high tension wire, and lay the plug on the cylinder so that the body only touches the metal (the cap on porcelain, with terminal and wire end, must not touch). Place machine on stand, and pedal. If the spark does not appear at every other revolution of the engine-shaft, insert a new plug. If not successful, look to magneto. (See page 31.)

(C) The electrical system is in good order, but misfiring still continues. Probably dirt has been carried from tank, choking petrol pipe; examine, and clean.

B.—Motor Suddenly Stops Working.

(A) Examine sparking plug as before.

(B) Wheel machine forward without lifting exhaust valve. If it runs too easily, with an unusual hissing noise, a valve spring or stem is probably broken. In case of breakage, be sure to recover all the broken pieces, and replace with spare valve and spring. One fragment left may cause considerable damage.

NOTE.—A spare valve complete should always be carried.

(C) If tank is empty and engine being still warm, call at the nearest cottage—as a little paraffin will answer your purpose until you reach a town.

(D) Tank still partly full. Hold down carburetter float by lifting needle and notice whether petrol drips from mixing chamber as well as running from the hole above float chamber. If not, most probably the pipe leading from tank to carburetter is stopped up. Take to pieces and clean.

(E) If stoppage cannot be traced to any of the above causes, notice, when wheeling machine, whether both valves are regularly lifted. If either remains open, the stem has jammed in the guide. Remove cotter and spring. A little paraffin run down the valve stem, followed by a gentle tap or two on the head, will generally loosen the valve sufficiently to permit of its removal. Clean the stem with fine emery-cloth before replacing. If, on the other hand, the valve remains closed, but can be lifted by the fingers or a screwdriver, the teeth

See separate Catalogue for Spare Parts and Replacements.

of the two to one gear have been probably stripped. This is a very rare occurrence, and is only to be remedied by the makers or other experts. The rider's only course is to remove belt, and pedal home or to the nearest railway station.

C.—Motor Runs Freely, but does not Propel Machine.

Belt has stretched and is slipping. Cut out an inch making a fresh hole in such a position that the belt end is gripped to the full capacity of the fastener jaws. Or clutch is slipping. (See page 35).

D.—Motor Refuses to Start after a Stoppage.

Make sure you have turned on petrol; or the sparking plug is probably sooted, and should be taken out and cleaned, or replaced with a new one.

See that the belt is at the proper tension, *i.e.*, that it is carrying the engine properly over compression.

Maybe that piston has gummed up, due to lubricating oil solidifying—especially in cold weather—or, which does not occur so frequently—to flywheels being in a similar condition. To remedy the latter, inject petrol or paraffin (squirt provided) through the hole in pulley side of main shaft. (See remarks concerning magneto, pages 31 and 32).

E.—Motor Loses Power and Refuses to take Air.

Probably the petrol pipe is choked. This can be ascertained by holding up needle valve to see if petrol flows freely.

Should the engine for one minute run well, and then suddenly stop altogether, or run very slowly or jerkily, this is generally due to water or dirt in carburetter. To remove same, unscrew small screw lying horizontally immediately underneath the jet, lean machine well over, and let petrol run out freely, and the water in the float chamber will run away at the same time. Or it may be that oil has leaked down valve stem and tappet, thus congealing when engine is cold, and not allowing the valve to seat properly. It is advisable to free these parts occasionally with petrol or paraffin.

If loss of power is experienced, although compression is good, this is probably owing to carbon depositing on top of piston and cylinder. To remedy this detach cylinder from crank case as described on page 36. This having been done, scrape the carbon from the top of piston with a knife or chisel, previously protecting the rings by means of a cloth wrapped round the piston. Next remove the carbon from the top of cylinder with a long chisel. Scrape top of piston and upper ring slot, also ends of ring joint, and after finally seeing that the rings are in their correct position, oil the piston and cylinder, and replace.

See separate Catalogue for Spare Parts and Replacements.

A Small Selection of Awards won by Triumphs during 1913

Date	Event	Rider	Result
1913 Feb. 8.	Christchurch—Kaikoura and Back Record, 270 miles.	G. B. Brown.	Broke Record by 2 hours, 20 mins., the finest cross country Record ever made in New Zealand.
Mar. 22-24.	M.C.C. London-Land's End and Back.	Rear Admiral Sir R. K. Arbuthnot.	Won Special Gold Medal.
Mar. 22-24.	Birmingham M.C.C. Weymouth and back trial. Sangster Trophy.	H. Ball.	Won Trophy.
April 5, 6, 7, 8.	Paris—Nice Trial and Speed Test, 667 miles. L'Aero Cup.	Rex Mundy.	Lost no marks. Won Cup and Gold Medal, and made fastest time 64mph.
		W. F. Newsome.	Lost no marks, Gold medal
		S. B. Joyce.	Lost no marks, Gold medal
April 26-27.	Italian T.T. Team Race (Circuito del Po), 1000, kiloms.	—	Triumphs 1st and 3rd teams, winning Shield and President's Gold Medal.
			Out of 57 starters only 14 finished, 5 of these being Triumphs, out of a possible 6.
April	New Zealand Championship (500 c.c.)	J. L. Braithwaite.	Winner of Champoinship.
May 3, 4 and 5.	Aberdeen M.C.C. 3 day's Trial.	J. I. Coulter.	1st, Won Trophy and Gold Medal.
		C. Maitland.	2nd.
Map 8	Championship of Japan	— Emi.	Winner of Championship
		— Shiomi.	2nd
May 10-12.	M.C.C. London Edinboro' Trial.	—	Six Triumphs awarded Gold Medals.
May 10-12.	Birmingham M.C.C. Trial Lands End and back. Lycett Trophy.	H. Ball.	Won Trophy, total error 17 secs.
			Out of 35 starters only 12 finished.
May 17.	Consuma Hill Climb (Italy) rising 3160 feet in 10¼ miles.	Triumphs.	1st, 2nd, 3rd, 4th, Winning the famous Challenge Cup for the second time, and Medal presented by the King of Italy.
June 3.	Marawatu Hill Climb, Paikakariki Hill, New Zealand.	G. B. Brown.	Fastest time, besting all 8 h.p. Twins, and breaking Record for hill.
		A. B. Collins.	2nd fastest time.
June 14, 15.	Leeds London and Back Trial, "Kelly" Cup.	A. T. Jenkins, Triumph and Sidecar.	Won Cup and Medal.
June 21.	South Wales A.C. Speed Trial, Porthcawl. Class II.	S. Crawley.	1st.
June 21	Ipswich and District M.C.C. Hill Climb.	—	Triumphs scored— 7—Firsts 3—Seconds 5—Thirds and fastest time of the day.

A Small Selection of Awards won by Triumphs during 1913

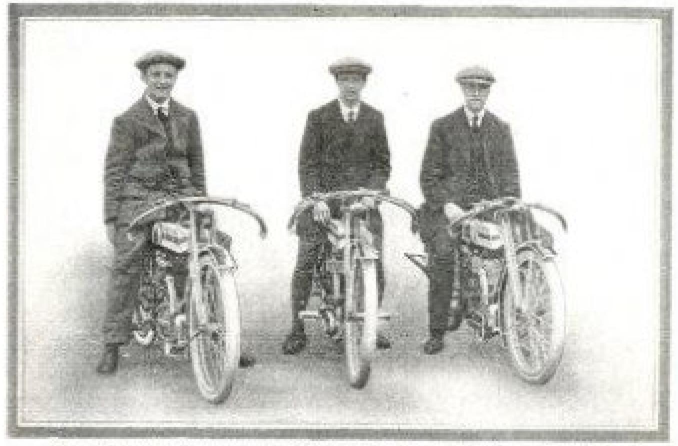
Date	Event	Rider	Result
July 13.	Grand Prix (Amiens) (500 c.c. Class) 217 mls.	—	Triumphs 2nd, 4th, and 11th.
July 14.	Irish End to End Trial. 395 miles.	—	5 Triumphs started 5 finished.
July 14.	Northants. M.C.C. Hill Climb, Sidecar Class.	A. E. Catt.	1st, Gold Medal.
July 16.	Six Hours Race at Brooklands, 500 c.c. Class.	J. R. Haswell.	1st, 351 miles, 1315 yards, winning easily by over 16 miles.
	Records: 500 c.c. Class: 250 miles Record, 300 ,, ,, 5 hours ,, 6 ,, ,,	J. R. Haswell.	Broke these Records handsomely, averaging nearly a mile a minute.
July 19-20.	Sheffield and Hallamshire M.C.C. Trial, Holyhead and Back. Hutton Shield. 316½ miles.	Stephen Raynes.	Winner, did not lose a single mark.
July 19.	Western District M.C.C. Trial to Daventry. Triumph Cup.	B. F. G. Fowke.	Won Cup.
July 30.	Ballymena M.C.C. Hill Climb (500 c.c. Class).	W. Cameron.	1st.
	Sidecar Class.	W. Cameron.	Fastest time, record for hill.
Aug. 15, 16, 17.	Liege—Paris—Liege Trial. 525 miles.	E. Taymans.	Won highest award, the only Triumph competing.
Aug. 16.	North Derbyshire M.C.C. Hill Climb, Amber Hill.	—	Triumphs won 5—Firsts. 3—Seconds.
Aug. 18-23.	A.C.U. 6 Days' Trials (500 c.c. Class).	—	7 Triumphs started, 7 finished, awarded 5 Gold and 2 Bronze Medals.
Aug.	Birmingham M.C.C. Trial, Birmingham to Edinboro'.	H. Ball.	Won Sarsons and Duke Trophy and Gold Medal. Best Amateur Performance.
Sept. 6.	Championship of Scotland (Middleweight	S. Crawley.	Winner of Championship.
Sept. 19-20.	Birmingham M.C.C. Trial, Carlisle and back. 400 miles.	H. Ball.	Won Baker Trophy and Gold Medal for best solo performance.
Sept. 28.	Umbro-Toscano Circuit, 230 miles. (Private owner class)	Tofanari Bindo.	1st. Won Medal. 6 hrs. 18 mins.
	(Trade Class).	Ambrogio Zan.	1st, 6 hrs., 38 mins.
Oct. 11.	Coventry and Warwickshire Open Hill Climb. Touring Class up to 500 c.c.	H. Green.	1st.
	T.T. Class up to 500 c.c.	S. Crawley.	1st, making fastest time of the day, beating 8 h.p. Twins.

Appreciations.

Foreign Touring.

Wimbledon,
August 28th, 1913.

Gentlemen,—I write to express my satisfaction with the 1913 Three Speed Triumph Motor Cycle having just returned from a month's tour through France over the Mont Cenis into Italy—visiting many of the North Italian towns and all



The Triumph Team in the Grand Prix Race, 217 miles, who finished 2nd, 4th, and 11th and did not carry a single spare.—*"The Motor Cycle."*

the Lakes. The return journey was made over the St. Gothard through Switzerland with its rough roads, and Eastern France. The machine ran splendidly throughout and took the mountain passes without a falter.

With the exception of straightening a bent footrest, the result of a fall, and replacing an exhaust lifter wire which broke on the return journey, not a single adjustment was necessary on the whole journey. The machine had run 3,000 miles before starting, including the Edinburgh run at Whitsun, when it gained a Gold Medal.

Of the nine machines I have ridden during the past nine years, three have been Triumphs and all three have been no trouble machines.

H. W. BULL.

The Ideal Mount for the Medical Practitioner.

Sutterton, Boston,
June 26th, 1913.

Gentlemen,—I can honestly say I am delighted with my new mount. I am a Medical practitioner, and one of its most useful features is its efficient mud-guarding, as owing to my profession, I dislike entering houses bespattered with mud; as it is I just wear my ordinary clothes instead of overalls, except of course in wet weather.

V. T. GWYNNE-JONES.

Signor Giovanni Ravelli, who with Signori Bona and Zan formed the winning Team in the Italian T.T. Race the "Circuito del Po," all on Triumphs.—*"The Motor Cycle."*

Testimonials—*continued.*

Not a single engine failure in 10,000 miles.

The Mount, Loughton, Essex,
June 23rd, 1913.

Gentlemen,—I wrote to you quite a long time ago now in testimony to the virtues of my 1912 Triumph Motor Cycle. I think it was just after it had completed its first 3,000 miles. It has just passed the 10,000 miles limit, and you may like to know what, exclusive of tyres and belts, petrol and oil, it has needed in the way of upkeep and repairs. The items are :—

2 Piston Rings,
1 Pair Pulleys (I use ——— Belt, which is rough on Pulleys).
1 Exhaust Valve.

So far as I can see, the engine bushes are as good as ever. At all events, the machine pulls, if anything, better than ever. I have never had to take to train by reason of a single motor failure in the whole 10,000 miles, though I had once to do so by reason of a tyre failure—not your fault.

This is the nearest thing to a miracle I have ever known—and I am a pretty old hand at motor cycling.

R. T. NICHOLSON, M.A., Oxon.

Rex Mundy, 3½ Triumph, who won the Paris-Nice Trial, 667 miles, and Speed Test, L'Aero Cup and Gold Medal.—*"The Motor Cycle."*

A time saver in business.

Leckhampton Road, Cheltenham,
June 7th, 1913.

Dear Sirs,—I have ridden one of your machines since January 1912, until this month for business purposes, all weathers, upon good, bad and indifferent roads, and am glad to say have never had a breakdown of any description, neither have I been delayed a minute except for an occasional puncture. I can honestly say it is the most reliable machine I have ever ridden.

E. COLWELL.

Testimonials—*continued.*

14,000 miles with an 18 stone rider.

Great Easterton, Stamford.
March 21st, 1913.

Dear Sirs,—I have had such great success with your machines that I feel I must write and tell you how much I appreciate the Triumph Motor Cycle. I bought one of your machines in June, 1910, and with the exception of three broken exhaust valves due to inexperience, I have had absolutely no trouble. I weigh 18 stone and often carry another passenger on the carrier, and have done 14,000 miles. I do not ride long journeys, but do short runs, continually stopping and starting.

Now I have sold the machine and bought one of your 3-Speed Models to run with a sidecar. I honestly say there is not another machine on the market which would carry me so well.

A. HOWARD ARNOTT.

Mrs. A. T. Jenkins, who with Miss Spink as passenger, drove through the Leeds M.C.C. Reliability Trial to Edinburgh and back. The machine is a 1913 Three Speed Triumph.—*"The Motor Cycle."*

Never free from trouble till I rode a Triumph.

Oamaru, New Zealand,
January 27th, 1913.

Dear Sirs,—As an old Motor Cyclist, and one who has experienced every kind of trouble in connection with various Motor Cycles I have used, I have much pleasure in informing you that during the past year I have been riding a Triumph and my troubles have entirely ceased. My appointments are always kept to the minute and owing to the absolute reliability of this machine my work has become a pleasure. I am using my machine from morning till night, and frequently have to assist motor cyclists tinkering by the roadside and though Triumphs are numerous in my district, I have never yet had to assist a rider of one of these machines. Their reliability is a by-word, and by giving my machine hard work to do, I have proved this to be a fact beyond doubt.

CYRIL A. BARTLETT.

The first replacement in 15,000 miles.

Holmes Chapel, Crewe,
February 22nd, 1913.

Dear Sirs,—My machine is still good, despite work of 15,000 miles, no engine troubles, and the flange in question the first replacement.

R. G. JAMES.

66,000 miles on Triumphs.

Powick, Worcester.
March 6th, 1913.

Dear Sirs,—I have much pleasure in informing you that since I obtained my first Triumph Motor Cycle (then second-hand) in 1906, I have covered over 66,000 miles on your machines, the last 8,000 miles having been with a sidecar in use.

My eighth successive year's machine I expect shortly to take delivery of. I have never ridden in any Trials, but have done 300 miles in 24 hours, and 253 miles in 11¾ hours, both these rides include all stops for meals, etc.

The various machines have always brought me home, but doubtless many other Triumph riders can say the same.

HAROLD R. S. WALFORD.

Motor Cycling in the Tyrol. A rider of a 3½ Triumph photographed on the Stelvio Pass, 9,184 feet above sea level. The boundary between Italy and Austria is marked by the frontier stone shown.—*"The Motor Cycle."*

Northampton.
November 13th, 1913.

Dear Sirs,—Perhaps you might like to know of the perfect reliability shewn by every one of the several Triumph Motor Bicycles I have ridden, year in and year out, in fair weather and foul, and on both excellent and execrable roads, without having been once stranded by mechanical failure.

I have on a Triumph, done all the "Dangerous Corner" work in this County in connection with the grants promised by the Road Board for this work to the whole of the Road Authorities throughout the County, and I think the survey of over 5,000 bad corners, etc., and a mileage of over a thousand a month on both Main and Rural roads, without once being "either absent or late" and without the slightest worry regarding my "mount" is a record to be proud of.

The same machine too, which passed all the "trial" men whom I struck in Yorkshire—and really couldn't help it—has carried me unfalteringly over "occupation" roads and mere tracks through fields or farm yards where the mire was so deep that the belt ran in it.

As a "week-ender" the Triumph is a wonder! Leaving here after breakfast I had lunch near York, the first time I was out of the saddle was just before this stop for an hour or so, while during the latter part of the afternoon the sea breezes of lovely Scarboro' whetted my appitite for tea. Such holidays count.

And it is just the same whether one negotiates the Pennine Hills or the flats and bends of Fenland, and the Eastern Coast—in short, its the same everywhere the Triumph goes, and it must be easier to say where it doesn't go by how.

WALTON MAUGHAN.

For Competition Work.

Sitwell Road, Sheffield,
July 24th, 1913.

Dear Sirs,—I have pleasure in informing you that I have this week succeeded in winning the Sheffield to Holyhead and back Annual Reliability Trial for the Hutton Shield. The total distance was 316½ miles, and there were eight secret checks, notwithstanding which I came through without the loss of a single mark, and without making the least adjustment.

This machine has done a good amount of work, always satisfactorily, and I think it is a striking tribute to the sterling reliability of the very properly named "Trusty" Triumph. The machine ran throughout the whole distance in a very consistent manner, and the engine turned over as sweetly the last mile as it did the first.

STEPHEN RAYNES.

Splendid on Hills with Sidecar.

Tubbs Hill, Sevenoakes.
December 11th, 1913.

Dear Sirs,—I purchased off you a few weeks back a 1914 Three Speed Model Triumph, and I am writing to say how extremely pleased I am with it. My previous mount was a Triumph, but I think this year's model with the extra ½ h.p. is an excellent machine. We have got some of the worst hills about here, and I think the way the machine goes up them with sidecar and passenger is excellent.

CHARLES TYE.

Mr. Emi and his Triumph, winner of the Championship of Japan. He is shown with the Championship Flag.

No roadside stop in 50,000 miles.

Bilton, Harrogate,
December 1st, 1913.

Dear Sirs,—You will no doubt be pleased to hear that this machine has covered 50,000 miles since I got it in October, 1910, which I think is a fair record. I don't think there is a main road between Edinburgh and Glasgow, London and Lands End that I have not been on several times, and not including 15 return trips between Harrogate and Cardiff, and up to now I have never been stopped on the road, or had to train which I think shows remarkable reliability. The 50,000 includes 8,000 with sidecar.

JOHN J. FALLON.

Cable Code.

Private Code can be used in conjunction with ABC and Lieber's.

ROADSTER MODEL, TYPE A.
With Free Engine.

Quantity.		
1	...	Libre
2	...	Libreduo
3	...	Libretres
6	...	Libresei
9	...	Librenove
12	...	Libredoce
15	...	Librekince
20	...	Libreventi

ROADSTER MODEL, TYPE B.
With Fixed Engine.

Quantity.		
1	...	Moteto
2	...	Motaduo
3	...	Motatres
6	...	Motasei
9	...	Motanove
12	...	Motadoce
15	...	Motakince
20	...	Motaventi

ROADSTER THREE SPEED MODEL, TYPE C.

Quantity.		
1	...	Velo
2	...	Veloduo
3	...	Velotres
6	...	Velosei
9	...	Velonove
12	...	Velodoce
15	...	Velokince
20	...	Veloventi

TOURIST TROPHY ROADSTER, TYPE D. With Fixed Engine.

Quantity.		
1	...	Tour
2	...	Tourduo
3	...	Tourtres
6	...	Toursei
9	...	Tournove
12	...	Tourdoce
15	...	Tourkince
20	...	Tourventi

TOURIST TROPHY ROADSTER TYPE E. With Free Engine.

Quantity.		
1	...	Clou
2	...	Clouduo
3	...	Cloutres
6	...	Clousei
9	...	Clounove
12	...	Cloudoce
15	...	Cloukince
20	...	Clouventi

TOURIST TROPHY RACER, TYPE F. With Fixed Engine.

Quantity.		
1	...	Tofy
2	...	Tofyduo
3	...	Tofytres
6	...	Tofysei
9	...	Tofynove
12	...	Tofydoce
15	...	Tofykince
20	...	Tofyventi

T.T. ROADSTER WITH THREE SPEED GEAR, TYPE G.

Quantity.		
1	...	Kur
2	...	Kurduo
3	...	Kurtres
6	...	Kursei
9	...	Kurnove
12	...	Kurdoce
15	...	Kurkince
20	...	Kurventi

N.B.—In types D and F codeword represents Motor Cycle with 3½ h.p. engine, when a 4 h.p. engine is required in these two types the word "fo" should be added to codeword, *i.e.*, "Tourfo," meaning one T.T. Roadster, 4 h.p. with fixed engine.