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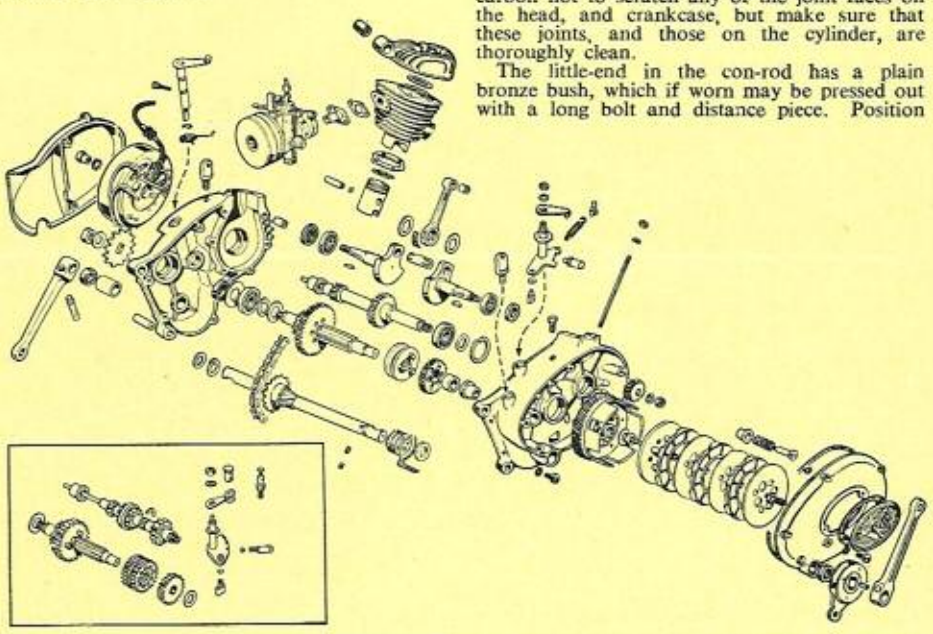
Servicing data sheet No: 19-2

Kerry Capitano

Concessionaires: Kerry's (Great Britain) Ltd., Moped Division, Warton Road, Stratford, London, E.15.

USEFUL DATA

Engine: Single cylinder two-stroke, cast iron cylinder, aluminium alloy cylinder head.
Bore and stroke: 38mm by 42mm.
Capacity: 47.6cc.
Compression ratio: 7:1.
Output: 3.1bhp.
Piston: Alloy, slightly domed top, two pegged rings. Ring gap 005in, maximum (worn) permissible .012in.
Ignition: Flywheel magneto. Points open ⅛in before TDC. Contact breaker gap .012in-.015in.
Sparking plug: Champion L81. Gap .020in-.025in.
Carburetter: Dell 'Orto type T/412/SI. Main jet 210. Atomising jet 56.
Transmission: Primary drive by gears, enclosed with clutch in oilbath case. Multi-plate clutch with 2- or 3-speed gearbox. Automatic clutch with single speed. Final drive by chain, size ½in by ⅜in, length 100 links. Sprockets—gearbox 13T, rear 30T.
Gear ratios: 2-speed, first 11.6:1, top 7.26:1. 3-speed, first 14.6:1, second 8.21, top 5.4:1.
Suspension: Front—telescopic forks, coil springs, no damping. Rear—swinging forks, coil springs hydraulically damped.
Brakes: Front and rear internal expanding, cable operated, diameter 4in each.
Tyres: Front and rear 23in by 200in.
Tyre pressures: For 11 stone (or less) rider—front 25 lbs/sq in; rear 36 lbs/sq in. For heavier rider, increase proportionately.
Lighting: Headlamp dual filament 6V, 15/15 W. Tail lamp 6V 6W.
Lubrication: Engine—SAE 30, proportions first 500 miles 1:16, after 500 miles 1:20, see handbook for proportions for two-stroke mix oils. Gearbox—SAE 40, 1 pint gearbox and primary drive together.



GENERAL

Kerry Capitano mopeds are notable for simple, straightforward design and robust construction, and in consequence are extremely reliable in use—for example, an engine-unit used daily by the concessionaires has not required an overhaul in five years hard use.

It is marketed in 2-speed 3-speed versions, the latter having also more luxurious equipment including a dualseat and legshields. There is also an automatic-drive model, no longer marketed in this country—details and instructions are given in the notes which follow.

WORKSHOP SERVICE TOOLS

V/1-2 Extractor, flywheel magneto.
V/2-1 Extractor, clutch back-plate.
V/2-2 Extractor, crankshaft (3-armed)
V/2-3 Extractor, drive sprocket.
V/2-4 Extractor, crankshaft pinion.
V/2-5 Spanner, clutch adjustment.
V/2-6 Locking spanner, clutch back-plate.
V/2-7 Locking spanner, flywheel magneto.
V/2-8 Locking spanner, drive sprocket.

The above tools are available as separate items, or can be supplied as a complete set together with a workshop board.

DISMANTLING

The engine unit must be removed from the frame if attention to the gears or crankshaft is required, or for decarbonization. But access to the flywheel magneto or final drive sprocket on the nearside, or to the primary gear-drive or clutch on the offside, can be made by removing the appropriate cover plate. On the offside there is also a small cover plate which can be removed for clutch adjustment.

If the offside cover is to be removed, the gearbox oil must first be drained, by removing the drain-plug. However, if the unit is to be removed from the frame, draining the oil can be done more quickly and easily during the dismantling process, as described below.

Removing engine unit from frame: If the machine is a 3-speed model, start by removing the legshields, which are held at three points.

Disconnect the clutch and gear-control cables (clutch and decompressor cables on automatic models) by undoing the solderless nipples at the lower ends, and pull the cables free of the adjusters.

Beneath the crankcase are two electric wires, in a tubular sheath. Slide the sheath to one side, and cut the wires close to the crimped connectors.

Undo the exhaust-pipe flange nut and remove the bolt supporting the silencer, and remove pipe and silencer complete.

Undo the screw of the clamping ring which holds the carburetter on to the induction manifold, and "wriggle" the carburetter free of the manifold.

Remove both pedals by knocking out the cotter-pins, and free the rear brake cable by undoing the pinch-bolt which fastens it to the cam lever, leaving it attached to the back-pedalling brake control. (h'bar lever on automatic models).

Remove the spring link from the driving chain and pull the chain free from the small drive sprocket.

Now remove the two bolts holding the unit to the frame behind the gearbox, and support the unit with a box or block. Lastly remove the bolt holding the cylinder-head to the frame—this bolt goes through a rubber bush which is renewable and may be pressed out.

The unit is now free and may be placed on the bench.

DECARBONISATION

Remove the sparking plug. The cylinder head is held by four nuts, each has a spring and a flat washer below it. Remove these and lift off the head. The gasket is of solid copper, and may be used again if in good condition.

Lift off the barrel, taking care not to distort the four long studs, remove the paper gasket below.

Remove the two piston rings, noting sequence of removal, so that if they are used again, each goes back into the groove in which it was fitted originally.

The gudgeon pin circlips are of wire, use a pair of pointed pliers to grip the upturned end for removal. Press the gudgeon pin out until it is just clear of the little end, and lift the piston clear.

Taking care during the work of removing the carbon not to scratch any of the joint faces on the head, and crankcase, but make sure that these joints, and those on the cylinder, are thoroughly clean.

The little-end in the con-rod has a plain bronze bush, which if worn may be pressed out with a long bolt and distance piece. Position the replacement bush, before pressing in, so that the junction of the two spiral oil grooves will come below the oil hole on the top of the little-end eye. This hole, and the smaller hole diametrically opposite, must be drilled after the bush has been inserted. Finally, the bush will almost certainly need reaming after being pressed in, to accept the gudgeon pin.

REMOVING FLYWHEEL MAGNETO

Lay the unit on the bench with the magneto uppermost, and remove the two screws which hold the flywheel cover and lift it off.

Use tool V/2-7 to hold the flywheel, with the long end of the tool against the pedal shaft. (*Note.* Recent flywheels have three slots, earlier patterns had only two slots). Undo the retaining nut, which has a right-hand thread, and remove it and the spring washer beneath.

Now use tool V/1-2 to pull the flywheel off its taper, the tool screws into a female thread cut in the flywheel boss. A keeper is not necessary for the magnets, but take care to lay the flywheel down with the magnet uppermost. The contact breaker cam is integral with the flywheel boss.

Mark the stator plate and housing, so that the plate may be replaced in the correct position. The stator plate is held by three screws, remove these and lift the late out carefully, as behind it are two electrical wires and the HT cable, leading out of the housing through rubber grommets. Pull the cables free carefully. The LT and HT coils, the contact breaker, and the condenser, are all renewable as separate parts.

If the unit is to be stripped completely, for access to the crankshaft and/or gears, the small drive sprocket should now be removed. Use tool V/2-8 to hold it whilst its retaining nut is undone, there is a plain washer behind the nut. Now use tool V/2-3 to pull the sprocket from its flats on the shaft.

REMOVAL OF PRIMARY DRIVE AND CLUTCH

Turn the unit over and lay it on the bench o/side uppermost, remove the two screws holding the clutch adjustment cover, which has the name "Kerry" cast into it.

Now lift the unit, turn it over and drain out the gearbox oil through the clutch adjustment hole, if draining has not already been done.

When all oil has been drained out, replace the unit on the bench o/side uppermost, and remove the back-pedalling brake control from the pedal shaft. The control is keyed to the shaft and may need to be tapped free. The key itself is an oblong pattern, and may be found to be stuck fast in its slot (owing to the pressure exerted when braking). If so, the best method of removal is to cut a small slot in the outer end with a chisel, and then use a screwdriver to lever it free.

Now remove the five screws holding the cover and lift this free. There is a dowel locating the cover, just above the pedal shaft and this should be removed also.

Remove the four clutch spring screws, and lift out the springs and cups. Remove the pressure plate, the three friction and two plain plates. Lift out the pushrod which has a mushroom head; behind it in the hollow secondary shaft there is a ball and a second short push-rod, which will slide out if the unit is turned over clutch side down.

Now use tool V/2-6 to hold the clutch back-plate. Undo first the nut holding the small pinion on the crankshaft, there is a plain washer behind this nut. Next knock back the tab washer which locks the nut on the clutch back-plate and undo this nut.

Use tool V/2-1 to pull the clutch back-plate from its shaft. Behind it is a shim washer. The clutch housing (and the large pinion) will now lift off the shaft, and there is another shim washer behind this part. The clutch housing and the pinion are separate parts, rivetted together, and either can be renewed if damaged or worn.

Lastly, use tool V/2-4 to pull off the small crankshaft pinion. If this tool is a tight fit and reluctant to go into position, do not use force—remove a small amount of metal from the flat faces with a fine file, until it will slide on and surround the pinion easily. It must be positioned absolutely squarely on the pinion before the extractor stud is tightened. Remove the Woodruff key after the pinion is off. The next operation is to split the crankcase halves, to obtain access to the gears and crankshaft, but before proceeding to this, here is a description of the automatic clutch and instructions for removal and dismantling of this component.

AUTOMATIC CLUTCH

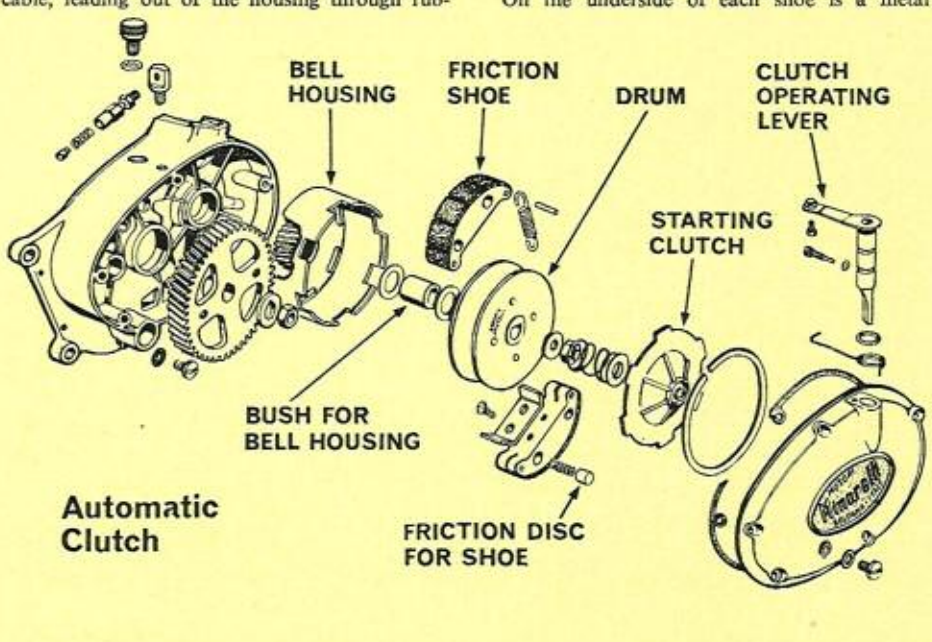
The automatic clutch, when fitted, replaces completely the hand-operated clutch. At tick-over speed the drive is disengaged—in effect this is "neutral" When the throttle is opened, the clutch engages automatically, and the power is transmitted through the primary gears to a simple reduction gear within the gearbox and thence through the chain to the rear wheel.

Parts which differ from the 2- and 3-speed models are the automatic clutch assembly itself, the crankcase castings, and the reduction gears within the gearbox.

The clutch assembly is contained within the o/s primary drive case. A bell housing is attached to the small crankshaft pinion, and both are free to rotate on a tubular bush on the crankshaft. Within the bell housing is a drum consisting of two circular steel plates, kept rigidly apart by four short spacer rods, and mounted on a short boss which is pressed on to the crankshaft and turns with it. Between the drum plates are two segmental shoes, resembling brake shoes in shape, and faced with friction material. When stationary they are pulled towards one another by two springs, hooked over their ends.

When the engine is speeded up above a tick-over, centrifugal force overcomes the springs, and the shoes tend to fly outwards; the friction linings then grip the inner face of the bell housing and it turns with them, so the engine power is then connected to the primary gears, gearbox and rear wheel.

On the underside of each shoe is a metal



Automatic Clutch

arch, attached by two screws, which centre the shoes on the four spacer rods. The shape of the arches causes them to tilt slightly as the shoes move outwards, so that at maximum revs, the shoes are locked against the bell housing, giving a positive drive.

Of necessity, the shoes must be free to slide between the drum plates, but to prevent them rattling, there are small friction discs, pressed outward by springs, in two transverse holes in each shoe.

Lastly, so that the engine may be pedal-started, there is a starting clutch, outside the drum. It is a single plate, the inner face carrying friction inserts, with six tongues which engage with grooves in the bell housing, so that it turns with the latter. A light spring presses it outwards against a retaining circlip and normally keeps it out of engagement. It can be moved inwards by a lever mounted in the outer gear cover, this being cable operated from the handlebar. A second cable from the same handlebar control operates a decompressor in the cylinder head—this is fitted to the automatic model only.

When the handlebar control is operated, the starting clutch grips the outer plate of the drum and allows the pedals to turn the engine, the decompressor being brought into action at the same time.

Removal of automatic clutch: The outer cover is held by five screws as on the other models, remove these and lift off the cover There is a dowel locating the cover, just above the pedal shaft.

Push the clutchplate inwards against its spring, and remove the circlip from its groove in the bell housing. Lift out the clutch plate, followed by a thrust washer and the spring. Now insert two screws from tool V/2-1 in the threaded holes on the drum; these will enable the drum to be held whilst the splitpin, castellated nut and washer are removed. Now use tool V/2-1 to pull the drum off the shaft. The bell housing and pinion can now be lifted off, note there is a thrust washer on each side of the bush on which the pinion runs.

Use the two screws from tool V/2-1 to hold the large pinion on the primary shaft whilst the nut is undone—the washer behind it has a groove locating on the Woodruff key. Use tool V/2-1 to pull the pinion off the shaft, and prise the key from its slot.

Removing and replacing friction shoes: The two friction shoes are the parts most likely to require renewal, when the friction linings have worn.

Remove the two springs holding the shoes in the drum with fine-nosed pliers. Lay the drum flat on the bench and slide the shoes out slowly, in turn, covering them with a finger of the free hand, since if the anti-rattle discs are facing upwards, they will fly out with their springs once the shoe is clear of the drum.

Remove the arch from each old shoe by undoing the two countersunk screws which fix it, and transfer the arches to the new shoes. Also transfer to the new shoes the pin at each end on to which the springs are hooked—these pins may be renewed if worn or distorted.

Place one end of the new shoe in the drum, insert one spring and friction disc, and compress this with a finger at the same time sliding the shoe inwards so that the disc is within the drum. Repeat this with the second disc, and then with the second shoe. Finally hook the two retaining springs back into position with pliers.

SPLITTING THE CRANKCASE

To split the crankcase halves, first knock through the two hollow dowel tubes in the rear mountings, from the o/side, until they protrude for half their length. Now, from the magneto side, undo the 12 screws holding the halves together—note that eleven of these screws are identical in length, the twelfth below the exhaust port is longer and passes through a shortdowel tube.

Now use tool V/2-2 on the o/side crankcase, the three arms being held to bosses on the case by screws. Light pressure on the centre screw will break the gasket seal.

Further pressure on this screw may cause the two crankcase halves to open out unevenly, and this would cause distortion. Also this method of splitting the case will allow the gears to drop out piecemeal.

The following method is therefore recommended, and if used should result in the gears and crankshaft being left in position on the o/side half.

Lay the unit on two wooden blocks, magneto side uppermost. Hold the magneto side in the left hand, exerting a slight steady upward pull. At the same time, tap the shafts protruding through this half, evenly downwards with a rubber mallet. As the magneto side of the case comes clear of the shafts, disengage the gear selector pin from its groove in the sliding collar (or sliding gear on 3-speed model).

REMOVAL OF GEARS

The method and sequence of removal is the same whether the machine is a 2-speed, 3-speed or automatic model. It is assumed that the dismantling procedure outlined above has been followed, and the o/side crankcase half is on the bench with the gear shafts (and crankshaft) still in it.

It will be seen that a short endless chain runs round two sprockets, one on the pedal shaft and the other on the secondary shaft. On the top of these shafts and the primary shaft is a shim washer which should be lifted off.

Hold the pedal and secondary shafts with the chain in the palm of the hand, and the fingers holding the gears on the secondary shaft—on 2- and 3-speed models these gears are free on the shaft, and the aim is to lift out both shafts together keeping the gear wheels in position.

On 3-speed automatic models, there is a thrust washer on the secondary shaft, against the bronze bearing. On 2-speed models, there is a distance piece in the same position.

The primary shaft may now be removed. On 2- and 3-speed models this is hollow, to take the clutch pushrods, so care should be used when tapping the threaded end, with a rubber mallet.

Renewal of gears: When examining the gear wheels for wear, the following differences in construction should be noted.

2-speed models: The secondary shaft carries a sliding collar with dogs which engage in holes in the gear wheels. The primary shaft has integral gears.

3-speed models: Both primary and secondary shafts have sliding gears which move together, as a collar on one engages in the groove of the other, and these are of two types. Up to engine No. 4964 the sliding gear had dogs engaging in holes in the wheels on either side. From engine No. 4965 onwards, the sliding gear had holes and the dogs were on the other two wheels, on each side of it. These differences are clearly shown in the Spares Manual issued in 1965.

On both types, the top gear wheels are pressed on to the o/s end of the primary shaft.

2- and 3-speed models: In both gearboxes the low gear wheel on the secondary shaft, which also incorporates the ks. sprocket, is held in position, with a shim washer under it.

Automatic models: Both shafts have integral gears.

All models: The pedal shaft is identical on all models, and the ratchet sprocket is retained by a circlip, with shim washer between it and the sprocket. The ratchet engager can be sid off its quick-thread; it is surrounded by a retainer spring, and there is a thrust washer between it and the crankcase wall.

For renewal, the sliding collar and gears, and the loose wheels and those pressed on, may all be replaced as separate items. But where gears are integral, the complete shaft must be replaced.

Removal of gearbox bearings: In the o/side crankcase, the primary shaft is supported by a ball bearing, located by a circlip in a groove. Warm the case and tap it downwards on the bench and the bearing should drop out, the circlip being left in position. (If this method is unsuccessful, the circlip must be removed to allow the bearing to be driven out).

On the magneto side, there is a ball bearing supporting the secondary shaft, with an oil seal outside it. Warm the case inside, and tap downwards to remove the bearing, which has a washer behind it. The oil seal may then be pushed out from inside, and if undamaged, may be used again. (If this method fails, the oil seal must be levered out first, to allow the bearing and washer to be driven out—in this case the oil seal should be replaced with a new one on re-assembly.)

The other ends of both primary and secondary shafts run in bronze bearings, which can only be removed in one direction as each has a collar. Old bearings, to be renewed, can be driven out with a drift of suitable diameter, but it is better to use a long bolt with nut and distance piece to extract them, the same mehod in reverse being used to press in the new bearing. These should never be driven in with a hammer and drift, as they will be burred and possibly distorted. New bronze bearings here will require reaming after fitting.

The pedal shaft has a loose bush supporting it in the magneto side half of the crankcase, but on the o/side the shaft runs direct in the aluminium casting. There is an oil seal at each end of the shaft.

REMOVAL OF CRANKSHAFT

The crankshaft will still be in position in the o/side crankcase half if the dismantling procedure outlined above has been followed. It may be removed by using tool V/2-2 to push it through the bearing.

In the event of big-end wear or failure, the individual parts (crankpin, caged rollers and con-rod) may be obtained separately, but it is better to fit a complete assembly which is available either as a brand new or factory reconditioned item.

Main bearings. There is an oil seal on the outside of each main bearing, and it is suggested that it is better to remove the bearing first and then push out the seal from the inside. This allows the possible re-use of the seal, if it is not damaged in any way, as can happen if it is levered out first, before the bearing is removed.

Warming the crankcase halves on the inside will allow the bearings to drop out, and the heat necessary should not in most circumstances damage the oil seal.

CLUTCH OPERATING LEVER

On 2- and 3-speed models this is located in the magneto side crankcase half. On automatic models a similar lever is housed in the primary gear case cover.

Both levers are similar in construction and operation, but differ in dimensions. Essentially they comprise a spindle, on one end of which is a lever operated by the cable, and on the other end a ground flat which operates the clutch pushrod (or pressed direct on the clutch plate on automatic models). The spindles have two milled grooves, one of which takes an O-ring as an oil seal, the second groove is engaged by a screw, through the casting, which retains the assembly in position. Just below the lever is a return spring.

The most likely trouble to be encountered would be a broken return spring, and in this case of course access to the assembly can be had by removing the magneto cover or drive cover only. The retaining screw is then undone, and the lever and spindle can be lifted out. One end of the spring hooks over the lever, the other end has a short leg which must locate in a hole in the housing.

Jerky clutch operation: This may occur on 2- and 3-speed models, and is caused by wear of the short plain pushrod. The rounded end is tempered and sometimes crumbles—it is this end which is pressed by the ground flat of the operating spindle. Removal of the magneto cover and spindle, as described above, will allow the rod to be removed by tilting the machine—if this is done, the ball between the two pushrods will almost certainly slide out also, so ensure this is replaced before the new pushrod is inserted. Take care also that the pushrod is fitted correctly, with the rounded end outermost.

GEAR SELECTOR

On 2- and 3-speed models this is located in the o/side crankcase. Basically, it comprises a spindle with an integral plate at one end. At the other end, it has flats on which the lever is held by a nut and washer.

The integral plate is inside the crankcase, and carries the gear selector pin (which engages with the sliding collar or gears on the secondary gear shaft).

2-speed model: The integral plate has a hole at the end opposite to the selector pin, into which a short spring is hooked. The other end of the spring is anchored to the crankcase by a small saddle which seats in a milled niche in the crankcase.

The effect of the spring is to pull the plate round so that second (or top) gear is engaged unless the twistgrip is operated to select neutral or first gear, in which gears a pin on the twistgrip locates these gears positively.

Breakage of this spring is extremely rare, but if it does occur then the unit must be stripped down (as has been described) to obtain access to the selector inside the crankcase.

3-speed model: The integral plate on this model is quadrant shaped, and has four detent notches on its edge, into which a ball is pressed by a spring housed in a transverse blind hole in the crankcase.

The gear twistgrip operates two cables, which are connected to the selector lever to move it in either direction. One cable is connected in the normal way, the other is anchored to an extension of the crankcase breather and so uses the reaction of the outer casing to move the lever.

RENEWAL OF PARTS

Note has been made in the course of the instructions to the availability of parts requiring renewal as separate parts.

If the crankcase castings have sustained damage, they must both be renewed as a matched pair.

All circlips and gaskets should be renewed as a matter of course, once they have been disturbed. However, the solid copper cylinder head gasket may be re-used if in good condition.

Similarly, Woodruff keys should be renewed, unless they show no sign of wear or have not been damaged in extraction.

Oil seals may be used again only if undamaged.

RE-ASSEMBLY OF BEARINGS AND CRANKSHAFT

In the off-side crankcase, fit the crankshaft and primary shaft ball bearings, warming the case will allow the bearings to be pushed in easily. The crankshaft bearing locates against a shoulder, the primary shaft bearing is located by a circlip in a groove.

In the magneto-side crankshaft, fit the crankshaft and secondary shaft ball bearings, in the same way. There is a large plain washer, the same diameter as the secondary shaft bearing, which must be fitted to the housing, against the shoulder, before the bearing itself.

Check that the two bronze bearings for the gearshafts have been reamed, if these have been renewed.

Now fit the crankshaft to the o/side crankcase, tapping it gently with a rubber mallet if necessary to enter it in the bearing.

If the bearing and oil seals have not been disturbed, rotate the crankshaft as it goes home, to ensure that the lip of the oil seal is not turned over by the shaft.

RE-ASSEMBLY OF GEARS

The method of re-assembly is the same for 2-speed, 3-speed or automatic models, the differences in construction having been noted previously.

2-speed and 3-speed models: Lay the o/side crankcase on two wooden blocks on the bench, inside uppermost. Now fit the primary shaft to its bearing, tapping it gently with a rubber mallet if necessary — if a 3-speed model, check that the top gear wheel is correctly pressed on its splines, as the position of this wheel determines the lateral position of the shaft.

Now, on the secondary shaft bronze bearing, lay the thrust washer or distance piece for a 2-speed model, followed by the (loose) top gear wheel. Align these two parts carefully with the bearing itself.

Assemble the secondary shaft — fit the sprocket/low gear wheel, followed by a shim washer and the retaining circlip. Fit the sliding collar or sliding pinion for a 3-speed model.

Assemble the pedal shaft — fit the ratchet sprocket, followed by a shim washer and the retaining circlip. Run the ratchet pinion up on to the quick thread, and fit the U-spring, with the leg pointing away from the sprocket. Place the thrust washer on top of the shaft housing and align it carefully with the hole.

Now take the two shafts in one hand, holding the loose parts in position, and fit the kick-starter chain round the two sprockets. Hold the complete assembly with two hands, the shafts vertical, and lower into position, entering the shafts through the loose parts previously aligned with the bushes.

The leg of the kick-start U-spring must be located in the narrow well in the casting, vertically below the pedal shaft.

Before the shafts are finally seated, make sure the pin in the end of the gear selector is correctly seated in the groove in the sliding collar or sliding pinion on a 3-speed model.

Place a shim washer on top of the circlips on the secondary and pedal shafts.

Automatic models: The sequence of assembly is the same, but the operation is simpler as there are fewer loose parts.

Lay the o/side crankcase on two wooden blocks on the bench, inside uppermost. Fit the primary shaft to its bearing, pushing or tapping it through until the collar on the shaft is against the bearing.

Lay a shim washer on the secondary shaft bearing, and a thrust washer on the pedal shaft housing, aligning these carefully.

Assemble the kick-start mechanism complete to the pedal shaft, as described above.

Hold the pedal shaft and secondary shaft in one hand, and fit the kick-starter chain round the two sprockets. Hold the two shafts together, and lower them into position, entering the shafts through the loose washer previously aligned on the casting.

Again, make sure the leg of the kick-start U-spring is located in the narrow well of the casting, vertically below the pedal shaft.

Place a shim washer on the upper end of the primary shaft, and another on the retaining circlip on the pedal shaft.

Fit the short dowel tube which lies below the exhaust port.

Refitting the crankcase: Fit a new gasket to the magneto/side crankcase half, using a smear of grease to hold it in position. The use of gasket cement is not necessary (or recommended), unless there are bad scores on the two faces.

However carefully it is used, excess cement will be squeezed out of the joints when they are tightened. This excess hardens, and small particles can then drop off and will circulate with the gear oil. The Capitano unit will remain oil-tight without the use of cement if the various joint faces are not damaged.

Now lower the mag/side crankcase half on to the shafts, tapping gently round the bearings as it goes home.

If the oil seals in the mag/side crankcase were not disturbed when dismantling, check that the inner lips have not been turned over by the shafts passing through them.

If all oil seals were removed, fit the new ones at this stage. There are five altogether, two on the crankshaft, one on the magneto side of the secondary shaft, and two on the pedal shaft.

Tap home the two hollow dowels in the rear engine mountings.

Now check that the kick start ratchet pinion is engaging correctly, by turning the end of the pedal shaft by means of an adjustable spanner on the cotter-pin slot. After a little free motion, turning the pedal shaft should cause all the other shafts to turn.

Fit the twelve screws which hold together the crankcase halves, remembering that eleven are the same length, the twelfth longer screw is just below the exhaust port.

Finally, operate the con-rod by hand, to check that all shafts revolve freely. At the same time, operate the gear selector lever by hand, to check that all gears engage correctly.

REFITTING THE PISTON AND CYLINDER

The piston is not marked, but is fitted correctly when the ring pegs are facing towards the exhaust port. An old gudgeon pin ground undersize, or any tube or rod of suitable diameter, can be useful in aligning the piston bosses with the little end eye before the gudgeon pin is pressed home. Fit a new circlip at each end of the pin.

The correct piston ring gap is 0.005in Check the rings, whether new or old, in the bore before fitting. New rings may need the gap adjusting by careful filing — old rings should be scrapped if the gap exceeds 0.012in. If the old rings are to be used again, check that they go back into the grooves in which they were fitted originally.

Slide a new cylinder base gasket over the studs, a smear of grease may be used on this but gasket cement is unnecessary unless the faces are badly scored.

Smear a little clean oil on the piston and compress the rings in turn with one hand as the cylinder is slid over the piston. Take care to keep the cylinder square, so that the long studs are not distorted.

Replace the solid copper head washer, then the cylinder head, followed by the flat washers, spring washers and finally the four nuts. Tighten down evenly.

REASSEMBLY OF CLUTCH AND PRIMARY DRIVE

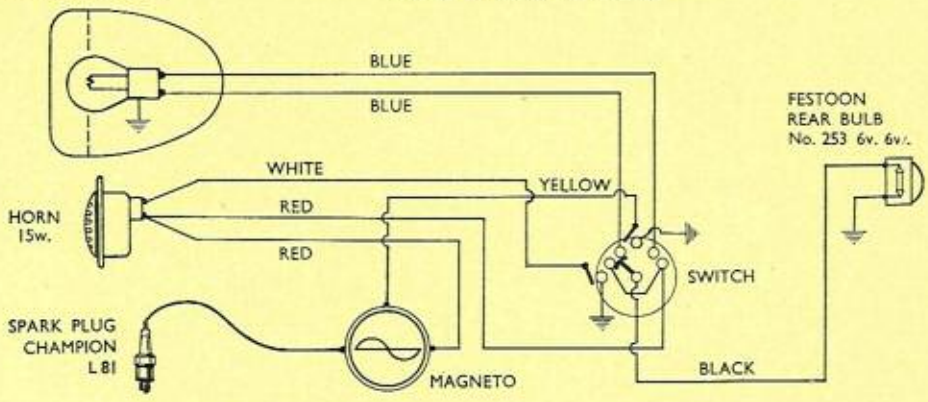
2- and 3-Speed Models: Lay the unit on the two wooden blocks, o/side uppermost.

Place a shim washer on the secondary gear shaft, then fit the clutch housing/pinion, followed by another shim washer. Now fit the clutch back-plate, tapping it squarely on to its locating flats with a hollow drift.

The nut securing the clutch back-plate has a recessed inner face to ensure that it seats against the boss of the plate and not against the shoulder of the shaft — make sure it is

HEAD LAMP BULB
No. 388 6v. 15/15w.

KERRY CAPITANO MOPEDS
WIRING DIAGRAM ALL MODELS



replaced correctly and do it up finger tight.

Now fit the Woodruff key to the o/side crankshaft, followed by the small engine pinion, washer and nut.

Use tool V/2-6 to hold the clutch plate whilst the clutch and engine pinion nuts are tightened.

Drop the clutch plates into position, a friction plate first, followed alternatively by two plain plates and two friction plates.

Fit the clutch pushrods — first the short plain rod with the rounded end first, then the ball, finally the mushroom-head rod.

Fit the clutch pressure plate, the four spring cups and springs, and finally the four screws. These tighten down against the shoulders on the clutch back-plate.

Fit the dowel for the cover plate, just above the pedal shaft. Fit a new gasket, positioning it carefully round the stud holes. Cement is unnecessary unless the faces are scored. Fit the cover plate and tighten up the five screws which hold it.

Fit a new Woodruff key (oblong pattern) to the pedal shaft if the original one was damaged, and fit the back-pedalling brake control to the pedal shaft, making sure it is held firmly by the key.

At this stage the gearbox may be filled with oil. Refit the drain-plug if this was removed, and pour 1 pint of oil (SAE 40) in through the clutch inspection aperture in the primary drive cover. This quantity should bring the level just up to the inspection aperture, with the unit placed on the bench.

Refit the inspection cover and its two screws, again with a new paper gasket. Again cement is unnecessary if the faces are in good condition.

Automatic models: Lay the unit on two wooden blocks on the bench, o/side uppermost.

Fit the Woodruff key to its slot in the primary shaft, and press on the large pinion — the flush side faces outwards. Fit the plain washer, with its groove on the key, and the nut. Hold the pinion with two screws from tool V/2-1 in the threaded holes, whilst the nut is tightened.

On the crankshaft, fit a thrust washer, then the bell housing with its bush and another thrust washer. Fit the drum, making sure it is located on its flat, then a plain washer and the castellated nut. Use two screws from tool V/2-1 to hold the drum whilst the nut is tightened, and fit and bend over a new split-pin.

Now fit the clutch spring and thrust washer and the clutch plate, pressing this inwards whilst the retaining circlip is sprung into its slot in the bell housing.

At this stage the gearbox may be filled with oil; pour 1 pint of SAE 40 oil carefully into the primary drive case, allowing it to run through into the gearbox.

Fit the dowel for the cover, above the pedal shaft. Fit a new gasket, positioning it carefully at the screw holes — cement is unnecessary, unless the faces are damaged. Fit the cover and its five screws and tighten up.

Place the unit upright on the bench and check that the clutch lever moves the clutch in correctly. Remove the oil-level plug and check that the level is correct.

REFITTING THE FLYWHEEL MAGNETO

Lay the unit on the wooden blocks on the bench, magneto side uppermost.

Hold the stator plate in the left hand and push the ends of the electrical wires through the rubber grommets in the casting — the HT lead goes through the upper grommet. Pull the slack of the wires through as the plate is lowered into position.

Timing the ignition: The c/b points should open ⅛in before TDC, with the points gap set at 0.012in.

If the original stator plate is being used, position it so that the marks made on dismantling are in register, replace the 3 screws and tighten up.

With a new stator plate, proceed as follows. Check the c/b gap first, then position the stator plate so that the screws are in the centre of the elongated holes and tighten the screws just enough to hold the plate. Now fit the flywheel key and push the flywheel on to the engine shaft. Insert a thin rod through the plug hole, resting on the piston. Turn the flywheel slowly anti-clockwise until the c/b points, which can be seen through the holes in the flywheel, are just opening. Mark the rod, and turn on till the piston is at TDC, then mark the rod again. If the two marks are more than ⅛in apart, remove the flywheel, turn the stator plate a little in one direction or the other, replace the flywheel and repeat the process.

When the timing is correct, tighten the three screws holding the stator plate, replace the flywheel and check that the timing is still right. If so, mark the stator plate and housing for use again in the future, then fit the spring washer and flywheel nut and tighten up.

Completing assembly: Refit the small drive sprocket to the secondary gear shaft, pushing it home squarely on to the flats which locate it. Fit the plain washer and nut, and use tool V/2-8 to hold the sprocket whilst the nut is tightened.

Fit the flywheel cover and its two retaining screws. Place the unit upright on the bench and fit the sparking plug.

If the unit was filled with oil as suggested above, check now that no seepage has occurred whilst the unit was lying clutch side down.

If this is in order, the unit is now ready to replace in the frame.

REFITTING ENGINE

Support the unit on a box or block whilst the cylinder head lug is aligned with the frame brackets. Insert the bolt, fit the plain washer and serrated washer, and run the nut up finger tight.

Swing the unit up and align the two rear mountings. Insert the bolts, they both have plain washers and serrated washers, and tighten the nuts. Lastly tighten the nut on the head mounting.

Refit the driving chain and the spring link.

Refit the pedals, which are retained by cotter-pins.

Refit the rear brake cable through the pinch-bolt on the cam lever, and tighten the nut on the pinch-bolt.

Refit the carburetter to the inlet manifold, and tighten the screw of the clamping ring, with the carburetter upright.

Check the condition of the gasket behind the exhaust-port flange nut. If necessary renew the gasket before refitting the exhaust pipe and silencer.

Reconnect the two electric wires beneath the crankcase — it is recommended that snap connectors, or insulated connectors with grub screws to clamp the wires, should be used.

Adjustment of gear control — 2-speed: The adjustment is made with second (top) gear engaged. Check that the gearchange twistgrip is in 2nd. (top) position, pass the lower end of the cable through the looped end of the lever on the gearbox, and tighten up the solderless nipple with light tension on the cable, e.g. just no slack. Now move the twistgrip and check that the two gears and neutral are obtained, if not use the cable adjuster to make the operation correct.

Adjustment of gear control, 3-speed: The adjustment is made in neutral. Place the twistgrip in neutral, then replace the cables in the following positions: the cable nearest to the rider at the twistgrip goes through the upper hole in the barrel nipple on the gearbox lever and is secured by a solderless nipple. The cable furthest from the rider at the twistgrip passes through the lower hole in the barrel nipple and then forward to pass through the anchor pillar on the gearbox breather, where it is secured by a pinchbolt—on this cable it is the outer casing which presses on the barrel nipple. Tighten the screws in solderless nipple and anchor pillar whilst keeping a light tension on the cables, then operate twistgrip to check proper selection of gears. Use the cable adjusters to get the operation correct.

Adjustment of clutch cable: On both models, the cable end is passed through the looped end of the operating lever and then secured with a solderless nipple. Adjust the cable so that there is ¼in free movement, measured at the tip of the operating lever — in addition to the adjuster on the cable, there is a further adjustment in the clutch pressure plate consisting of a screw, locked by a nut, which presses on the mushroom head of the clutch pushrod.

Automatic models: The clutch and decompressor cables are secured with solderless nipples, the method of replacement is as described above. Adjust the clutch cable so that there is ⅛in free movement of the lever, if correct the pedals should not turn when the back wheel is revolved.

Finally, replace the legshields, if fitted originally.

CARBURETTER

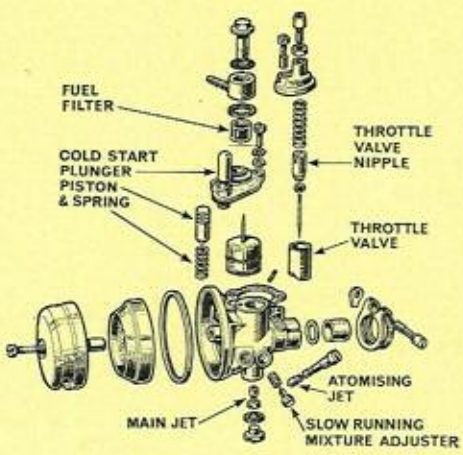
The construction of the Dell 'Orto carburetter is shown in the exploded drawing.

It is clamped on to an inlet manifold which is a separate part, secured to the cylinder by two studs, with a paper gasket. There is an insulation bush within the clamp, with a washer behind the bush.

Enrichment of the mixture for cold starting is done by a starting pump, operated by a plunger on top of the float chamber, which injects a small quantity of neat petrol into the choke.

The jet and needle sizes are fixed, and the only adjustment is the slow running screw on the side of the instrument.

The air filter shown is that fitted to the



2-speed machine. On 3-speed and automatic models, the filter is larger in size and is secured by a clamp and screw.

Recent machines are fitted with a newer Dell 'Orto carburetter which differs in construction slightly from that shown — the float chamber is circular and detachable, and is located below the throttle valve. On this instrument cold starting is done by a choke, operated by a lever protruding through a slot adjacent to the air filter clamp — this lever springs back to the "open" position as soon as the throttle is opened.

CONTROL CABLES

All conrol cables on all Kerry "Capitano" models are of the same pattern, in that they have a soldered nipple on one end only, the other end being secured by a solderless nipple, or a setscrew, or a pinch-bolt. All cables are available for replacement as separate inner, separate outer, or the two together.

Throttle Cable: The soldered nipple is at the lower end, in the carburetter. If this cable breaks, therefore, the mixing chamber top must be removed, so that the broken cable can be removed and the new cable attached to the throttle slide and then threaded through the adjuster and outer casing. Screw the adjuster right down before fixing the cable at the twistgrip, where it is attached to a small carrier, sliding in the boss of the grip, below the handlebar. Undo the grub-screw which can be seen in the slot of the boss, enter the free end into the hole in the carrier, and tighten the grub-screw, (which grips the cable). The cable may now require adjustment to take up slack.

Gear change cables: As explained previously, there is one cable only on the 2-speed model, kept in tension by the internal spring on the selector lever, whereas the 3-speed model has

two cables, which pull the selector lever in either direction. The soldered nipples are at the twistgrip end. To replace broken cables proceed as follows.

2-speed model: First turn the twistgrip to 2nd (top) gear position by holding the cluch lever up —this operates the gear lock. Underneath the twistgrip boss is the head of a grubscrew with a locknut—slacken the nut and undo the screw far enough to allow the grip to be pulled sideways, which will expose the nipple carrier. Place the nipple in the recess, and slide the grip back toward the boss holding the cable downwards so that it lies in the slot below the nipple recess. Do up the grubscrew and tighten the locknut. Thread the adjuster and outer cable on to the inner, pass the latter hrough the stop and lever on the gearbox, and slide on and tighten the solderless nipple. Adjust as described previously.

3-speed models: The procedure is exactly the same but the twist-grip must be placed in the neutral position before undoing the grubscrew to allow the grip to be moved. One or both cables can then be replaced.

Clutch cable: The soldered nipple is at the handlebar lever, the other end of the cable is secured by a solderless nipple on the operating lever. The same arrangement is used to operate the starting clutch on automatic models, on which also a decompressor cable is arranged in the same way. The method of replacement is as described above.

Brake cables: The front brake cable has the soldered nipple in the handlebar lever, the other end is secured by a pinch bolt on the brake cam lever. The rear brake cable has the soldered nipple located in a clip attached to the back-pedalling control on the pedal shaft, the other end is secured by a pinchbolt on the cam lever.

Automatic models have a hand operated rear brake, with the soldered nipple at the handlebar end and the other end secured by a pinchbolt.

WHEELS AND HUBS

Both front and rear wheels and hubs are identical in dimensions and method of construction, though of course the rear hub has a boss with holes to which the sprocket is attached by four bolts with a ring washer below them, and nuts inside the hub.

Since 1963, front and rear brakes are anchored by a slotted extension arm, which engages with a pin on the fork leg. Before 1963, the front brake (only) was anchored by a bolt passing through the anchor bracket.

Removal of wheels: On the front wheel, undo the pinchbolt of the cable (remove brakeplate anchor stud on pre-1963 models) slacken the wheel nuts and the wheel will drop out. The machine will then balance on the central stand.

On the rear wheel, first remove the spring link of the chain, then undo the pinchbolt of the brake cable. Slacken the wheel nuts and pull the wheel back out of the fork-ends, turning it slightly to disengage the loop of the anchor arm from the pin on the forks. (There is a distance piece between brake-plate and forkend on pre-1963 models).

Dismantling of brakes: Current models have the brakeplate locked to the spindle by a nut, with a washer behind it — before 1963 this method was not used.

Design of the brake assembly is straightforward — two identical shoes pivot on a fulcrum and are expanded by a flat cam against two return springs. Remove the shoes by levering them off the cam and fulcrum with a screwdriver, after which the springs can be unhooked. This process is reversed to re-assemble the shoes.

Dismantling of hubs: The hubs run on conventional cup-and-cone bearings with uncaged balls, but some details of design were changed in 1963. Before this date, the o/side cone, within the brake, was locked by a tongued washer which engaged with a groove in the spindle and then by a locknut, and there was an oil seal washer between the tongued washer and cone. Since 1963, the spindle has not been grooved and the tongued washer omitted.

To dismantle, remove the nearside locknut and cone (which are the easier to get at) and pull out the spindle. The balls being uncaged will drop out as this is done. The cups can be driven out from alternate sides, and these and the cones and balls are the most likely parts to require renewal.

Re-assembly is straightforward. Hold the balls in the cups with grease, insert the spindle with one cone and locknut from the brake side, and run up the other cone and locknut. Adjustment should be so that there is just no play — if new bearings are fitted, these should be checked for settling-down after a few miles.

Lubrication of the bearings is done by packing the hubs with grease.

FRONT FORKS AND STEERING HEAD

The upper fork tubes are welded to the lower fork crown, which has the steering column at the apex of its triangular shape. The assembly is completed by the upper head plate, held to the steering column by a cap nut — forward of the handlebar mountings, two studs go through the head plate and screw into bushes in the fork tubes. These bushes also have an internal scroll thread into which the upper ends of the forks springs are screwed.

The lower fork legs are tubular, flattened and slotted at their lower end to accept the wheel spindle. At the top they have an internal scroll thread into which the fork spring is screwed. There is no hydraulic or other damping, the springs being in compression and tension. Each leg has two external bushes which provide the bearing surface for the telescopic action. These bushes are not renewable, in the event of wear the complete fork leg is replaced. Lubrication is done by packing the upper fork tube, round the spring, with grease.

Dismantling the forks: The fork legs can be unscrewed from the spring and will then drop out. The springs can then be removed by undoing the studs on the head plate and will then drop out.

Dismantling the steering head: Undo the four nuts holding the handlebar clips, and lay the handlebars, supported by the cables, on the tank. Undo the cap nut on the steering column, and lift off the head plate.

The steering head is supported by cup-and-cone bearings, with uncaged balls.

Hold the forks while the upper cup is unscrewed. When free, lower the forks carefully, as some or all of the balls will drop out. The upper cone and lower cup have spigots which are a press fit in the steering head and can be removed by driving out from alternate ends. Similarly, the lower cone is a press fit on the steering column. All cups and cones and balls are renewable.

Re-assembly of steering head and forks: Hold the balls in the steering head upper cone and lower cup with grease, and insert the steering column from below, taking care that none of the balls is dislodged. Screw on the upper cap, until there is just no play in the bearings. Fit the upper head plate, and screw the cap nut on the steering column. Check that when this is tightened the bearing adjustment is not upset.

Now screw the fork springs into the scroll in the fork legs, smear liberally with grease, and insert them in turn into the fork tubes, remembering that the o/side fork leg has a peg for anchoring the brake. Insert the studs through the head plate into the fork spring bushes and tighten up, holding the fork legs as this is done to ensure the flattened fork ends are parallel.

Finally, refit the handlebars and their clips to the upper head plate

REAR SUSPENSION

The rear swinging fork pivots on a single long bolt which passes through a bushed tube in the frame. The nearside fork leg has a threaded bolt hole, thus giving an adjustment for sideplay, and the bolt is locked by a nut, with plain washer, on the nearside.

To dismantle the forks, remove the back wheel, and then undo the two lower shock-absorber bolts. Remove the locknut and washer from the pivot bolt, unscrew this until it is free of the thread, it may then require tapping right through with a soft drift. The fork will then come away, with the chain guard attached to it.

The two bushes in the frame tube are renewable and can be driven out by a suitable drift used alternately from either side. Pack the bearing with grease before re-assembly, which is straightforward.

Early pattern shock-absorbers are recognisable by having a thin tube on each side of the main assembly. They can be topped-up with oil by removing the upper cover which is sprung on, when a small hole sealed by a grommet can be seen near the upper fixing bolt. Later patterns are sealed units of conventional appearance, and both types are renewable as complete units. Upper and lower fixing bolts have rubber inserts which are renewable.

PETROL TANK

This is held by two bolts to brackets welded to the frame, and sits on two felt pads which are taped in position on the main frame tube. Each fixing bolt has a plain and a shakeproof washer and nut.

ELECTRICAL EQUIPMENT

There is a single switch on the handlebars, controlling main or dipped headlamp beams, with a horn button on op of it, and an engine cutout button in its side. It is secured by two screws passing through a plastic distance piece to a clip, and is of simple construction, unlikely to give trouble during the machine's life.

Access to the headlamp bulb is gained by undoing the single screw holding the front, which will then come free bringing the reflector with it — the reflector is held to the front by spring clips, with a sealing washer. The bulb is held in a bakelite holder in the back of the reflector.

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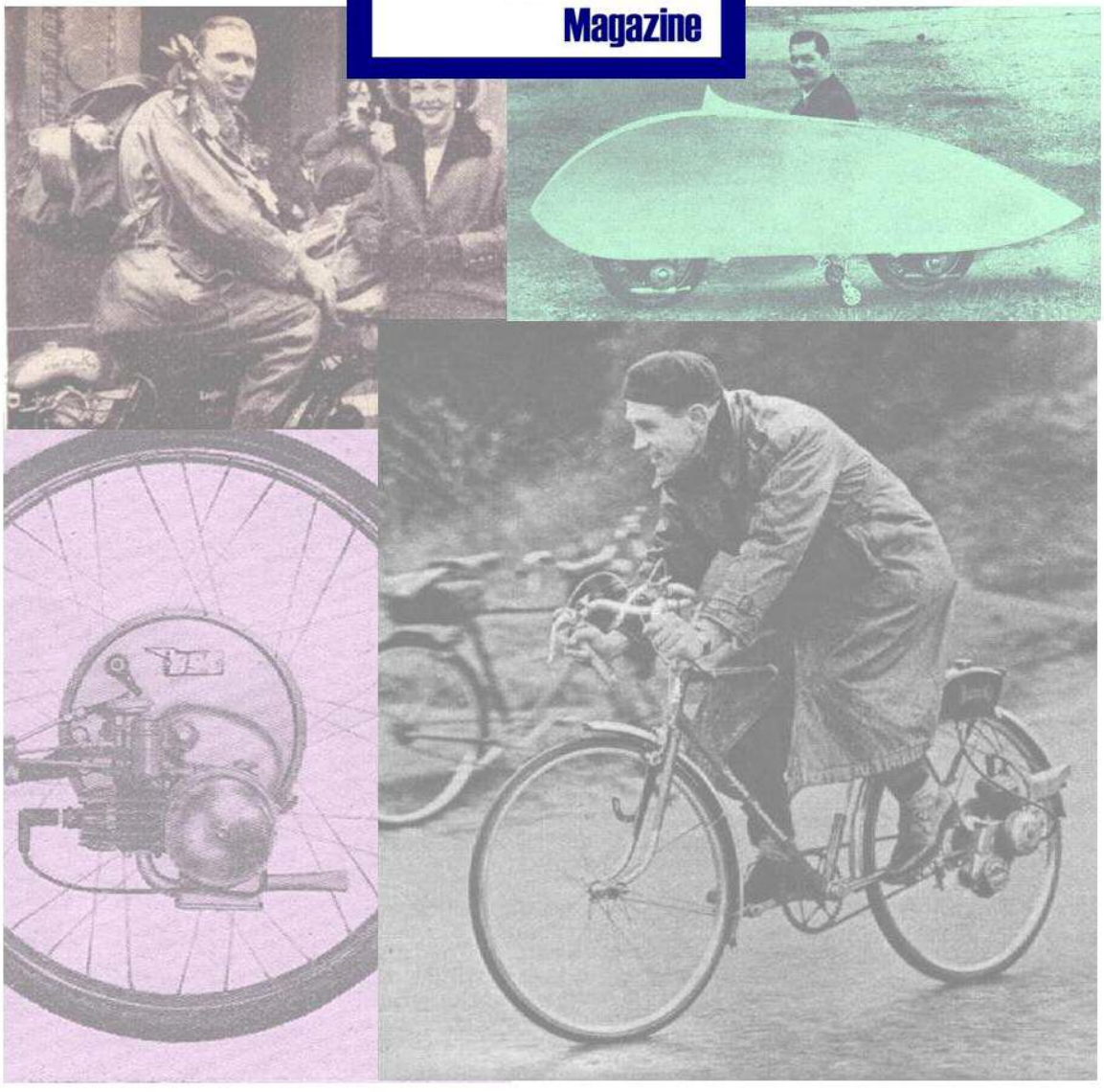

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