9.1 Maintenance Topics - General

CARE AND MAINTENANCE OF THE TWIN CYCLINDER SCOTTS

Some practical trouble saving hints, notes on improving performance and advice on preparing for competitions.

By C. H. Wood.

(Reprinted from the *Motorcycle* of August 21st, 1930.)

A difficult problem arose when I was asked to write upon the "The maintenance of the Scott" for the new 72 page handbook leaves little to be added in the way of general maintenance instruction. There are, however, many small ways in which the Scott may be improved according to the tastes of the rider, and a number of time saving and trouble saving hints, often discovered only after years of experience; and it is with such minor detail that this article will deal.

Intelligent handling repaid

Perhaps the most important advice to the new Scott rider is that he should dismiss once and for all the idea that his machine is complicated. The mere fact that a water-cooled twin two-stroke is uncommon amongst motor cycles, lead some people, familiar only with the conventional types of engines, to imagine that they cannot understand it, and to excuse their ignorance by describing it as complicated. A rider who adopts such an attitude cannot possibly get the best from his mount! and the Scott, probably more than most machines, is a thoroughbred which deserves and repays intelligent and sympathetic handling.

Coming to the actual maintenance of the Scotts, the most usual job is the periodical de-carbonizing. After reading the instructions it is impossible that anybody should have difficulty, but the following are a few hints, perhaps trivial in themselves, which all help towards making the work short, easy and enjoyable.

On Super Squirrels the removal of the oil tank is unnecessary if it be moved around each way in turn to enable the radiator bolts to be withdrawn.

If the water-hose connections are badly stuck the joint can be quickly broken by first levering up the edges with a long flat screw-driver and then pushing the centre of the pipe with a blunt instrument (such as a hammer shaft) while working the end of its tube.

Removing carbon deposit

The four cylinder holding down bolts should at first be slackened only about a quarter of an inch, so that in the event of the cylinder block sticking the joint may be broken by hammer blows on the heads of these bolts.

Carbon is most easily removed from the combustion head by means of a sharp screwdriver and a right-angled scraper, and from the exhaust ports by means of an old worn file of about $\frac{1}{8}$in. square section. The deposit on the piston should be scraped off very carefully so as not to scratch the aluminium, a useful tool being a strip of old hack-saw blade. If the carbon is exceptionally hard it may be broken by gentle chipping with a crank case door strap. It is safest, and quickest to remove the pistons for decarbonising, thus preventing carbon from falling down inside the crank case, and also allowing the pistons to be held more conveniently.

If the gudgeon pins are too tight to be pushed out, a cylinder holding bolt forms a safe substitute for a soft punch, if carefully used: but the piston should be held during the process to prevent distortion of the con-rod. Removing carbon from the inside of the piston is, on some high compression engines, almost as important as removing it from the outside.

Before fitting new jointing washers, every trace of the old ones must be removed from both cylinder and crank cases faces. A good joint is ensured by fitting TWO linen rings to each side and smearing them lightly with oil or seccotine. If the latter is used, the faces should first be washed with petrol to remove all traces of oil. Rubber base rings MUST be fitted in a dry condition.

If it is desired to remove the con-rods, the crank pin screws can be turned (except on power-plus engines) by means of a tommy bar and door-strap, remembering that the right-hand screw has a left-hand thread. The quickest method of preventing the engine turning during this operation is to slip the other door strap down into the crank chamber in such a way that it wedges against the con-rod big end.

A water hose hint

On some Scotts the bottom water connection has a habit of kinking, and if this is so serious as to restrict the circulation it may be cured by inserting a short piece of tube, but with a "v" notch and bent to form an elbow; or alternatively a short length of stiff one inch diameter coil spring can be used in the same manner.

The honey comb radiator should be cleaned out occasionally and the easiest method is first to scrape off all surface mud, then soak the fitting well in warm water and soda, thus softening the mud sufficiently to be swilled or hosed away.

Tuning a Scott engine is apt to be puzzling, for its extreme simplicity leaves us with almost nothing to tune!

Careful attention to small detail, however, can make a wonderful difference, and the most important point to watch is that the engine is free from air leaks. Allowing the engine to tick over on as much air as possible and alternatively detaching the plug leads will shew up any inequality between the two cylinders. Any leaks can be detected by squirting the suspected joints with petrol and noting whether there is any difference in the running. The well known Scott "push on" plug terminals are a great convenience for such test and are invaluable for competition work, since in nine cases out of ten, an oiled up plug can be instantly cured by temporarily detaching the lead, holding it near the terminal and thus making an external spark gap. Another advantage of the twin!

If a better performance at high speed is desired, all gas passages should be smoothed and polished. The induction flange packing should be cut to register exactly with the opening, while the induction pipe (or carburettor stub) and the crank case inlet should be filed to leave no step at their joint. The same remarks of course, apply to the transfer port covers, from which the gauzes may be omitted. For ordinary use however, these wire gauzes are desirable. Their effect on power is negligible except at maximum revs., and they prevent any possibility of sudden spitting back stopping the engine at very low speeds.

(To be continued)

CARE AND MAINTENANCE OF THE TWIN CYLINDER SCOTTS
(Part 2)

(Some practical trouble saving hints, notes on improving performance and advice on preparing for competitions)

By C. H. Wood

(Reprinted from Motorcycle of August 21st, 1930)

Tuning for Speed

When preparing for racing, new piston rings should be fitted with a gap of 0.008 in. run for about 100 miles and left undisturbed when the engine is cleaned. Champion Aero or KLG "246" are suitable plugs for sprint work and KLG "356" or "341" when high revs are to be sustained for long periods. A combination of benzole mixture and No. 1 petrol forms a good fuel for most Scott engines, but Ethyl is best for the latest Power-Plus engines.

It must be remembered that the ignition lever on a Scott is NOT fitted for ornamental purposes and with racing engines it must be used intelligently to obtain good acceleration.

Owners of Super Squirrels who desire the maximum in speed can effect an improvement by shortening the piston skirt, but such an alteration, except in very special cases, IS UNWISE.

The removal of about 3/32 in. from the bottom of the pistons adds appreciably to the maximum speed and acceleration AT HIGH REVS ONLY; but it must be remembered that at the same time, crank case compression is lowered and the blow back through the carburettor increased. As a result, slow pulling is impaired and petrol consumption seriously affected.

Care and Maintenance

Leaving the engine, the ordinary cycle parts require the most attention for the correct adjustment and lubrication of wheel bearings, controls, brakes, chains and head races are quite as important, though just as often neglected on a Scott as on any other machine.

The top sliding bush of the Scott (De Luxe and T.T. Replica models) requires regular lubrication particularly under dusty or muddy conditions. The tube guides on these and the Super Squirrel forks should also be kept well oiled, so that the full range of movement may be employed to give good front wheel road holding. Unnecessary friction may also occur between the bottom and top spring cases (Super Squirrel) if the latter is not positioned after adjustment of the head races. The fork dampers on the Tourer model should be fairly tight for fast road work and slackened off only for picking a course in thick grease, or climbing trials hill and the like.

On all models the high tyre pressures recommended by the tyre manufacturer are obviously intended to obtain the maximum possible tyre mileage regardless of the physical and mental wear and tear of the rider; and, except for racing, very much lower tyre pressures particularly for the front wheel, are desirable. Rear wheel bounce is usually the result of too hard a tyre, and, on Tourer models, excessive slackness of the fork dampers.

The Two Speed Gear

To experience fully the charm of the Super Squirrel two speed gear, careful attention must be paid to the adjustment of the foot pedal. The

engagement positions are determined by the number of thin packing washers behind the outer quick-thread drum; and its freeness or otherwise depends upon the clamping band, the joint of which should lie on, and not between, a segment of the outer drum. These quick-thread drums should be washed and lubricated with paraffin only, while fitting loosely a second clamping band alongside the inner one in use serves to protect the drum from mud. The two speeder's kick starter should be adjusted with the rachet just out of mesh so that the maximum movement of the lever is available after engagement.

(To be continued)

V7/8 Nov. 1971

CARE AND MAINTENANCE OF THE TWIN-CYLINDER SCOTT (PART 3.)

(Reprinted from the Motor Cycle of August 2nd, 1930)
By C. H. Wood.

Some practical trouble saving hints, notes on improving performance and advice on preparing for competition.

No comments are needed concerning the three speed box, for it is genuinely fool proof and can stand anything. Heaviness of the clutch operation is usually caused by a dry cable with a sharp bend where it passes through the eye bolt behind the engine, or by roughness of the plate sliding tongues.

Finally a few words on preparation for trials.

Carburation of a two-stroke is considerably affected by fitting an extended air intake, as trials riders who believe in preparing at the last moment will have found to their sorrow. Anything in the nature of an extension or even a standard air cleaner necessitates very much smaller jets. Similarly the exhaust pipe, because of its extractor effect on the gases should remain nearly as possible the standard length found best, and if raised for splashes should still discharge *with* the flow of air and not vertically upwards. Oil leakage from the aluminium end caps of Flyer silencers, incidentally is due to a softened and blown packing. If these washers are removed altogether and the through bolt tightened whilst hot the joints will soon carbon up and become permanent. The central outlet of the Scott tail silencer may with advantage be increased to ½in. diameter and the silencer internally cleaned fairly frequently.

For trials work in particular, chain oilers are a great asset and should feed on to all three chains. Fairly free delivery turned on for short periods is (except for the absent minded rider!) preferable to the "occasional drop—sure—to—stop—up" variety.

The trials rider may find that the exceptionally wide bars are inclined to become involved with gate posts and the like; but if they are shortened too much they will not protect the radiator in crashes.

Protecting the plugs

When preparing for water the plugs should be protected from spray by an efficient shield, and for depths exceeding 15 inches by Plasticine, which on account of the water jacket does not char. The magneto chain unavoidably carries a lot of water up with it and a good plan is to fit a thick felt washer behind the magneto sprocket with which it rotates, and by centrifugal force, prevents water reaching the armature shaft. The front shield must not be close enough to short circuit the electrical cut-out when wet; whilst care should also be taken to see that neither the flywheel nor chains throw water on to the plugs when running partially submerged.

ON VICE — FREE SCOTTS

by " Mr. Stiffpocket "

Upon receiving the September issue of " Yowl " and finding myself styled " Chairman of Vice " for the club, a great feeling of guilt descended upon me regarding my lack of articles for the aforementioned publication.

I then proceeded to search for some suitable subject on which to write. I decided that those articles which I find most interesting are the historical ones, and these I leave to those more knowledgeable than myself.

The second subject which drew my attention was one about which I do know a little, i.e., making old Scottie go ánd keep going. I shall now proceed to give details of the several modifications which I have made to my four Scotts. I am only going to expound on those which have proved a success with the addition of one or two problems to which I have not yet discovered the solution in the hope that it will draw an article or two from another " surgeon."

One very useful accessory which I fitted to my first Scott, a 1929 Flyer, was a speedometer. My machine was fitted with Scott girders and a standard 19" front wheel. The following directions should not be adhered to too rigidly as obviously some slight modification will be necessary for a Webb wheel, etc.

The first stage is to detach the front wheel and thus determine the diameter of the boss, and examine clearance of the brake shoe, etc. The next step is to visit a motorcycle shop, preferably one in which one can wander behind the counter and browse. A speedometer gear-ring should be found of a sufficient outside diameter to give a wall thickness of approximately $\frac{1}{4}$" when bored out to fit snugly over the boss. These are quite soft and are easily turned. On the inside a generous radius should be turned, especially if the drum is pressed out as on a Scott wheel.

When turned to a good fit a speedometer gear-box should be obtained from the same source as the ring, remembering to buy two locking nuts at the same time, one for each side of the brake plate. Also required is the pinion. This should be as small as possible, but with of course corresponding teeth to those on the ring. I believe mine were both intended for some obscure Norton.

The gear-ring should then be attached to the wheel hub with four 6 BA steel nuts and bolts with suitable packing (I used one extra nut under the ring) to provide 100% tooth area.

A very slightly elongated hole should be drilled and filed in the brake plate to accept the gear-box, and a much smaller threaded hole ($\frac{1}{4}$" BSF or similar) adjacent to it at the gear-ring radius. Thus the gear-box can be fitted and the pinion can be checked for alignment (just feelable backlash) through the smaller hole. This can later be fitted with a grub screw.

When fitting the gear-box it may be necessary to modify one of the brake shoes. On my machine I filed a small cut-away for the pinion and moved the return spring anchorage hole about $\frac{3}{8}$".

Having assembled the gear-ring and pinion the box should be well greased and the speedometer head must be obtained; this is where the manufacturers' help is required. The procedure I used was this—firstly equip yourself with all (and I mean all) relevant information. This includes wheel size and tyre size, number of teeth on gear-ring and pinion, outside diameters, type of head required, i.e., with light and range 80 or 120 m.p.h., trip, etc., as these help to avoid mistakes.

Telephone to the technical information (speedometers) department of Smiths and supply all the information to someone knowledgeable, explaining your position. I think it was a Mr. Catlin I spoke to and he was very thorough, asking me to phone again the next day, by which time he had traced the serial number of the head which corresponded to the other two pieces of equipment.

This does sound rather complicated but it is not really, and for the sake of two or three phone calls is well worth the trouble. Except for a broken cable this arrangement gave me no trouble for several thousand miles until I sold the bike. Regarding these cables, an L.E. Velocette cable did this job admirably in my case, though I removed that steel spring protection, and replaced it with a length of plastic tube, pre-war Velo fashion. However, if a cable is not forthcoming immediately they can be made up at no extra cost within a few days at most dealers.

This arrangement is quite satisfactory, although not compulsory on any machine registered before October 1st, 1937. It is also not quite so accurate as an outrigger or rear wheel driven speedometer, due to the fact that ones front wheel is not permanently in contact with the road surface.

However, it has the advantage of cheapness (in fact I obtained the head wholesale after I had been supplied with the serial number).

This instalment absorbed more space than I anticipated, and I shall therefore make it Item No. 1 in this series.

V2/2 May 1961

ON VICE-FREE SCOTTS Part 2

by "Stiffpocket"

Much discussed at last year's Showstand was the question of an up-to-date Scott handbook. Scorn is poured upon the old manual, which has remained unchanged for 30 years—a great advantage to new owners of vintage Scotts, but not much help to riders of modern machines.

The chapter which deals with "Bottom End Workings" has caused me both trouble and expense, and there is no doubt in my mind that a new Scott owner—reading it and considering a crankcase and mains inspection for the first time—would be at a loss, to say the least. I therefore hope this article will clarify the procedure and benefit some fellow members.

Engine Removal

Before commencing bottom-end inspection, remove both crank-case doors (with pump, electrics, etc., if fitted). Before removing chains, it is a good idea to loosen crank-pin screws—stamped L/H and R.H (thread direction)—by engaging gear and tapping lightly on end of each screw slot. Cylinder holding down bolts should also be slackened one thread or so, working on diagonally opposite bolts in sequence.

The exhaust manifold and pipe need not be completely removed—a useful feature with combinations—but must obviously be unbolted. Plugs should be removed, and radiator hoses detached.

A suitable block should then be obtained for supporting the engine at the correct height while the engine mounting bolts are removed. (I use an ex-A.R.P. tin hat with the top hammered in to the right extent—a matter of trial and error). At this point an assistant will be required to remove the said block on request.

Standing astride the machine with four finger-tips in each crank-case, take the weight of the engine while the support is removed. The whole unit should now be rotated backwards and downwards at the same time, so that the cylinder block passes through the lower frame members as illustrated by Fig. 1, page 2. A piece of sacking on the floor will help to cushion the blow if a mistake does occur (this is where the carburetter suffers if not removed), and it is useful for dragging out the engine between the two front down tubes, while the front wheel is turned to one side.

Thus the engine is removed, and a good wash with paraffin or " Gunk " is recommended. Removal of all the dirt and grime from a well-used motor usually takes two or three washes. Both cylinder block and rods complete with pistons can be detached in the usual way. A tight block is best loosened by unscrewing all bolts slightly, and tapping the heads downwards. (Again, work in sequence on diagonally opposed bolts).

Crankshaft Dismantling

The procedure recommended in the instruction manual is poor, as when blows are delivered to the tightening-bolt head, the reaction is taken on the crankshaft main bearing cup. One famous veteran Scott fitter has his own special system, which involves knocking the crankpin (via a special drift) after loosening the crankshaft bolt. (Fig. 2 on page 2).

My own method is a combination of both these systems: Commencing with the R/H crank, the locking nut should be removed and the crank bolt unscrewed about $\frac{1}{8}$". It is most important that before striking the crank bolt (as per handbook), the case should be held in the air by an assistant grasping the flywheel. By this method the shock transmitted to the case is reduced considerably, and the crank is usually freed after a few blows.

By only undoing the crank bolt a few threads there is no danger of smashing the case wall. (This I have seen happen when the crank bolt was withdrawn too far). I use a two pound hammer on a 4" aluminium drift of 1" diameter. After freeing the R/H crank, the crank bolt can be removed; by correct positioning, the R/H crank can be taken out, followed by the main bearing rollers, gland, springs and shims. These last items can normally be used again, but rollers should always be renewed.

The L/H crank is removed in a manner similar to that already described, but no blows should be transmitted to the crank pin (Fig. 2 style), as this overloads the L/H main bearing cup. I usually give each crank a knock or two **before** commencing work on the R/H one. The L/H crank is best removed by having the case held as before. For safety's sake place the crank pin opposite its "cutaway" and avoid having the case too far above the ground or bench. The best drift to use is a brass or soft iron one about 8" long and of a suitable diameter to pass through the flywheel and clear the key, but certainly not less than $\frac{1}{2}$" diameter. A couple of blows should knock the crank out on to the bench. The pieces can be collected and kept separate from the R/H assembly.

With the flywheel removed the case may be cleaned thoroughly inside. (It is astonishing what may be found in here—I have heard of a complete primary chain crammed in the front!). It is unlikely that the cups will be either loose or pitted. If they are—read no further. Any carbon deposit should be removed from the intake, cylinder seatings and transfer passages. The cups should be lightly oiled, and the case polished and placed in safety.

The sprockets on early machines are made from a high grade material and rarely need replacement, but in any case this is a straightforward job. (After rivetting, the countersunk heads must be ground flat). I usually paint the flywheel at this stage, using quick-drying aluminium paint, which ensures that the job is not held up overnight. In spite of the prejudice against aluminium paint, I prefer it for this job, as it is unaffected by petrol and reflects more light into the crankcase. (What Tom Bellamy called "an inky void full of spring clips and main jets!"—Ed.).

The key should be removed from the flywheel boss and examined. I was unfortunate enough to have one of these shear, and was for a short time the owner of the only 10° vertical twin Scott. This was probably due to the previous owner fitting the key badly, and the cranks locking on the key instead of the tapers. (This key is for the positioning of the cranks only). A new key from the service agents is a good investment, and will seldom need any modification. Always ensure that the cranks are not tight on the key, or swarf will be created whilst fitting.

(To be continued in the next issue. Part 3—Big end and Mains renovation, Shimming and re-assembly).

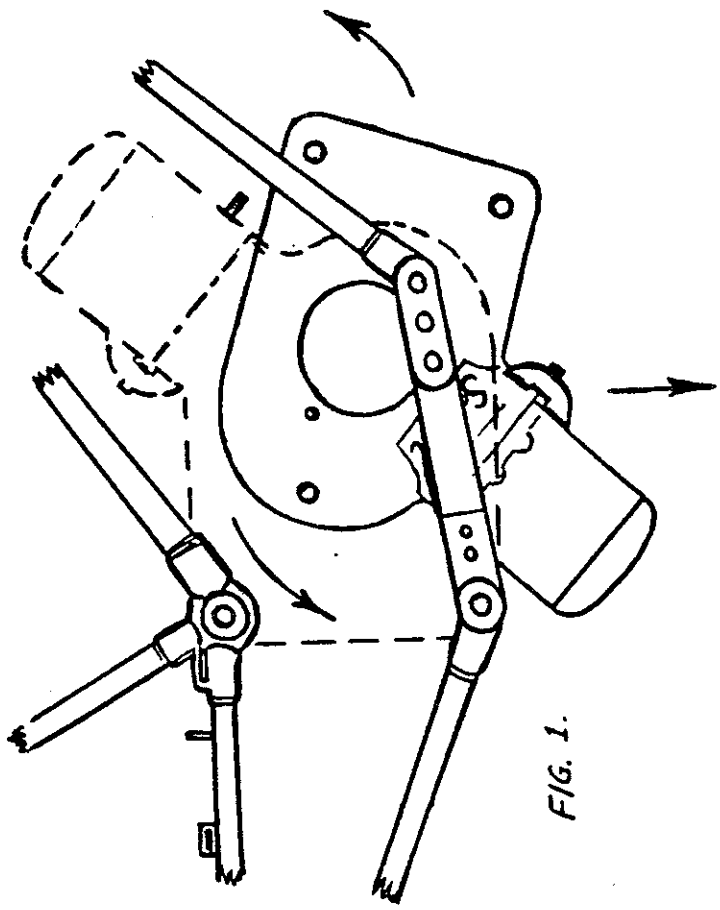

FIG. 1.

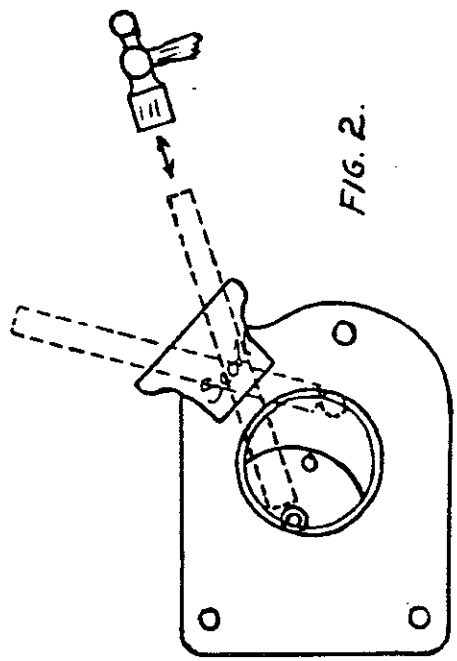

FIG. 2.

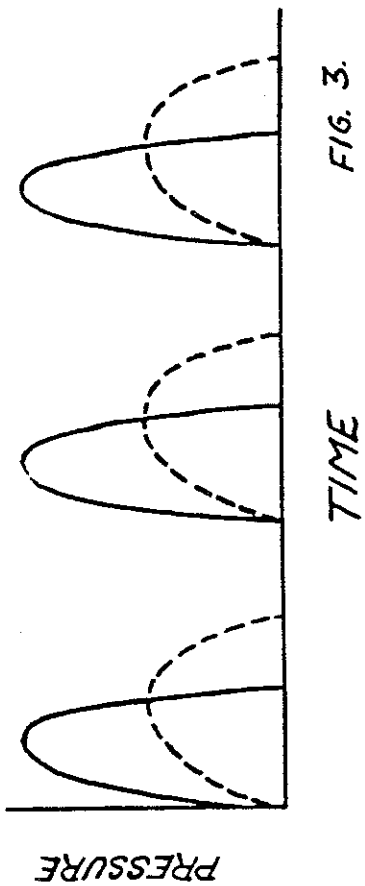

FIG. 3.

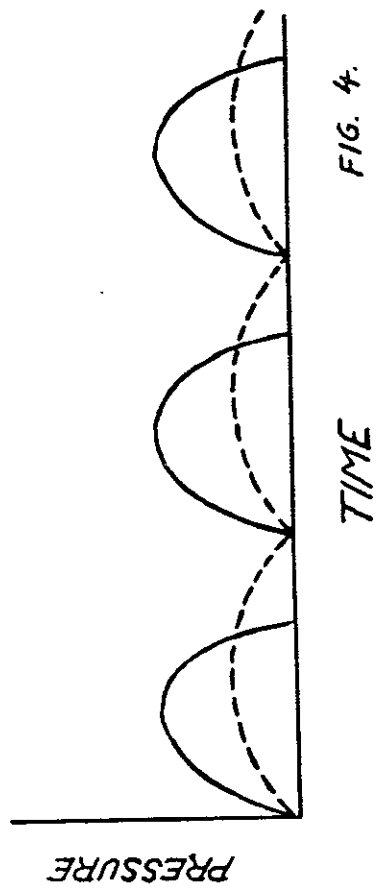

FIG. 4.

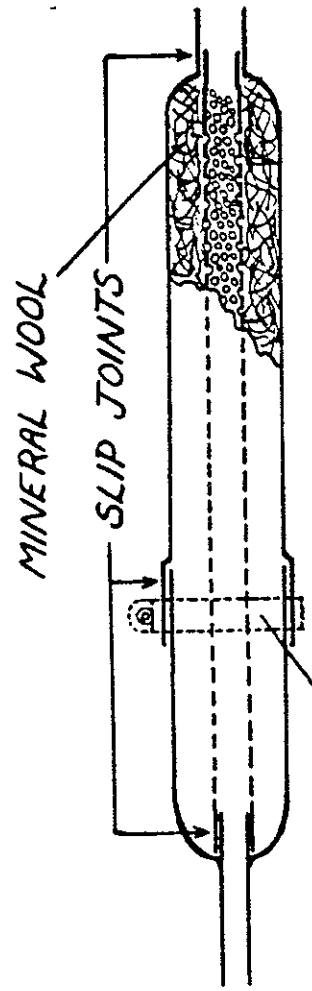

FIG. 5

ON VICE-FREE SCOTTS Part 3

by " Stiffpocket "*

With the key removed, the cranks should be examined for cracks and other defects. A common discovery at this point is that of " rotating crank pin bushes." These are never fitted very tightly in order to avoid distortion and consequently sometimes become loose after running. If they are in poor condition then having them " done " is the best remedy, in which case the con-rod bushes should also be renewed. Service dealers have these bushes with alternative internal diameters. If the bushes are quite usable and also rotatable without being sloppy, then a repair can be affected by having the inside walls nickel plated to a depth of about .001" or so (to do this the remaining surface area is coated with plastic paint). Be warned, oil holes will not always line up correctly in relation to the crank pin lock washer recesses, in which case the corner of a small oil stone can be used to redirect the oil feed around the crank pin circumference.

Replacement of main bushes is a much simpler job. The mains roller plates are marked either LH or RH thread, and the best method for removal is that employing a number two jubilee clip. If this is tightened around the periphery, then a sharp tap on the fastener should release the plate. (See Fig. 1, page 2). The main bearing bush is then removed, and for this job I use an old steel kitchen knife. Blows on the back of the blade from alternative sides (as shown Fig. 2) should do the trick. Normally these are not very tight.

While the cranks and flywheel are in this dismantled condition they should be lapped together with fine grinding paste. This is best done by holding the flywheel by its rim in a vice, and grasping the crank in both hands and pressing it into the taper. Only a little movement in different relative positions is necessary to ensure an accurate fit (Fig. 3). Upon completion both cranks and flywheel should be gunked and washed off. Avoid the temptation to wipe the mating surfaces with any fabric before refitting the key. While the grinding paste is available the packing glands should be ground into the back of the main bearing cups, as shown in Fig. 4. For this operation also, only a little paste and slight movement is required. I use an old file handle or a similar tapered piece of wood which fits tightly inside the gland. These should be washed off in the same way as the cranks.

Now for reassembly. A new crank tightening bolt is not absolutely essential unless the old one is in a bad way, but a new LH lock nut is certainly a sound investment.

Both the tongue and keyway of the packing gland in the flywheel boss are usually worn, but I have never attempted any correction of this fault and have not heard of it affecting the oil supply, although it would presumably not be a difficult welding job.

Packing gland springs should never break, and last indefinitely. They do, however, distort and become conical, in which case the larger end should be inserted in the gland. After ensuring the flywheel is the right way round inside the case, the right hand crank should be fitted in the following manner. First, put the case on the L/H side and clean the R/H cup thoroughly. A piece of rubber tube on the oil delivery angle piece will enable you to "blow through" the oilways.

If an old cylinder holding down bolt is screwed into the R/H crank from the "wrong" side it will facilitate assembly. The main bearing bush should be well greased and the rollers (15) placed in position and pulled in tightly using a thin cord or piece of strong cotton. The packing gland and spring should be well oiled and fitted into the flywheel.

The amount of shimming is different for each engine. Shims should be equally divided between the two sides, and it is a good plan to fit each crank one shim short of the number found when dismantling.

Hold the R/H shims in place with grease; use the temporarily inserted bolt as a handle, and insert the crank smoothly, taking care not to disturb the rollers.

When fitting the R/H crank, ensure that the flywheel is in the correct position—i.e., so that the crank can be inserted without rotation. When "home" the crank face should be just proud of the inside wall.

To avoid the chance of the crank moving out of position it should be kept in place by the thumb of each hand—see Fig. 5. and in this position the $\frac{3}{8}$" x 26 bolt can be removed. The case should be turned on to its R/H side and placed on a block of hard wood about 2 inches square and 4 inches long which should be positioned under the crank as shown. Only when the full weight of the case and flywheel is taken on this block should thumb pressure be released. The case should be steadied by an assistant during this operation.

For the L/H crank, the same procedure should be adopted with the following exceptions. The case should be rotated through 180° which will ensure that the L/H crank pin will line up with the case cut-away. Due to the absence of a thread inside the L/H crank centre, an alternative method of suspension is required. The crank pin screw may be utilised with an "L-shaped" piece of mild steel; alternatively a tapered piece of wood or soft metal that will fit tightly in the centre hole. However, the most satisfactory

method I have discovered is the use of eight inches of so of stiff wire bent to shape as shown in Fig 8. This piece of equipment can be made on the spot, and will just support the crank weight, complete with rollers and shims, when inserted in the centre hole of the crank, which may then be placed in position. A sharp pull whilst the crank is held securely in place will withdraw the wire.

The crank locking bolt may now be passed through the centres, and should be finger-tightened immediately, the flywheel being held stationary. After discarding the block from under the R/H crank the case should be turned upright and the crank bolt tightened with a box spanner and bar. The crank assembly may be prevented from turning by the use of a soft metal strip placed alongside the crank face. Alternatively a wooden or brass wedge between a sprocket tooth and the crank case base may be used.

Mains should be checked for end float, for which many recommendations are given: I use 0.015 plus or minus 0.003". This figure ensures that the procedure need not normally be repeated more than once. By pulling the flywheel hard to alternative sides with the fingers, the end float is normally made quite obvious. Occasionally a screwdriver is required behind the cup as a lever.

Either one or both cranks may have to be removed, but for a variation of 0.005" or less, one is normally sufficient (the R/H crank being the obvious choice for easy removal). Final tightening and "knocking up" is best done with a good tubular spanner or a socket and bar. The cranks should be driven into the flywheel boss, while supporting the R/H crank on top of a wooden block or similar material which will not absorb too much shock. (A tubular drift to clear the crank bulk head being used in conjunction with a hammer on the L/H crank.) Three sharp blows are sufficient. At this stage end float should be checked finally (feelers interposed between cup and flywheel boss when the latter is in its two respective positions.) The crank bolt should now be re-tightened as before.

The L/H threaded nut (a new one is recommended) should be tightened with the same tools and locked either by centre punching, or by peening over the bolt thread which stands proud. The flywheel should be tested for a good ring and a little oil forced through the oilways whilst spinning.

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* Many members asked, during T.T. week, the origin of this peculiar pseudonym. "Stiffpocket" is the only clubman in the country who wears a CAST ALUMINUM blazer badge!—Ed.

FIG. 1

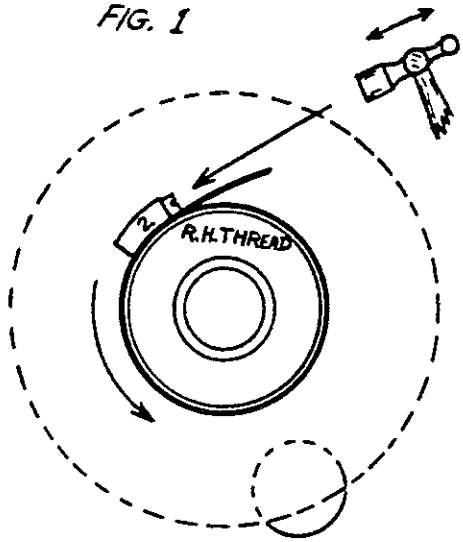


FIG. 2.

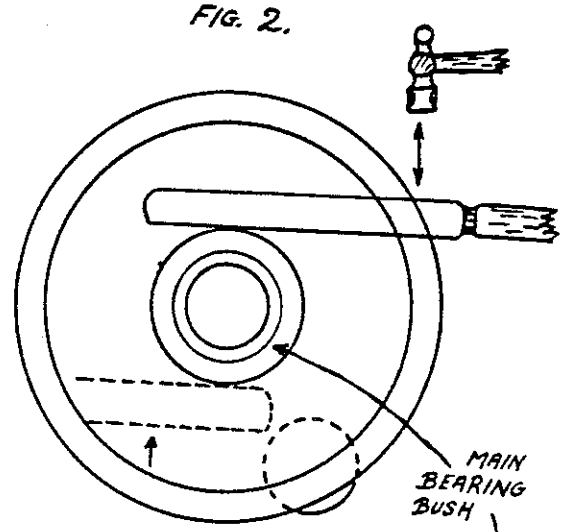


FIG. 3.

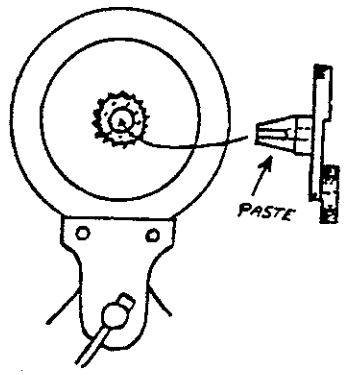
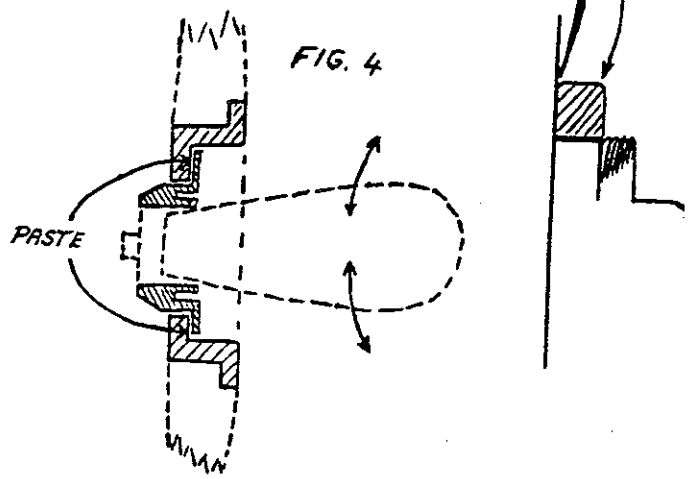


FIG. 4



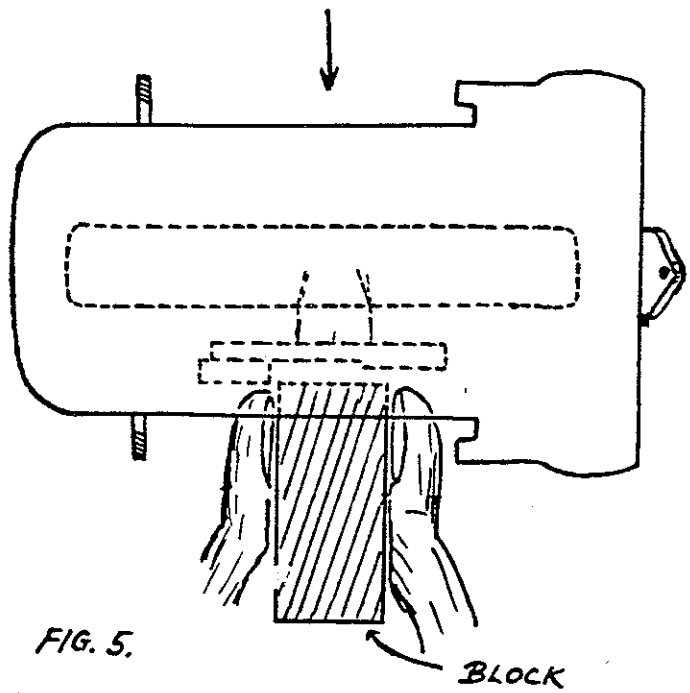
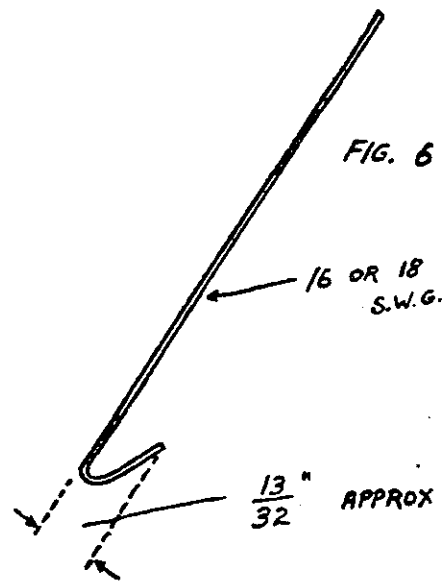


FIG. 5.

FIG. 6



G.J.P.
1/7/61

GETTING THE BEST OUT OF YOUR MODEL

It my few years experience of Scotting, I have met and talked to many different owners,—I've even ridden some of the machines, and it has become plain to me that there are those who can make a bike run well and be reliable, and there are those who do not enjoy the same success. I therefore offer the following tips in the hope that they will be of assistance to someone.

Now I know that some of us are blessed, (or cursed) with 'bitza's', but that need be no excuse for a poor running, uncomfortable and awkward machine. I am not concerned here with the need to put everything in perfect working order, it's surprising how well a very worn machine will run if treated with respect.

The heart of any bike is undoubtedly the motor, and, looking at it objectively, there is not much in this unit which can give trouble, except perhaps a lack of compression. Of the two compressions in a two stroke engine I have always found the crankcase one to be the more important, for it is the degree of compression down below which governs the effectivness of the transfer action, and the effectivness of the carburation. Keep the crankcase compression up and you will probably notice a difference in the oil behaviour. The oil inlet is timed to coincide with maximum crankcase suction, hence the greater the suction, the greater the oil induction!

Having looked at the motor, we must now examine its ancillaries. Here we certainly can run into trouble. Take the plugs. I venture to say that these are probably more misunderstood than any other component part of the machine, for, simple as they appear, the problems they create are ever changing. To start off with, one must understand the differences between plugs for different jobs. Some are termed 'cool', that is they have a low heat value and a high oil resistance. They are suitable for slow, cool-running engines and they are so designed that the small amout of heat generated in the engine is sufficient to keep the plug hot enough to burn off the oil and soot. At the other end of the scale there is the 'hot' plug—so termed because it has a hot job. The type is a very solid affair capable of absorbing considerable heat without building up a high temperature—naturally this kind of plug is easily fouled by oil. It is at at once obvious that in a Scott there is a conflicting demand—we want a plug for towns so we can heap on the oil without harm, and yet we want a plug for the open road, so that we can speed up without overheating the plug, the symptoms of which can always be recognised by the way the engine goes off note and slows down after a few hundred yard of relatively high speed driving. We must also remember that in a two stroke the plug is firing twice as often for the same revs as a four stroke plug, so it runs in a perpetual furnace and in consequence doesn't give half the life expected of it. A four stroke plug has a breather between firing strokes!

We must start off by selecting an average plug—such as is recommended in the handbook. Over a period of time we discover whether we are having to clean it too often—plug designed for hotter engine; fit cooler plug, or drive harder,—or experiencing pre-ignition at high speed—plug designed for cooler engine; fit hotter plug. Eventually one finds *almost* the ideal plug for one's driving. My experiments with plugs still go on—I've used about twentyfive pairs on two bikes in five years!

Before leaving the subject of plugs, a few words on whiskering may be of help. This annoying fault has at times driven me to distraction, and usually plagues me most during the first few weeks of owning a strange model. The first thing I do is buy a pair of new plugs with whose characteristics I am familiar. I then fill up with commercial petrol, and try again. This often works, but driving technique has a lot to do with it, and bound up with this is the regulation of the oil. If you are liberal with the oil then during slow driving periods, as in heavy traffic, the oil collects in a liquid state on the plugs. As soon as you open up this oil carbonises onto the plug points and, combined with other dirt and metal particles in the engine together with the electro-static action of the spark, it bridges the gap beteewn the electrodes. The answer here is to keep the engine working hard enough at all times to be sure of maintaining dry plugs. The lead content of the petrol is also a whiskering agent and for that reason the commercial spirit is to be recommended, although this is still not entirely lead free. Engine cleanliness is governed to a large extent be the type of oil used, and a grade which deters the formation of deposits is to be preferred. A weak mixture will tend to produce whiskers by causing overheating to the extent where the metal of the plug electrodes begins to disintegrate. All these remedies must be tried and it has sometimes taken me several weeks of patient and careful work to eliminate the trouble, so don't give in.

Having found suitable candles, let us examine the mystery box which makes them spark. A magneto is one of the most vital parts of a bike, nothing can let you down so skilfully and so subtily at the crucial moment—my bike stopped dead one night (late) just because the magneto failed without warning. If you feel you want to go out now and overhaul your electrics refrain; a magneto, dynamo, or coil ignition set is beyond the average mechanic and even if you can pull one to pieces without breaking it, the chances are that you will achieve nothing. *Most* magnetos need to be re-magnetised if the armature is removed, and this can be done only by the specialist. If you suspect your mag, take it to a reliable repairer and leave it to him—you'll be glad you did. Obviously if it is only a question of replacing the H.T. leads this can be done without difficulty, and it is not a difficult operation to set the contact breaker gap to half that of the plug, so these can be done at home.

Our second important ancillary is the carburettor. I do not propose to go into the intricacies of tuning—an Amal instrument still baffles my Binks bred mind!, but a useful point which not everyone will know is the fact that the mixture strength over the whole throttle range can be delicately adjusted by swinging the float chamber on its mounting bolt. The disturbance of this when the carb is stripped for cleaning is often the cause of that inexplicable change in performance. Another puzzler, and one which caused one of my machines to sieze up, is the addition of oil to the petrol without richening the mixture all the way up the scale to compensate for the displacement of the petrol by the oil. The effect is much the same as that created by water in the carburettor. The same valume of liqued passes through the jets, but it is not *all* petrol —some of it is oil which does not burn—hence the petrol/air ratio is altered. Petroil fans, beware of changing your mixture proportions, and beware of careless mixing too!

The third item which helps the oil on its way is the oil pump. This piece of equipment is capable of giving trouble-free service for very long periods without attention, My recomendation is that you set it and forget it. When setting it, instead of timing the drips against a clock at what *you* think is a good idling speed, try counting the number of pulses at the break between each actual drop of oil—remove the sight glass window if you have difficulty in seeing the oil. No matter what revs the engine is doing, this method of adjustment will work, in fact if you run the engine a little faster it will be easier to judge. Use three to four pulses per drip for running in and five to six, or even seven if you are a careful rider, for normal use. It is a wise precaution to fit the locknut type of adjusters, to discourage inquisitive beings from upsetting the adjustment!! I fancy more than one Scott has siezed inexplicably because of this!

Let us now turn to the transmission. Here we have an important unit which is often left to play second fiddle to the motor. There is no gainsaying the fact that a rigid yet free running transmission makes a world of difference to the performance. If a dry chain can be stretched by more than 2% of its length then it is scrap. 2% is not a lot you say, but remember, on the rear chain this represents an elongation of about two whole pitches. It is by running elongated chains that hooked sprockets are formed and since some Scott sprockets are not easily obtained these days, it is easier to replace chains. Keep the chains well lubricated all the time—periodic imersion in hot graphite grease is quite good, but cold grease will not flow like oil, so when it is squeezed out of the links it cannot return, whereas oil will. Give the chain regular treatment with engine oil—a little and often and you should find that they will run sweeter, longer.

Between the chain comes the gearbox,—on a Scott, one of the most hardworking, quiet and reliable gearboxes ever produced. I think we all know enough of the driving angle to be able to use the box without damaging it,—

but there is more to it than that. How many of us can claim that we have a gearbox free enough to turn the mainshaft between finger and thumb with bottom gear engaged. It can be done, but many gearboxes are stiff, due to mal-alignment of the shafts and bearings. This trouble is particularly prevalent where the box is built up of components not originally matched to one another. For example a footchange cover fitted to what was a handchange shell. Check this carefully and adjust until complete freedom is achieved. Remember that you may have freedom of the bronze bushes due to wear having taken place, but this is no excuse for allowing poor alignment of the ball bearings. These will break down far more quickly and with much more disasterous effects if only slightly distorted. Notice how these bearings are given the lighter duties to perform—the bronze bushes taking the real strain.

The clutch of a Scott is another very reliable unit, but apt to be a bit baffling at times. How many of us can boast of a really smooth clutch? Here are one or two points to be observed in producing a shudder free start. It is essential to ensure that the withdrawal race is unpitted. That groove you have noticed in the steel rings is a sign of very advanced pitting. If you are not in a position to obtain new rings, and provided someone has not already done it, you can turn then both over. To do a thorough job, a new set of balls should be fitted too. Now, as far as the fixed pin fraternity is concerned there is not much else one can do except check the pin lengths with a micrometer and ensure that the wear on the end plate is negligible.

For those who have the later adjustable pins, there is still hope. Remove gearbox and clutch together from the frame and mount securely on the bench. Re-connect the operating cable to the handlebars. Squeeze the lever just enough to remove all the slack and put a slight load on the bronze quick thread arm. When you spin the clutch you will notice that this arm rocks slightly as the pins roll round the race. Adjust the pins till the arm no longer rocks, and the clutch will be perfectly smooth. Do not separate the clutch and gearbox or you may well upset this adjustment.

We now have the engine and its ancillaries functioning smoothly and driving a silky transmission, but what about the wheels? Even these, simple as they are need care and attention paid to adjustment. Make sure that the bearings are neither too tight nor too loose. If a bearing is a bit lumpy then adjust it until the roughness disappears, because the lumps are small tight spotscausing excessive bearing temperatures, which not only melt the grease but also hasten further the deterioration of the bearing. Also, just because this only a wheel bearing, do not think that any second class grease will do.

There's grease and grease, and most of the major oil companies are now marketing greases of a multipurpose variety—far superior to the ordinary types. These multipurpose greases are soft in consistency, but not to the extent that they will pour, and yet the melting point is as high as 360 degrees Farenheit whereas ordinary grease will usually melt at half that figures. In addition, the new greases are completely waterproof and rust resistant, and, more important, they do not deteriorate in service. Don't go gay and overpack the bearing in your exuberance and desire to try the new product, leave a bit of space for expansion and movement. Above all, avoid the use of Vaseline or anything similar. This is a form of petroleum wax which the oil companies are at great pains to remove from the oil that they sell to you. Vaseline has no valuable lubrication properties, although it is a good rustproofer for parts in storage.

Having covered the wheels, it is logical that we should examine the brakes. These should always be more than a match for the power of the engine, so give them your best attention always. All loose bearings in the linkage, weak parts, such as an over skimmed drum, bent rods and badly fitting linings will impair efficiency by making the action spongy. The threaded portions of the adjusters must be in perfect condition—if worn they could strip in an emergency. Bowden cable nipples must be absolutely secure, and this cannot be achieved merely by soldering the cable end in carefully. File a tangential groove across the back of the nipple with a small rat tail file. Solder up the nipple with about $\frac{1}{8}$ of an inch of cable protruding. Split the strands and bend them down into the grove on either side of the hole. Solder up again and then file smooth. This joint should never pull out!

Tyres can be life savers or death traps—never neglect them. Beware of reject tyres and seconds at reduced prices. They are not rejected for nothing, and the reason is not usually one which the layman can readily spot.

Having ascertained the correct pressures, stick to them. *Never* let your tyres down on a hot day. Heat is very damaging to rubber; it works in a way which you cannot see, by affecting the molecular structure. When you let your tyres down the increased friction between tyre and road and the increased molecular friction due to flexing, does more damage than a pressure as much as 30% in excess of that recommended, even though an increase in pressure gives an increase in temperature, temporarily. You will stand far less chance of a blow out or a puncture by keeping the pressures up!!

Give a thought for your tyres when riding—rapid acceleration and sudden braking do a lot of harm and are not examples of good driving. Try not to drive recklessly over bad surfaces, the sudden shocks and flexing are damaging to the fabric of the tyre, which in most cases is still only cotton.

Once the fabric cracks, the strength of the case has gone and in no time at all it will split. Be careful to remove all stones which lodge in the treads and be even more vigilant about keeping petrol, paraffin, oil and grease well away from the rubber.

Let us turn now to the finer points of the bike. Those points which distinguish the enthusiast from the indifferent owner. Bowden cables are one of the most efficient flexible linkages ever devised and yet how often they are left to maintain themselves. Here is a case of a little attention reaping a large reward. Check eack cable carefully to ensure that there are no sharp bends, and take care to see that all moving parts are kept at a distance. Chains have a bad habit of sawing things in two! Always keep the cables thoroughly lubricated—to do this effectively needs a little more effort than just a squirt with the oil can. Buy a couple of toy balloons from Woolworths, half fill one with a mixture of engine oil and petrol (on no account use paraffin as this will not evaporate and will make the cable operation very jumpy!) Push one end of a cable well into the oil filled balloon and then tie the neck of the balloon securely around the outer case. Tip up until the oil runs into the cable and then squeeze gently. Eventually oil will run from the other end of the cable and you can then be sure that it is fully lubricated and no rainwater will be able to seep in and cause rusting and stiffness. Regular attention with the oilcan should now be sufficient to keep the cable in good condition. Lubricate all the handlebar levers, and gear and brake linkages wtih engine oil at regular intervals. Dont forget to oil or grease between the handlebar and the twistgrip sleeve—you'll be surprised at the improvement.

Even though the controls are all well lubricated, they will be difficult to operate if not correctly positioned. Always have important items placed so that a minimum of effort is required to reach and operate them—this makes driving less tiring and saves fumbling in an emergency. Make sure that the various levers do not foul one another, especially the front brake lever and the twist grip. A lot of awkwardness and possible damage can be avoided if the handlebars are arranged so that they do not come into contact with the tank on full lock.

For the most comfortable operation of both brake and clutch levers, try setting them as follows. Set them as close to the grips as possible and twist them into such a position that, when you are seated on the machine with the arms and fingers extended in a straight line from the shoulder, with thumbs under the grips and palms resting on top, the levers come just under your finger tips. This is the method of setting recommended by the police!

The foregoing points are just some of the many different items which make for smoother running. There are many more. One must always be listening for those elusive little sounds which act as telltales and pointers to possible trouble. After a period of driving one machine, these sounds grow upon you and give a fair indication of the performance of various parts. When riding a Scott, remember what makes it tick, and have a little feeling for the works. If it wont go just as fast as you think it should, when at other times it will, dont force it, relax a little, let the bike have its head. One often finds that the bike will not go as fast under certain conditions, and it may be harmful to force it. If you are patient and allow the bike to go its speed it will always work willingly and amply repay you for your restraint. I used to push my machine hard at one time, but, I have discovered that it does not pay. Very little time is lost in the long run by treating the model a little more gently, and this is more than compensated for by the increased life of the bike.

THE GOOD SCOTTING GUIDE (Part one)

Brian Marshall

Every month, in *The Classic Motor Cycle* magazine there is an article featuring an "Original and Unrestored" motor cycle. Delectable machines, with a lovely patina of age and use. Perhaps you are lucky enough to own such a machine? Sadly all the Scotts that I have owned have been totally worn out, modified beyond recognition, incomplete, or dismantled. (Usually a combination of those things!)

As a result I have had a rather special insight on the things that can and do go wrong or break when a Scott is abused. I've seen some incredible examples of abuse and ignorance, together with some appalling bodges. I've also found some very clever little touches that more caring owners have applied to keep their Scotts running properly.

To my surprise, in these days when we all love and value our Scotts (I hope!), there are still some very badly 'fettled' machines around; but this is due, I think, to lack of knowledge rather than lack of care or information.

In this article, and perhaps further articles, I hope to put right the lack of knowledge with some basic maintenance and care tips that are peculiar to Scotts.

For a kick-off I'm going to mention chains and their proper adjustment:

Far too many Scotts have primary chains that are much too tight. This causes harsh running, vibration, shears the rivets holding the driving sprocket to the flywheel, and causes premature wear of the gearbox mainshaft bearings. A too-slack chain will wear grooves in the top crankcase space 'candlestick', and front lip of the gearbox tray, but those grooves are far less serious than the consequences of a tight primary chain.

The problem with Flyers/Reps./Sprint Specials is that the gearbox clamping is rather marginal and there is a distinct tendency for the box to creep backwards in use, thus tightening the primary chain. Do make sure that you have the correct large diameter ⅞" nuts on the two mounting bolt and NOT ordinary ¾" nuts. You must also have the correct large diameter washers beneath them. Lack of the correct washers to spread the clamping load can crack your gearbox tray!

1. Slacken the two outrigger bracket mounting bolts right off.
2. Slacken the two large nuts under the gearbox tray, but NOT loose. Leave a slight 'nip' on them.
3. Using the adjuster sleeve nut and draw-bolt move the gearbox backwards and forwards to achieve the correct chain tension (making sure that you have enough slack in the rear final drive chain to allow free movement of the gearbox). Allow approx. ¾" total up and down movement with your finger midway along the primary chain run.
4. Tighten the two nuts under the gearbox tray, then recheck the tension. DON'T go at the nuts like a gorilla! A normal open-ended spanner or ring spanner is quite sufficient.
5. Tighten up the two outrigger nuts and bolts, and again recheck the chain tension.
6. The next bit is most important, and the bit usually missed. Tighten the adjuster sleeve nut HARD ANTICLOCKWISE, repeat ANTI-

CLOCKWISE. This action means that the draw-bolt is now trying to push the gearbox forwards, thus counteracting the tendency for the gearbox to creep backwards. Again recheck the tension on the chain.
7. Finally adjust rear drive chain tension to compensate for the new gearbox position.

SNAGS? — The usual one is that you may find uneven chain tension when checking at different points of engine rotation. This is usually due to chain wear and indicates that you need a new primary chain. If you still have tight spots with a new chain, life starts to get awkward and expensive — check for worn sprockets, bent gearbox mainshaft, or a sprocket that is non-concentric with the flywheel.

To summarise, the important thing is to do the adjustment strictly in the order listed 1 to 7 above. Failure to do so can get the gearbox out of line, break outrigger brackets, crack gearbox trays, and cause all sorts of other problems. Also check the tension of the chain regularly.

The rear drive chain adjustment is a much simpler matter, at least on rigid-frame Scotts, and largely a common sense procedure, but when you have done it do check wheel alignment with a straight-edge or length of string. The outrigger bracket should contain a special self-aligning bearing. Do check this detail, as many have been replaced with a normal ball bearing, which prevents the drive sprocket lining itself up with the rear sprocket. Another check point is the cush hub on Enfield rear wheels. If the retaining ring and three bolts are loose or broken and the rubbers are chewed-up, the sprocket can get well out of line with disastrous results. In correct adjustment, with the bike in first gear, you should be able to just get the cush ring to move when rocking the back wheel back and forth with both hands, or pushing the bike against compression.

Finally we come to that Achilles heel of the Scott, the magneto chain. Three feet of push-bike sized chain thrashing back and forth at up to 5,000 r.p.m. is not a recipe for long life. Although Renold are again producing ½" x ⅛" chain, I will stick my neck out and say that, in my experience of the new chain, it is not a patch on the older British-made 'Renold Elite' in terms of durability. I could describe it in much stronger terms, but won't. Wipperman chain IS a good substitute, but it is only very lightly riveted together, and so sprocket alignment is critical. Any misalignment sufficient to get the chain sideplates rubbing on the sides of the sprocket teeth will soon force the sideplates off.

Above all, don't run with a tight magneto chain as this will very rapidly do awful things to the mag. bearings.

With the modern 'anti-fling' aerosol chain lubricants there is no excuse for dry chains on a Scott, and I don't even put oil in my TT Rep.'s chain oiler tank these days. A quick squirt with the spray before a run is quite adequate.

Here endeth the First Lesson, and so Rule no. 1 is:
DON'T RUN YOUR SCOTT WITH TIGHT CHAINS.

opposite page:
A still-useful page from a 1929 Renold chain application list. Do not order a chain using this list as, of course, sprocket sizes make a difference. Check from your old chain. (I would also have expected a difference between '28 Flyer and '29 Rep. rear chains due to different frame length.) (B.M.)

RENOLD MOTORCYCLE CHAIN CHART

MAKE	H.P.	Year	RENOLD CHAIN NUMBER AND LENGTH					
			FRONT		REAR		MAGNETO	
			Chain No.	No. of Links	Chain No.	No. of Links	Chain No.	No. of Links
SCOTT								
2-Speed Squirrel Solo	4·86	1925	10044	66/72	10046	119	70040	44
2-Speed Super Squirrel Solo	4·98	1925	10044	66/74	10046	119	70040	44
2-Speed Standard Solo	5·96	1925	10044	66/78	10046	123	70040	44
2-Speed Standard Comb.	5·96	1925	10044	66/78	10046	122	70040	44
2-Speed Squirrel Comb.	5·96	1925	10044	66/78	10046	117	70040	44
3-Speed Standard Comb.	5·96	1925	10044	66	10046	120	70040	54
3-Speed Standard Solo	5·96	1925	10044	66	10046	120	70040	54
2-Speed Squirrel Solo	486cc 498cc 596cc	1926/7	10044	66/74	10046	119	70040	44
2-Speed Touring Solo	596cc	1926/7	10044	66/78	10046	123	70040	44
2-Speed Squirrel Comb.	596cc	1926/7	10044	66/78	10046	117	70040	44
2-Speed Touring Comb.	596cc	1926/7	10044	66/78	10046	122	70040	44
3-Speed Touring Comb.	596cc	1926/7	10044	68	10046	123	70040	54
3-Speed Squirrel Comb.	596cc	1926/7	10044	68	10046	123	70040	54
3-Speed Touring Solo	596cc	1926/7	10044	68	10046	123	70040	54
Flying Squirrel	498cc	1927	10046	75	10056	92	70040	69
	596cc	1927	10046	75	10056	92	70040	69
Flying Squirrel	498cc	1928	10046	75	10056	94	70040	69
Flying Squirrel	596cc	1928	10046	75	10056	94	70040	69
2-Speed Super Squirrel	—	1929	10044	66/78	10046	119	70040	44
Replica	—	1929	10046	70	10056	94	70040	68
Tourer	—	1929	10046	70	10056	94	70040	68
De Luxe	—	1929	10046	70	10056	94	70040	68

When ordering please quote Make, H.P., Year, Chain Number and Number of Links. 2-29-51

THE GOOD SCOTTING GUIDE (Part two)

Brian Marshall

The kite-shaped Scott forks, used firstly on the 1926 TT machines, and then up to 1930 on the Flying Squirrel Deluxe, have a lot of detractors; with all sorts of complaints such as 'heavy', 'stiff' 'unyielding' etc., having been applied over the years.

Actually many of the complaints are due to incorrect maintenance, and a lack of understanding how they are supposed to work.

As I have mentioned in one of my 'Machine Profile' articles, there were three basic versions of this fork: The earliest version, used from late 1926 to late 1927 was the lightest pattern, and this used all parallel-section tubing in the side members. Under racing conditions, particularly with a sidecar, failures occurred, and so for the 1928 'season' they were beefed up with heavier taper-section tubing in the bottom half, but retaining parallel-section tubing in the top half. Failures still occurred, and so for the 1929 'season' they were made much stronger and heavier, with taper section tubing in both top and bottom of the side members. These heavy forks were fitted on the first TT Replicas in late '28, and through 1929/30. they also were fitted to the Flying Squirrel Deluxe Model some time in 1929, once stocks of the earlier version had been used up, and through to the introduction of the single downtube framed machines for the 1931 season. (A few Sprint Specials also seem to have used this heavy fork.)

There also seem to have been a few odd variations to these forks which I am at a loss to explain. There were, for instance, at least two different types of top crown casting, a bronze type identifiable by a wedge-shaped front end and a commoner ferrous casting type with a much rounder and bulbous shape. I suspect that the bronze type is the earlier version but can't be too sure. I am also totally foxed by the mounting lugs for the Bentley and Draper friction dampers, called 'stabilizers' in period literature. Very obviously some forks never had those lugs, whilst other machines had clamp-on type fittings, and the vast majority had brazed-on lugs. Strangely, this was not a matter of which model you ordered as even some TT Replicas were supplied without lugs, and stabilizers were offered as an extra, for 30 shillings, in my early 1929 catalogue. Perhaps you only got the brazed-on lugs if the stabilizers were ordered on a new machine?

Enough of the history, and down to the bad reputation.... Now, I have stripped about half a dozen sets of these forks, and every set was completely and comprehensively worn out, particularly around the bottom bushes/sliding members. And yet the legs were always full of grease from top to bottom. The answer is a little surprising.... They weren't designed to be greased! THEY SHOULD BE OILED. Look at 75% of Scott-forked machines and you will see grease nipples a the top of each leg. That is just asking for trouble. There should be a little flip-top oiler cup, to be filled before each run. Of course, owners got fed up with the constant dribble of escaping oil, particularly on the offside, where it had a nasty habit of creeping along the wheel spindle, down the brake plate, and into the brake drum.... I suspect that the tinplate 'water deflector' introduced in 1929 was really an oil deflector!

Of course with the legs full of impacted grease the bottom bushes never got lubricated, and clapped forks and evil handling are the result.

All I can say is, let someone like Barry Jackson or Ken Lack overhaul your forks, with modern neoprene lip seals in the bottom, fit the correct oiler cups, and you will be pleasantly surprised how nicely the forks work. (Also make sure that all the 'acorn' nuts are kept really tight, and that the centre legs are bolted-up really tight into the bottom yoke.) It is essential that the legs are NOT 'sprung' inwards or outwards when the front wheel is bolted in. Check the gap between the fork ends when the wheel is out, and make sure it is the same when the wheel is *in situ* and the nuts are tightened. If incorrect, the forks will bind badly and soon wear out. Shim washers on the ends of the hollow axle should do the trick, but also make sure that the wheel is dead central in the forks.

My '29 TT Replica with the heavier version of these forks was featured in the January '94 issue of *Classic Bike* magazine. If you need to know just how well they can be made to handle and hold the road, read that article! On the Vale of Belvoir Run last year I was riding my 1927 Flyer rather rapidly around some very bumpy bends, with Val Ward on his well-known slimline special (with Webb forks) close on my heels.

On return to The Haven Inn he complained not just of double vision, but triple vision, and informed me that he had changed his very long-held poor opinion of Scott forks because I was 'on rails' whilst his Webbs were 'tying themselves in knots'. Need I say more?

So, the Good Scotting Rule No. 2 is:

USE OIL, NOT GREASE, IN SCOTT FORKS.

LAYING IT UP — A PROCEDURE

There will be some of us, stalwarts of course, who ride their motorcycles all the year round, through rain, hail, snow etc. etc. Then there will be other lesser mortals, who cannot enjoy that luxury and so came October or November the machine is put away until the Spring when the weather gets warmer and the roads start drying out. There may also be some among us who actually do not strip down and complete a total re-build every winter and so it is for them that this article is intended.

If a motorcycle is left standing for a long period, particularly through our wet winters, it will begin to deteriorate. Folk go to some lengths to arrest this process, such as keeping the machine in the house (front rooms and bedrooms are not unknown) or if you are fortunate, a heated garage. For the majority however, it is a cold, damp wooden shed at the back of the house, or a lock-up, just the place for moisture to quietly and steadily get to work and start the reactions beloved of nature, whereby everything is reduced back to some original state, which in our case is most likely to be rust and oxides of aluminium. The aim then is to prevent these chemical actions from taking place or to take precautions that will reduce their effect to a minimum. Firstly then the engine:

The bottom end of the Scott engine is unlikely to come to much harm over a single winter, but it will be found advantageous to apply a simple treatment to the top end. This involves removing the spark plugs and spraying about 5cc of storage oil through the spark plug hole while the engine is being slowly turned over with the kick start. (A suitable example of a storage oil is Castrol Storage Oil 20). Coat the electrode and threads of the plug with storage oil and replace in the cylinder head finger tight.

For a four stroke run the engine for at least ten minutes then drain the old oil from the oil tank and crankcase while the engine is still hot. Refill the tank with a Solvent Flushing Oil and then run the engine for at least 15 mins. without load at idle speed, but with occasional short bursts of speed. This is to remove all traces of the old oil and any sludge caused by chemical decomposition. Drain the Flushing Oil from both the tank and crankcase and clean the oil tank and crankcase strainers. Refill the tank with a Storage Oil and then idle the engine for several minutes to circulate the oil thoroughly. The flushing procedure is most important, particularly if the engine has been run on a castor based lubricant such as Castrol R. It is said that a vegetable based oil can absorb moisture more readily than the mineral type and this helps to speed up decomposition if left standing for long periods. Additionally Castrol say that engines should not be stored indefinitely with R grades of oil in situ, as heavily contaminated oil may increase the chance of chemical attack, particularly to light alloy components.

Remove the spark plug and proceed as earlier described; with single cylinder engines bring the piston up to top dead centre so that the valves are closed, spring pressure is at minimum and the load is off the valve gear train.

Remove the inspection covers and spray the valve gear with storage oil. The push rods, rocker gear springs etc. should all be treated and the covers replaced after treating the inside faces.

There are two schools of thought with regard to laying up the unique cooling systems of the Scott engine; either drain off the coolant and leave the radiator and cylinder block empty, or fill the system completely wih anti-freeze. If the system is to be drained then try to ensure

that internally the engine block is dry; there should be no remaining pockets of entrapped coolant that over a period will quietly get to work corroding the cast iron. Good results can be obtained by draining off the coolant when the engine is hot, leaning the machine over to run out as much liquid as possible. Remove the radiator cap and allow the heat of the engine block to dry out residual dampness in the internal passageways and surfaces. The system can be left filled providing of course that the liquid contains an anti-freeze concentrate. Use only a good quality anti-freeze, one that complies with BS 6580, ensuring that the mixture will provide protection down to the lowest temperatures our winters are likely to experience. For instance a 33.3% concentration by volume of anti-freeze to water will provide protection down to around −18°C (0°F); a 50% to about −35°C (−58°F). Nearly all commercially available anti-freeze products consist of an ethylene glycol formulation, a chemical that displays a "searching" characteristic for leaks and will attack some types of paint, so check tighten hose clips after a new charge of fluid has been introduced. Some anti-freeze compounds claim to contain inhibitors designed to protect the coolant system internal surfaces against corrosion and to reduce the sludging and scale formulation associated with hard water. Certainly if you do reside in a hard water district it will be found beneficial to use rain water together with anti-freeze as the cooling medium.

Gearbox: Since the oil in the gearbox of a Scott will be uncontaminated with combustion products it should not deteriorate to the same extent as the engine oil of a four stroke machine. It is reasonable to assume that the gearbox internals will come to no harm if the original oil is left in situ, provided it is of the usual mineral variety and not a castor based lubricant. Even so, for very long periods of laying up it will serve the box better if the same procedure is applied—drain the old oil off whilst hot and refill with a storage oil—no flushing should be necessary.

Castrol Storage Oil 20 will do, but a heavier grade can be used such as No. 40. Run the gearbox for about 5 mins. to get the storage oil coating all the components.

With the open chain transmission arrangement of the Scott there is not much that can be done except to ensure that the chains are properly lubricated (the well known Link-Lyfe treatment appears to give the most superior performance) and in correct adjustment. In chaincase enclosed primary transmission designs the oil is likely to be contaminated with particles of dust from the clutch friction inserts and this usually shows up as a black sludge trapped at the bottom of the primary chain case. Drain off the old oil, remove the primary chain case outer cover and clean out any sludge. Check that the primary chain is in correct adjustment. Replace the outer cover and fill to the normal level with a storage oil. Then turn the transmission over slowly on the kick start so that the chain and sprockets will all receive a coating of the storage oil.

So much for the engine and transmission "area" now for the remainder of the machine; there are a number of items that will be subject to special treatment by nature, so to deal with them first:

Petrol System: The best way to avoid corrosion of a steel petrol tank is to keep it permanently full of petrol, so that condensation cannot develop inside and then combine with oxygen and the metal to cause rust. Alternatively remove the tank and drain it of petrol com-

pletely, allowing the surface wetness to evaporate off. Then spray in a considerable quantity of WD-40 and swill this around so that all the internal surfaces are coated. Screw down the filler cap, make sure the petrol tops are in the "off" position and seal any breather pipes with masking tape. Drain off any residual petrol in the fuel pipes and float chamber, leaving these dry.

For Scott petrol tanks with the integral oil chamber now will be the time to drain off any residual oil and clean out the chamber. Whilst the oil "tank" of the Scott will of course not be subject to the sludge forming deposits associated with four stroke engine dry sump arrangements, the chamber can get a bit murky over a long period, so a clean-out can do no harm.

Electrics: The battery must be removed from the machine and for best results keep it in the house. Ideally it should be re-charged every 4 to 6 weeks and if you can remember to do this on say the first Sunday of each month, then a good battery can be persuaded to last for years. The switch gear is likely to give trouble if it is unused for long periods so it will help if the headlight is released and a squirt of WD-40 applied to the area of the switch gear inside the headlamp shell.

Cycle Parts: There is no doubt about it, condensation will hasten the demise of paintwork, polished alloy, chrome and nickel plated surfaces more than anything else on a stored motorcycle. How it seems to work is this: A period of cold weather drops the temperature of all the metal parts down to a low level; then comes one of those warm fronts the weathermen talk of, bringing with it moisture laden air. Whilst the surrounding atmosphere quickly rises in temperature the machine, acting as a "cold sink" does not and the resulting temperature differential causes the moisture in the air to condense into water droplets all over the colder metal. Let that process go on for a winter and Mother Nature starts rubbing her hands at the prospect of all your restoration efforts being reduced back to their basic elements. The solution to this problem is happily quite simple and relatively painless. All you need to do is to bring about an arrangement whereby moisture laden air cannot gain access to these cold metal parts; this can be achieved by placing the entire machine within a polythene bag and sealing it up so that the damp air cannot get at it.

I have found that a polythene bag from a new large double bed sized mattress is ideal, and the bedding shop manager is usually only too glad to give them away. Split the bag along one of the long seams and lay it out on the floor. Position the motorcycle roughly in the middle, and place a piece of "plank" under the main stand to prevent it tearing the polythene. The sides and ends of the split bag can now be folded over to envelop the machine and old blankets or sacks laid over the folds. This arrangement will prevent any condensation and it is easy to remove the machine if necessary. For really long term storage the edges of the bag can be rolled together and then taped or clipped to form a completely airtight environment — I used this method when I went abroad and was delighted to find not a single trace of rust or corrosion anywhere when the bag was opened up again 2 years later. For a really delux treatment all the metal parts of the machine can be sprayed with WD-40 prior to being "enbagged" and if you can get hold of a couple of baking trays full of heated silica-gel crystals, so much the better. These crystals are blue in colour after having been heated to drive off any moisture and gradually turn pink as moisture is reabsorbed. There is one school of thought that consider it best if the frame is jacked up to take the weight of the tyres; I did this for the 2

year storage but for winter lay-ups there is probably not much advantage. Incidentally prolonged use of WD-40 on bright metal will result in a golden lacquering effect, but this can be readily removed with a soft cloth soaked in petrol.

Back into service: Taking the machine out of storage is more or less a reversal of laying it up. The storage oils should be drained off after running the engine for about 15 minutes. There will be no need to use a solvent flushing oil in a gearbox or primary chain case prior to recharging with the correct grade of oil, or in the engine if using a mineral oil. You must however carry out the solvent flushing oil treatment of a four stroke engine if you intend to run it on a castor based lubricant.

The foregoing procedures may sound long winded and a bit of a bore to carry out, but they are tried and tested and they *do* work. My 500 Triumph-Norton (sorry—we can't all own Sprint Specials!) has had the treatment since I built it in 1965, twenty four years ago now, and is still in a very presentable condition.

Mike Keighley

LAYING IT UP — AN ALTERNATIVE VIEW V16/7 Dec.1989

(See Mike Keighley's Article in Oct Yowl)

Here at last was something that I can comment on seriously, because my job concerns the control of dampness within buildings, and limiting it's effects on the fabric and contents. I can therefore add quite a bit to Mike Keighley's excellent article:-

Firstly one omission that must be given attention. If you ride your motorcycle in the Winter and early Spring months, especially on wet roads, your machine will have picked up a quantity of it's greatest enemy, road salt.

The corrosive effects of road salt and/or sea salt cannot be overestimated. It is devastating to ferrous metals and plated parts.

So before you lay up your machine it must have a throrough wash down, getting into all the nooks and crannies, underside of mudguards, chainguard, etc. Do this on a good dry windy day, and don't carry on with the lay-up procedure until it is throroughly dried off.

I for one like to have easy access to my machines during the winter, for it is during those long dark winter evenings, with no gardening to worry about, that I can really get stuck into all those little repairs and "fettling" jobs that need doing. I also like to turn over the engine on the kickstart once every week or so, without having to remove polythene sheeting etc. So I abandoned such devices three or four years ago and purchased a dehumidifier. Until you have tried one you will never know just what a boon they are in our humid climate. Apart from looking after your bike(s) they will also protect all your tools, lawnmower, lathe, and whatever, from significant corrosion, as well as giving you a constant supply of soft "distilled" water, perfect for Scott radiators, batteries, car windscreen washer bottles, car radiators, and even for washing your best "woolly pully".

Basically they work very much like a domestic refrigerator. Air is drawn in, through a mesh filter, over a cooled plate or coil. The water vapour in the air condenses out onto the plate or coil, and trickles off into a container or outlet pipe. The resulting cold dry air then passes over the "hot" side of the heat pump and exhausts as warm dry air, perfect for our needs, and also nicely circulated by the fan in the unit. The more sophisticated models also incorporate a "humidistat" that can be preset to switch on or off at a given Relative Humidity level, and an automatic defrosting device to prevent ice build-up on the cold plate/coil.

The normal domestic models are quiet in operation and cost no more to run than your kitchen 'fridge', and cost from about £165 + VAT new, if you shop around. Unfortunately very few second-hand ones seem to be seen, as yet. If you decide to buy one remember that it can also be very useful in the house, to control condensation problems, and after effects of burst pipes, etc.

Do *listen* to your proposed purchase before handing over the loot, because some machines are rather noisier than the adverts would have you believe! The more enlightened electricity board showrooms usually have a small selection on display, the commoner makes being Toshiba (their "DryMini" is good for smaller homes and workshops), also Ebac, Westra, and Clarke.

Well, there you are, Yer pays yer money and yer takes yer choice!

B.M.

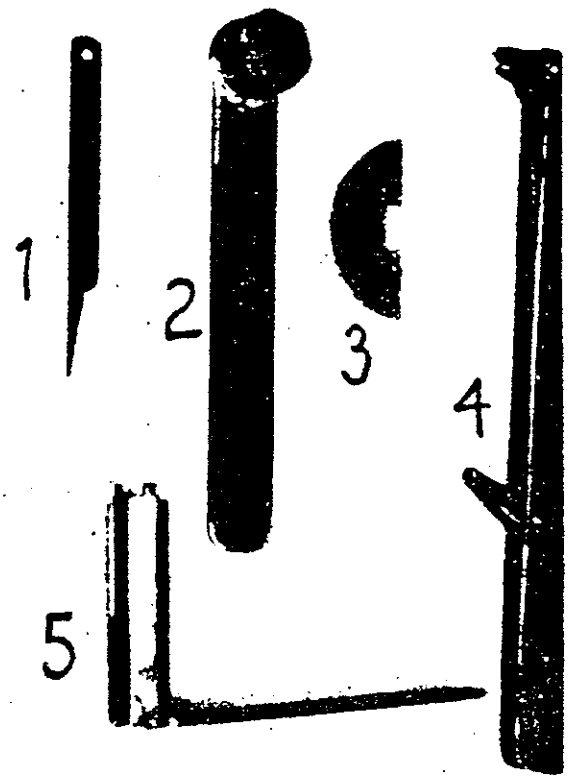
LEARNED THE HARD WAY

by Geo. Woodward, New Zealand

Like a woman the Scott takes an awful lot of understanding. Both are temperamental, sweet-tempered, bitchy, easy-going, hard to please, jealous, loving, hateful, co-operative and unco-operative, to mention only a few. The attributes that suit us we take for granted and apart from a perfunctory pat on the tank (or somewhere) give little recognition of her services.

However with the others we go to great lengths to point out the sins and omissions and do something about correcting them, or at least making it easier to cope with them. It is for the latter that I pen these lines, in the hope that other Scotters (but perhaps not other married men) may be helped to cope with the idiosyncrasies of their loves.

Like most men I have had to learn the hard way, and here set forth a few hints as to dealing a bit more quickly with our girl friend's foibles.



For instance—you may be screaming gloriously along and suddenly one of her lungs stop working. You are plunged into the depths of despair because you know that one of her plugs has filled up and you haven't any spares. Then you grin to yourself because you have remembered to bring your homemade plug cleaner with you, the one you made from a piece of hacksaw blade, as fig. 1 and also found, to your delight, that the thickness of the blade was exactly the gap you wanted in her plugs. Now a few minutes wooing and you have her tractable again, and to assist you with this quick return to sweet reasonableness, see fig. 2 which shows a plug spanner made from a piece of box spanner brazed to a handle, which slips in easily under her radiator.

But it is at home you have the most trouble. I well remember an overhaul carried out with loving care, after which I tried to woo her to behave sweetly to me. Maybe I shouldn't have kicked her so hard, but all I got was a loud whistle. She did start later, but the whistle became a screech and for fear of doing bodily harm I desisted. It took me a long time to discover that one of her transfer ports was not gastight and with the help of the small gauge in fig. 3, made from a piece of sheet metal, found her ports were not in line and, with the aid of an extra gasket where required, brought her asthmatical breathing back to normal.

And then another time when her front chain needed changing she was the bitchiest I had ever seen her. How many times I fished the chain link out of her gearbox tray I can't recall but after the first half-dozen I was ready to deny her a chain altogether and give her to the highest bidder. But, as all you clots know, you don't give up like that and I found a way of nailing the old girl to her responsibilities. Just take a look at the instrument at No. 4. This brought her back to her cake and milk! With her link gripped in the relentless jaws of the beak at the top and her chain held on her clutch sprocket, she was powerless to resist.

And then again when her Dowty forks became very sloppy I was rather chary of playing round with her legs, but decided I had to assert myself and do something about it. When I had taken the wind out of her I found her pistons were out of reach of normal spanners and evolved the instrument you see at fig 5, with which I could get comfortably inside.

Perhaps later I will tell you what I did to her legs but must close now with best wishes to all squires of Scotts, and with the hope that you will treat your spouses with the respect due—but not too much.

V4/12 June 1966

Derby.

Dear George,

Tools for the rider of the modern Scott.

It is a subject which has always interested me. The man who makes do with rubbishy tools is a fool.

The basic requirements are a set of 6 double-ended flat spanners 1/8 to 1/2 Whit, and I recommend (and stock) Pennant 6-in-clip, Nickel Chrome at 40/-

Another basic requirement is a set of 3 box spanners with tommy bar, and I have used a set of Pennant Chrome Molybdenum for 25 years and found them excellent. Still only 12/- per set.

Pennant also make a neat chain punch which deals with all the Scott chains. It is 9/- and I have sent for one to try, and if O.K. shall stock.

My favourite screwdriver, which I have used every day for 25 years, is a Crescent Hammer-handled 7 ins. No need to carry a hammer if you have this. It's American and dear, but I would not be without one. The same firm also make splendid pliers and adjustable wrenches.

I am in favour of using 2 mag spanners when adjusting points ; they are cheap, and one is required to hold the screw whilst the others secures the lock nut.

A plug spanner is not required with 14mm plugs as you can use the flat 7/16 ins. The mistake some riders make is to tighten plugs unnecessarily tight, instead of replacing the C & A washer occasionally.

With 18mm plugs you need a 9/16 ins. spanner and I use a Lucas Girder Wrench, which is very light and compact and exceedingly useful, but now not available although AKD make a substitute.

No need to mention tyre levers. It is not clever to carry excessively long ones. Quite the reverse.

Turning now to the tools which are of such help when working on the Scott engine, we have devoted much thought in recent years to this. I am not thinking of the hundreds of special tools which we use on engine overhauls, but simple labour-savers which every Scott rider needs.

A *guide rod* for holding the block when replacing it onto pistons. (2 can be used with advantage if the engine is out of the frame).

A *ring compressor*, or better still a pair. (Two sizes, 500 and 600). With engine on bench and two guide rods and ring compressors in use, the block can be pushed *straight over* pistons. I always do this job single-handed and never break a ring.

Crank releasing bar. I wish that I had thought of this darned simple idea *very* many years ago, and broadcast it. That would have prevented hundreds of broken door seatings, and radial cracks in cup faces.

There is no need for a special box key for the crankshaft bolt as the smallest of the three Pennant ones is just the thing.

Well George, I hope that I have given you some guidance. Just use it as you think fit—I am not after a free advert !

Cheerio !

Yours,
T.B.W.

WINTER PROTECTION

Like many members of the Club, I have several bikes to protect over the winter period, most of them just standing in the garage, but at least one exposed to the ravages of salted roads etc.

I thought that I would try several products in order to ascertain how effective they were, both for the stored bikes and parts, whose nickel and alloy suffer from the effects of even mild condensation and those exposed to salt.

The marks on the chart shows how good each product is under each heading, although for instance ease of cleaning off may not be considered an advantage.

CONCLUSIONS

Shell Ensis Fluid 260 and Silkolene UBS (both in bulk) gave excellent durability and corrosion resistance, battery acid being the only thing that slightly got through. However they are a bit thick for spray application and left treated items dark brown which was not all that easy to remove. Good for the kept on the road bike, if you don't mind the colour. Ideal for underseal on cars, inside mudguards on bikes and long term storage of parts.

Silkolene Silkcote Clear (sometimes known as 10B anti-rust) gave slightly brown finish on parts—reasonable durability and not too difficult to remove. Can be used on stored or used bikes.

Silkolene Slipsil and WD 40 (Aero) and Duck Oil Spray seem all nearly the same specification. Slipsil did not dry off as quick as the others and accumulated more flies and grit. However, all these products seemed ideal for the laid-up bikes and drying out electrical gear, and lubricating it.

Greases—moly grease quite good but unsightly and tended to dry up.

Both greases picked up dirt easily. Vaseline gave best corrosion resistance without question, of any of the products tested, and was very good against battery acids. However, if this is your problem, mix hard setting Hermetite with meths and paint on to your battery box or whatever. Salt crystals actually grew on the outside of the jelly without affecting the material underneath.

What would happen if it all got mixed up together I do not know, but might it promote hidden corrosion under the jelly.

WHERE TO GET THE PRODUCTS

Silkolene products from any Silkolene agent, or from me at 48 Belmont Road, Hemel Hempstead.

Shell Ensis Fluid 260 from any Shell agent. They also do an Ensis Fluid similar to 10B Silkolene.

W.D. 40 and Petroleum Jelly are obtainable anywhere.

DEB Contect Duck Oil from various factors.

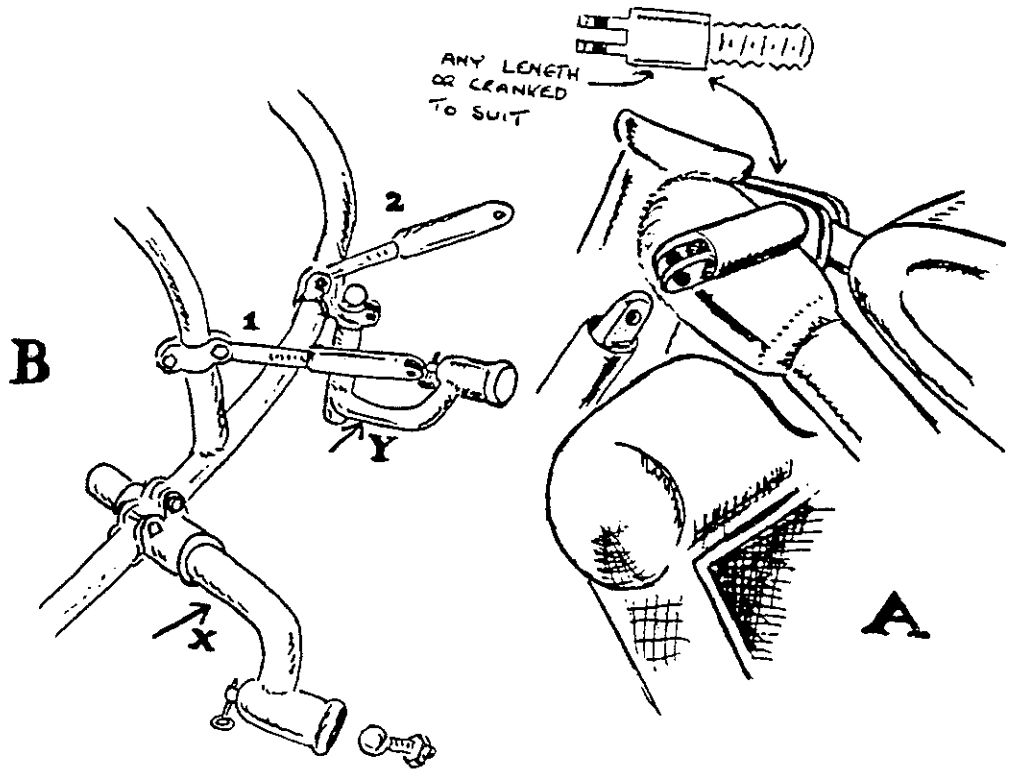
PRODUCT	Ease to put on	Durability	Corrosion resistance			Lack of dirt	Ease of Cleaning Off			
			Water	Salt	Acid	acquired	Detergent	Oil	Paraffin	Petrol
Shell Ensis Fluid 260	3	4	4	4	2	4			2	3
Silkolene Silkcote UBS	3	4	4	4	2	4			2	3
Silkolene Silkcote Clear	4	3	4	4	1	4		1	3	4
DEB Contect Duck Oil	4	2	3	3	1	3	2	3	4	4
WD 40 (Aero)	4	1	3	2	1	2	3	3	4	4
Silkolene Slipsil (Aero)	4	1	3	2	1	2	3	3	4	4
Wax Aero	4	3	4	3	1	4	1	1	4	4
Moly Grease	2	2	4	4	3		2	2	4	4
Petroleum Jelly	2	3	4	4	4		2	2	4	4

PENNINGTON POINTS!

Being a few of the hints and tips received by Harry Pennington following his appeal for hints.

1. Recommended sidecars — 1950 to 1965. Steib.
1950-1960. Watsonian Avon — V.21 chassis.
(Has anyone got photographs or brochures that he could borrow for copying?)
2. Use close-medium gears with 19 tooth sprocket for a medium weight combination.
3. Use a copper compression plate under the cylinder head.
(This to lower compression ratio — but where can these be obtained?)
4. Strengthen the rear brake anchor plate.
(Any further hints on this aspect?)

Harry did have a little experience some 25 years ago with a Scott outfit, and it was because of those experiences, that he wants to get things right this time. His main concern those 25 long years ago, was the difficulty in keeping the outfit lined up properly. The upper front attachment was in the shape of a tall 'S' and stiffness seemed non-existent.



To the above from our own experience with sidecar outfits, I add the following:—

Without doubt, the Steib although heavy (unless you can get hold of one of the S250 chairs) is amongst the best in its class.

Points to watch in the Steib are as follows:—

With the duplex frame of the Scott, plus the type of attachments, this makes for a very wide track (too wide really) unless special care is taken.

The Steib chassis consists of a tube which runs around the nose of the body, plus a tube which runs over the top in "grab rail" fashion.

There are four attachments. The lower ones, shown 'X' and 'Y' in the sketch, are the main ones. They have an expanding clamp which fits over a ball type fitment, one goes direct into the lug by the rear wheel on rigid frame Scotts, whilst the front one can be adapted to fit over the lower engine mounting bolt. The secondary fittings '1' and '2' fit directly to lugs bolted to the seat or rear chain stays, or to the upper down tube, or to the lugs by the steering head to choice.

It is the fitting 'X' that has to be watched. The other end of this fits up against the sidecar body, so this often has to be shortened at the outer edge, in order to get the chassis close into the frame of the bike. The front lower attachment, as can be seen, takes a peculiar shape, but because of the swivel ball joint, can be adjusted in position to get the front end over and in line. You certainly need the sidecar wheel well in front of the rear wheel. Too far back, and the weight of the chair is a heck of a drag, whilst too far forward gives the risk of the rear wheel lifting on right hand bends!

Regarding other sidecar chassis – if you prefer the long 'S' or swan-necked type fitted to the steering head, then you can always get one made up in heavier gauge tubing. (This should reduce any tendency to flex or give.)

However, with Scotts, there is no need to rely on swan necked tubing. You can always get fittings made up as shown in sketch A, so using straight tubes for the connections. Once 'set up' the layout should require little checking.

OTHER RECOMMENDED CHAIRS

1. The V.P. Viper of the late 40s early 50s. Similar to the Swallow sidecars of N. Carr (see Jan. 73 issue) and G. Gardiner (see Jan. 71 issue) but being panelled in aluminium alloy is much lighter and although alloy were painted.
2. The Wessex of the late 50s. These were of a light alloy monocoeque construction with sprung wheel operating on two tubes, on which the wheel mounting slid. The chassis had several straight tube connections to the machine frame. Screen was a "wrap round" perspex moulding, which lifted to the side for access (no door) and the hood press-studded to the top of the screen. It was available in single and child/adult form.

SCOTT SERVICING.

(Or 'Do it yourself for beginners!).

by a *Veteran Victim.*

If in light hearted moments you can recall 'burnups' with Silent Sixes or Blue Princes (and we offer no prizes for guessing those makes) the following will have little interest for you. If you are old enough to know that a Harley Pea-shooter is not a new fangled schoolboy's missile launcher—you are too long in the tooth and cynical to receive any assistance from this article. No, it is indeed for the downy faced youth standing in his wide eyed innocence and lost in rapture and admiration before his Scott, whether half clapped or otherwise, blissfully unaware of the harm and havoc the dreaded bug 'Scottitis' will wreak on his system with the passing of the years. You would be well advised to stand back at the Jubilee Rally and study the gnarled and grizzled veteran victims of the scourge and its effects on the human mind and system as they struggle and straggle from one model to the next, glassy-eyed, mouthing "No that's not original". "Didn't fit that 'till '22" and other strange phrases.

If they ignore this warning and with the determination of youth decide to press on—then where to start ?

If the internals of the Scott are just a mystery, then the Membership Secretary for the modest sum of one shilling PLUS postage, will forward two excellent exploded drawings which simplify things to such an extent that even the Editor can see which bit goes where.

You may be toying with the idea that at the time of overhauling to round off the picture with a spot of super tuning—well at this stage I would say 'forget it'. Put such thoughts firmly from your mind, unless of course you figure you are just the man to shew Harry Langman a thing or two. Why Harry ? Well recall his words—"the performance of a two stroke engine is determined more by the original design and construction than any subsequent tuning !" First and last it is accurate workmanship that controls the results. You cannot tinker with a two-stroke like you can with a four-stroke".

In any case, Scott blocks are rare and scarcer than Vincents at a Midland Scott meeting.

I suppose the engine should be the first item and we can deal with the gear box and cycle parts later.

So having armed yourself with the exploded drawings offered, we will take the plunge. (Although the drawings offered for sale are of the 1939 Clubman Special engine, with the exception of the porting and the additional pump and cylinder wall oiling, it is more or less identical with engines fitted to duplex framed Scotts since 1927).

Even the earlier engines bear a resemblance and the drawings will simplify these, but I should add that in the earlier Super engines only thirteen rollers were for the main bearings as against fifteen in the Flying Squirrels. During 1927 wider bearings were employed but these can be distinguished by a slight swelling of the crankcase near the doors, instead of flush fitting as the narrow bearing earlier engines.

We will assume that having moved exhaust pipes, radiator, oil pipes cables or other items that can get caught round the neck as the engine is dropped out—not literally of course, otherwise Matt will be doing a booming trade in crankcases,) and the engine is now removed.

If you are satisfied that the gasket between the head and the cylinder block is in good condition then there is no need to struggle with the sixteen studs, should any difficulty be found, as decoking etc can be carried out with the head in place.

The block is held by four bolts, the heads of which protrude by the side of the Scott lettering cast in the crankcase, but before the block can be separated, the transfer port covers at the rear of the cylinder must be removed. The washer or gasket at the cylinder base, as also the transfer ports will require replacing, but no difficulty need be found in obtaining supplies of these, as there are several sources of supply.

The big-ends can be dimantled through the crankcase doors and withdrawn through the mouth. Drive the gudgeon pin from the centre of the engine. In some earlier engines, circlips were used but in later ones pads are employed.

Small end bushes can be renewed by even the most unmechanical minded, but if big ends are worn then renewal entails grinding so Aerco Jigs are the people.

If it is just a question of small end bushes which must be reamed after fitting to .625-.00075-.001, then remember to file the top of the new bush to fit the con-rod cutaway.

Big end bearings consist of twelve $\frac{3}{16}$ x $\frac{3}{8}$ ins. rollers running on a sleeve and held in place by drilled side plates.

Should it be necessary to separate the two half shafts from the central flywheel, it will be necessary to slacken the LEFT HAND threaded nut of the through bolt. Unscrew the nut a few turns, and a sharp blow on the head of the nut should dislodge the right hand crank, and after removal of the bolt and crank, pass a drift through the flywheel to remove the left hand crank.

REMEMBER TO SUPPORT EVERYTHING PROPERLY whilst carrying out these operations.

If the outer main bearing races require renewal, then again a job for Matt at Aerco Jigs.

If the rollers of the main bearings are "scuffed" in any way they should be renewed. Never change them over from right to left etc., and whilst dismantling ensure that none fall through into the crankcases.

The keyway in the cranks and flywheel must be sharply defiined and if there is any wear in the grove, it should be fettled before reassembly.

The Pilgrim pump is driven by a slot in the extension plate and operates on the total loss system and expels shots of oil trapped by the reciprocating lungers. These are driven by a cross member keying into the mainshaft extension. The plungers rotate and because of the cams on the ends of the plungers are caused to reciprocate. The stroke of the plungers can be varied by adjusting the external adjusters. There are several kinds of these, which are the knurled wheels at the side of the pump. Some of these are numbered, but have no bearing on the adjustment other than a guide for setting. Screwing these in limit the movement of the lungers, hence less oil collected and forced out, whilst screwing outwards has the opposite effect. The pipes from the pump outlets are taken direct to the crankcase chambers and is directed to the main bearing. The oil is admitted through a hole in the packing gland and these register with the oil orifice. The intake of oil is timed to occur during the crankcase depression when the transfer port is closed. At this point oil not only passes on to the main bearing but improves crankcase compression by acting as a seal. The mist caused by shaft rotation lubricates the lower part of the cylinders and the big end via a drilling. Surplus oil drains to a well in the base of the crankcase which acts as a "splash" system when the engine is first started.

Oil should be SAE 50 for Summer or SAE 30 for Winter, though I have no doubt that we shall have other recommendations should this be read by seasoned Scotters.

On reassembly, (though perhaps before this, check the security of the sprockets that are rivetted to the flywheel and ensure that there is no looseness there,) after fitting together each main bearing assembly and crank and inserting the shafts into the keyway of the flywheel, working from the crankcase doors. After fitting the holding bolt test for end play which should be between .012 and .015 and is adjusted by shims between the screw collar and the face of the packing gland.

If the cylinder is badly worn — do not overlook "sleeving". There are several firms that will undertake this task.

SCOTT SERVICING

A Veteran Victim

The Editor chopped me off short on the last edition — shortage of space — before I could add the necessary data.

If you have made a hash of things — then I would suggest that you obtain a large tea chest — drop everything inside, then insert advertisement in "Exchange & Mart" commencing "Bargain for enthusiast: Scott (dismantled) - - - !

If you are still able to proceed then

Engine dimensions

498 c.c. Bore 66.6 mm. stroke 71.4 m.m.

596 c.c. Bore 73 mm. stroke 71.4 mm.

Carburettor Amal type 6/151 Bore 1 1/16 in. Jet size 170 Throttle slide 6/4 Float chamber 14/092.

Mainshaft assembly .012 to .015 in end float.

Piston Ring gap .010 in. when fitted.

Small end bush O/D .815 in. Bore .625 in — .00075 — .001 in.

Big end rollers 3/8 by 3/8 in. (12 per bearing).

Piston/Cylinder clearance: At skirt .004 in. at top ring land .009 in.

Gear Box

An extended mainshaft and outrigger bearing assembly supports the clutch assembly and removal of the outrigger bearing and withdrawal of the final drive sprocket leaves the clutch accessible.

Should it be necessary to remove the gear box entirely, dismantle the footchange mechanism. Parts which might require renewal are the pawl springs, the pawls themselves, which may be burred at the edges, and if wear is bad, the rod linkage to the bell crank lever.

The bell crank lever is controlled by a spring loaded ball engaging in recesses on a face plate. The spring may be weakened or there may be excessive wear on the face plate or recesses.

The bell crank is supported on two phosphor bronze bushes which if worn require renewal. After extracting the old bush it is a simple task to press in the new bushes. (Reamed 5/8 in. when new.)

The bell crank keys with the top of the gear operating fork and at the engagement end hardened steel pads are used to minimise wear and are easy to renew if necessary.

The driving side shaft support is a flanged bush pressed in the shell which carries the high gear wheel, which in turn is sleeved with two phosphor bronze bushes which carry the main shaft. At the other end this is carried on ball journal bearings housed in the end cover and the outrigger bearing. This latter being located by a screw-in cover to which is fitted a grease nipple.

The clutch assembly rides on the splined sleeve gear member. Clutch sprocket member and three insert plates lined with asbestos and three plain and spring carrier plate. Points to watch are the tongues of the plate and the recesses in the sprocket member, and the length of the pins on the carrier plate. These pins must be identical in length otherwise the thrust race will bear unevenly when operated. It is essential to have ample clearance on the cable otherwise there will be constant pressure on the race and so rapid wear.

Thirty rollers make up the clutch bearing, and care must be exercised to ensure these are not lost when reassembling.

An oil level plug is situated at the forward end of the gear box end plate. Oil recommended is SAE 30 or SAE 50.

Forks

Forks may be quite a problem. The old Scott girder bushes etc, will have to be made up if T. Ward of Derby cannot assist.

With Webb and Brampton, if you are unable to locate a local "vintagent" supplier, it may be that Webb & Co., Tame Road, Witton, Birmingham can assist with spindles, bushes or end plates. There is also Percival Bross & Webb who used to be at Cattel Road, Birmingham, though I believe they have moved in recent months.

For Dowty forks if you are diplomatic, you may be able to obtain spares for these from Velocette or Panther dealers, but remember the part numbers for these makes are different to Scott catalogue. It may be simpler to convert to spring forks as described some time ago in *Yowl*.

Chains

Primary 1/2 x .305 in. — 6 8pitches.
Secondary 5/8 x 3/8 in. — 94 pitches.
Mainshaft bearings. Outrigger and Kick start side.
Double row ball journals O/D 2 1/2 x 1 1/8 in. bore by .624 in. wide.
Inner sleeve gear bush (Flanged bush) 1 5/16 in. (reamed).
Gear Ratios (Wide ratio box)

Driving sprocket	Top	Second	First
22 teeth	4.00	5.80	11.52
21 „	4.18	6.08	12.20
20 „	4.40	6.40	12.70
19 „	4.62	6.72	13.30
18 „	4.19	7.16	14.10
17 „	5.17	7.52	14.90
16 „	5.50	7.97	15.85
(Close ratio box)			
22 teeth	4.00	5.26	8.53
21 „	4.18	5.50	8.90
20 „	4.40	5.78	9.37
19 „	4.62	6.16	9.90
18 „	4.90	6.44	10.40
17 „	5.17	6.80	10.98
16 „	5.50	7.20	11.69

MATHER'S MEANDERINGS

No doubt the Scott Owners' Club members can be divided roughly into two groups, the experts who produce gear driven oil pumps, experiment with reed valves, and airily recommend "Mavro" type oiling with Best and Lloyd pumps, and those like myself, of limited talents, who spend a whole week fitting a pair of mudguards!

However, some jobs which the experts seem to avoid, can afford some fun to we cheery bodgers, one of which is radiator building.

My unlovely hack Scott presented a problem when it was found that water cascaded from the radiator just as fast as it was poured in. My eldest son produced a scrap car radiator, and I decided to experiment. I shortened it, remodelled the header tank (tin shears and solder) altered the fixing brackets and finished up with a rather odd looking end product which gives excellent service. One word of warning, don't start with a scrap radiator, get a reasonable one from a car dismantling depot. A good pair of tin shears, a reliabe blow lamp, a large and small iron, some good tin-man's solder and liquid flux, and you are in business.

On primary chains: With proper care these should last 8-10,000 miles. I usually change my combo chain every decoke, when in funds, but have done 8,000 miles with the chain still in reasonable condition. The vital factors being adjustment and lubrication. I proceed as follows:—

Take out both sparkling plugs, slack off outrigger bolts and gear box holding bolts. Tension and lightly tighten gear box holding bolts until there is no undue up and down play at the tightest point of the chain but avoid any suspicion of tightness which ruins chains and puts extra load on the gear box bearings. Next, tighten gear box bolts fully, recheck, and if all is well, finish with out-rigger bolts. Next turn tension nut anti-clockwise, until it is solid. Failure to do this will result in the rear chain pulling the gear box backwards and tightening the primary chain.

Lubrication: I have found oil to be almost useless, use any medium grease. I apply it with an old toothbrush, both inner and outer runs. Don't use a disulphide base grease, as the stuff spreads and stains clothing. Inspect the chains for tension after a few miles, if all is well, frequent adjustments should not be necessary. Finally a slightly slack chain is far better than a tight one. Do not let the chain run dry.

Oiling: I am no supporter of those folk who always quote "oil is cheaper than pistons" and then stutter off in a dense blue fog. First make sure your oil pump is O.K., if it floods or is temperamental, send it to an expert such as Ward Motors. Next use one grade of oil. I buy five gallon drums from Messrs. Dalton (Silkalene Oils) Belper, Derbyshire. They make a grade eminently suitable for Scotts called Supertwo SAE 40, two-stroke engine oil. I have been delighted with this product which I have used for several years. Drop them a line, five gallons is delivered, the bill follows later, £2 9s. 2d., a real saving on oils made primarily for dry sump systems with their many additives which I suspect serve no useful purpose in a total loss system, and probably help to "gum up works". Set the pump to deliver one drop per five pulsations, O.K. for fast road work. Close the adjusters one notch and check. One drop per six or seven pulsations is about right for town work, but real flat out stuff will need another notch above the fast road work setting, about one to four. Sorry there is no setting suitable for flat out blinding AND traffic crawling. I cannot recommend adjusting the pump when on the

move, although I do so on my sidecar outfit, rather dangerous in this day and age. Above all, check your pump frequently when starting out as the flow can gradually decrease over a period. Perhaps I have been lucky, but have had no real oil troubles in 26,000 odd miles on my combination, and certainly have never had a sudden oil pump failure in my Scotting career, troubles being invariably due to slaphappy, or lack of, adjustment.

Clutches: Scott clutches are inclined to jingle but make sure the clutch is lifting evenly. Careful adjustment of the pins is necessary here. Incidentally, do not stand in traffic with the clutch held out, get into the habit of snicking into neutral, it is much kinder to clutch races.

When clutches are lined with cork this was a necessity. Incidentally my old hack has a cork clutch, very cheap and quite easy. Simply soak the corks in hot water, press into place and sand paper on a flat plate or linisher belt. Only one snag—clutch slipping in excess makes the corks swell and the clutch drags. A clutch takes time to bed down and is then best left alone.

A note on lighting: A Brum Scott can easily be converted to 12 volt giving a much better headlamp illumination. First obtain a brochure from Joseph Lucas entitled "Lucas fitting instructions for 12 volt motor cycle alternator systems."

This is free of charge. Also very useful is a Scott wiring diagram. One was shewn in a back number of Yowl. A blue-print can be had from A. Miller and Co., for about 2/-. By suitable bending, the accumulator case can be made to hold two plastic 6v. batteries (not the small A.H. type). A new tightening screw will have to be made.If your rectifier is of 1962 or later vintage it will be suitable. The ignition coil will have to be ohanged. Second hand ones from old cars about 5/-. The capacitor housed within the distributor will also require replacing. Hunts supply one which fits under a screw on the carburettor drip tray. 12v. ones being too large to go into the plastic cap. I have found no need for a Zenor Diode the charging rate is too low during daylight running. Although changing the yellow and green alternator leads will give more amperage if needed. On headlamp I use a 50w bulb.

Finally—everyone seems to have their favourite brand of sparking plug. I have had every satisfaction with Lodge H.N. which seem suitable for all occasions.

James E. Mather.

FITTING AN AIR-CLEANER

R. Ellam, Nakuru, Kenya.

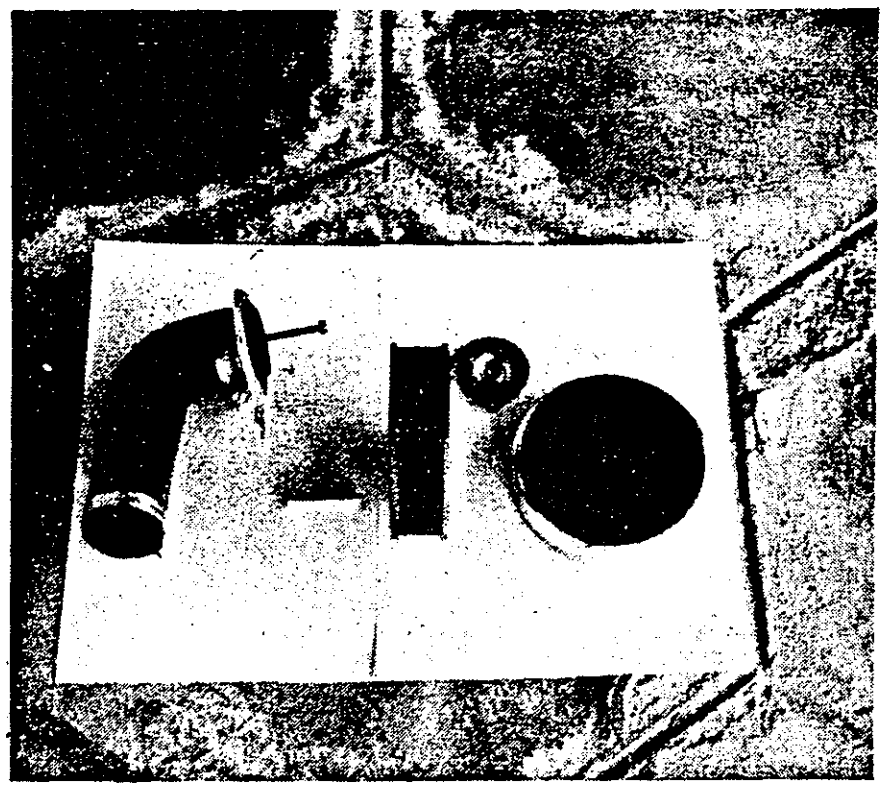
I have been using my Silk Scott in Kenya for the past two years and because of the very dusty conditions I found it essential to fit an air cleaner. There may be other owners who would be interested in a similar modification and I am therefore enclosing some photos of the conversion in case you would like to publish it in "Yowl".

There is not much room behind the cylinder block to fit the air cleaner directly to the carburettor intake, so I have cut away part of the triangular side panel to fix a Mini-Minor air cleaner, mounted on a flange secured to the lug for the side panel attachment, a hole has been drilled in this for a ¼in bolt.

It was necessary to move the horn so that a rubber hose of 2in inside diameter could connect between an angled adaptor screwed to the carburettor intake and the air cleaner element flange (hose pipe is a radiator hose, locally purchased and cut to length). The carburettor adaptor and the element flange were made for me by a local engineering firm and the filter element is covered by a stainless steel bowl bought at a local supermarket. The photographs will show the various components and the appearance, which however, does spoil the side panel, but I could not think of any better alternative.

The modification has not affected the performance except that the mixture was too rich just off the pilot jet and I filed ½in of the throttle slide cut-away which corrected matters. The throttle slide needle is now in the lowest position and carburation is O.K.

Regarding rubber base rings (cylinder) I have been using rubber joint rings for the C.A.V. Diesel fuel filter (C.A.V. part No. 7111/256A) which are square section and will stretch slightly to fit over the cylinder spigots, these make a good seal.



Parts required: Hose and flange for element, Sleeve for centre bolt, Element, cap for element and stainless steel cover.

THE GOOD SCOTTING GUIDE (Part three)

Brian Marshall

Look through any pile of old Scott parts and you will find them: broken, cracked, and welded-up gearbox trays, outrigger brackets, crankcases, gearbox end covers, and so on. Much of this damage is avoidable with a bit of care and attention to detail:

Crankcases. The commonest problem is broken-off or cracked rear upper or lower lugs, although I have had a few through my hands with the front bolt holes badly cracked, usually as a result of accident damage.

When installing an engine in the frame NEVER hammer home the ⅜" mounting bolts. You should normally be able to push two out of three into place, and then tap the third home with gentle blows from a rubber or hide hammer. Check that the bolts will slide through the frame lugs easily, as traces of primer or stove enamel can make life difficult. If you still have problems lining up the third bolt, and the engine was previously in the same frame, it is likely that the frame has 'sprung' when the engine was removed. This may be due to accident damage, or the strains imposed by a sidecar.

If engine and frame have not previously been mated together then the infamous Scott rubber limit gauge may be the culprit, and fitting a Birmingham crankcase into a Shipley frame (or vice versa) will often give problems.

If the third bolt is only a few thou out of register I confess to doing very naughty things with sash cramps, blocks of wood, and car jacks, but don't tell a soul! If the problem is more serious it is necessary to pack the bare frame and bare crankcase off to a frame specialist for straightening. Obviously when rebuilding a bike you should always check engine fit in the frame before doing any painting. It should perhaps be mentioned that a few replacement crankcases seem to have escaped from Matt Holder's old stock that were probably rejects, as I have seen one or two with bolt holes way off-centre in the crankcase lugs. These can be successfully reclaimed by having the errant holes welded up and redrilled. Never be tempted to file crankcase or frame bolt holes oval!

The rear upper lugs on Flyer and TT Rep engines MUST have the alloy 'candlestick' spacer in place, and the fit of the spacer is often overlooked. With the engine out of the frame the spacer should be an easy interference fit between the crankcase cheeks. In other words it should be possible to slide it into place by hand, but it must stay in position, without the bolt. Shim the ends of the spacer tube with washers stuck on with epoxy glue, because if the spacer is loose you can break off the crankcase lugs as the nuts are tightened up, or at least crack the crankcase.

On single downtube Sprint Special or 1931-1933 Flyer frames the frame lug takes the place of the 'candlestick' spacer, but it should also be shimmed for a perfect fit.

It is not widely known, but there is sufficient flex in the crankcase end float to be lost if the rear upper bolt and spacer are incorrectly fitted, and I have read that a 12 thou distortion at the rear of the crankcase can steal three or four thou of crank end float. It follows from this that end float should only be checked with the candlestick spacer correctly fitted and bolted *in situ*.

In a similar vein, the gearbox tray should be a nice snug fit between

the bottom lugs of the crankcase, and again shims can be used to achieve an easy interference fit. (Roger Moss once told me that he cuts long slots in the 'floor' of the crankcase, each side of the bottom lugs, but I have never tried it, and must say that it doesn't appeal to me.)

Gearbox Trays. Apart from the tip just mentioned, gearbox trays still seem to suffer, especially under very hard use, and the main points to watch are to ensure that all the bolts are kept tight and regularly checked. Also, as mentioned in the first of these articles, the gearbox clamping nuts and washers must be the correct large-diameter ones so as to spread the clamping load. Breakage around the outrigger bracket mounting holes is usually due to incorrect primary chain adjustment technique, so again refer to the first of these articles. Correct work here could also stop you bending the gearbox mainshaft, so do get it right!

Outrigger Brackets. Breakage of outrigger bracket castings is usually due to incorrect primary chain adjustment technique, as previously detailed, or to running with the bolts loose. There is, however, one other important cause of failure. Do check that the bracket sits squarely in place on the gearbox tray. Unless previously damaged and welded-up they usually do, but I have found a few where the bracket rides up out of proper contact with the tray, when pushed to the ends of the adjustment slots, because not quite enough metal was milled off the mating surfaces on the side of the tray.

Gearbox End Covers. Again the old rubber limit gauge is a culprit and some end covers are distinctly reluctant to fit onto the ⅜" location dowels. There seem to have been about half a dozen different jigs in use at the factory, and most gearbox shells and end covers are stamped with a number (other than the casting number or serial number). It follows that an end cover stamped '5' is most likely to fit properly on a shell stamped '5', and most problems seem to occur in a 'mix-and-match' situation, when trying to assemble a box out of parts of different ages.

Do not be tempted to omit dowels or bolts to achieve a mating. The ¼" studs are fragile so do not overtighten the sleeve nuts in the vain hope that it will cure oil seepage. Long ring spanners or socket sets are out of the question. Use only a short tool-kit size spanner!

Kickstart stops also impose excessive loads on the end cover castings. Various different stops have been used over the years, ranging from bits of spring steel strip, to the substantial metal-encased rubber buffers on an extended upper dowel, as used on later gearboxes. I tend to go for the later type of stop on my rebuilds, but this is a moot point. The main thing is correct use of the kickstart. Never let it fly back and hit the stop forcibly.

After all that advice you are not out of the woods yet, and it must be realised that some older castings have seen better days.... Alloy casting technology improved in leaps and bounds during the Second World War, and so post war Scott castings are usually stronger and also easy to repair if they do get cracked or broken. Castings produced by Birmal are usually very good, but some of the stuff produced by the foundries used by Shipley over the years is decidedly grotty, full of blow-holes, slag, and other defects. Together with years of use and abuse, the net result is rather like recycled Cheddar cheese; hard, and crumbly! Despite all the loving care you can apply you may still get problems; but that is Scotting for you.

So, Rule No. 3 is:

KEEP YOUR CASTINGS FROM CRACKING UP.

BAD LANGUAGE

Titch Allen

Having just wasted half an hour and a lot of bad language trying to fish a bolt out of the gearbox tray of a Flyer I am reminded of advice I have given many times in the past but ignored myself. Scotts, and Flyers in particular, have many traps for the unwary. The gearbox tray might have been designed as a catchment area for chain links, nuts and bolts and even the odd small spanner. On the kick-start side no harm will result from the odd small part that goes tinkle plop and disappears into the recesses of the the trap that your fingers cannot reach, but the deep well under the clutch is another matter. A chain spring link or link outer plate can be left to lie safely in the greasy muck, but anything bigger must be retrieved or it may leap up at the most inopportune time it can find and jam the clutch sprocket. Removing the outrigger and sprocket may be necessary to get the blighter, whatever it is, out. Even then it's difficult to fish things out of the well. My favourite trick is to jam a tuft of rag between the forward segment of the clutch and the tray.

Careful rotation of the engine with the plugs out and a bit of help with a screwdriver, will usually persuade the rag to scour out the well often bringing out bits you did not know you had lost. As for the crankcase, well, there's no telling what you may find a previous owner has dropped down there. I once found a two penny piece as well as the usual chain links. Prevention, though, is better than cure. Before you start work, decide where fallen parts will go and stuff rag into those areas. It's the work of seconds to cover or fill areas like the flywheel area when you are working on the carburettor or the gearbox tray when working above it. It can save you hours of frustration fishing with bits of bent wire.

CONTROL CABLES FOR THE SCOTT

Mike Keighley

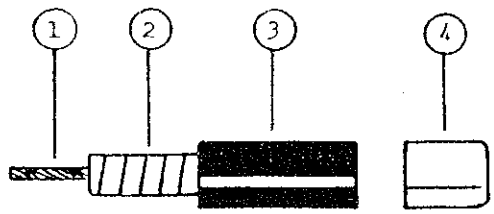
The control cables of the type fitted to motor cycles must be one of the most elegant engineering solutions to the problem of transmitting mechanical movement from one location to another. Compared with the alternative mechanical arrangements — systems of rods, levers, bell-cranks, screwed devices and the like it has no equal, only hydraulics which now find acceptance on modern machines might be considered as offering a superior performance, albeit at a price.

Control cables have been around for a long time, at least since the last century. Jeff Clew in his book *The Scott Motorcycle* notes that a certain A.A. Scott applied for a patent in 1899 for "brakes actuated by a flexible cord passing through a tube" and in 1912 Alfred had another patent dealing with "the means of anchoring cables in handlebar levers of Bowden wire controlling devices". Bowden was one of the early manufacturers of control cables, together with the associated levers and fittings and, indeed, the name 'Bowden' is often used to describe motor-cycle control cables, even if made by others. Nearly all control cables on motor cycles are of the type where the movement is 'pulled', as distinct from 'pushed', and while there are cable systems of a somewhat more sophisticated (and expensive) design which will transmit both 'push' and 'pull', these will not be discussed here as they are unlikely to have appeared as original equipment on production Scotts.

It is not intended in this article to describe the soldering of the various types of nipple to control cable wire, as this has been very adequately covered elsewhere, perhaps most recently in Radco's *The Vintage Motorcyclists' Workshop*. A point worth making, however, is to recommend the use of the largest soldering iron you can lay hands on. Mine has a 1 lb. copper bit acquired many years ago from an ex-WD tool shop, and I find this essential in order to provide the heat sink necessary to ensure penetration of the liquid solder into both the splayed wire ends and the nipple.

A range of outer cable and inner wire sizes is shown on p.279. As there is no British Standard related to the manufacture, dimensions may vary from one maker to another. Up to the 1950s the outer cable sheath was usually a fabric-based material which with age and use cracked, but nowadays it is a plastic or neoprene product. Old stock of pre-WWII cables do turn up from time to time, although there can be little of it left now. The applications shown are those to be found on Scotts, but the personal preference of the rider may dictate other combinations. For example, there is necessarily a tight bend in the clutch cable at the three-speed gearbox end and the clutch operation can be made easier by the use of a No. 3 inner wire (instead of the usual No. 4) in a No. 4 outer cable. Smoother operation of all controls can be achieved if the control cables are made to measure on the machine, providing bends as generous as possible with no tightening anywhere, particularly over the full range of the front fork movement. For those who are not too fussed about originality there are modern cables which feature an inner nylon lining to the outer cable. These are a larger diameter and require special end-caps to mate up to standard control levers, but do provide a smooth performance. Finally, do keep all components well lubricated as it is surprising the amount of friction that can develop in a dry or corroded cable.

CABLE CONSTRUCTION



1 inner wire
2 coil section
3 outer sheath
4 end cap

	OUTER CABLE		INNER WIRE		END CAP	
No	Nom Bore	Ext Dia	Dia	Strands	Dia	SCOTT Application
0	0.066	0.150	0.045	19	0.185	
1	0.100	0.188	0.062	19	0.221	Mag, Air, Throttle, Cut-Out
2	0.110	0.212	0.075	19	0.230	) Brake, Clutch - Inverted
3	0.125	0.225	0.087	19	0.243	) Levers
4	0.135	0.235	0.105	19	0.253	Brake, Clutch. Std Levers

Dimensions are in inches

The assistance is acknowledged of T. Johnson (Cables) U.K. of Banbury in the preparation of this article.

STOP THAT LEAK!

Mike Keighley

Probably we have all noticed at some time or other, Scotts with a line of oil seeping down the crankcase from one (or more) of the cylinder holding-down bolts and I've even seem a couple of beautifully restored machines exhibiting this defect. Reason dictates that if oil can leak out of the crankcase then air can leak in, providing conditions for possible mixture upset and carburation difficulties. Tightening the cylinder holding-down bolt(s) is unlikely to solve the problem and may do more harm than good. Over the years it has been pointed out on numerous occasions that these bolts should pull the cylinder block down sufficiently to compress the cylinder base rubber rings and the paper gaskets and should *not* be over tightened.

However, the original machining on many crankcases is such that even with the rings, gaskets and associated cylinder block faces in

perfect condition, oil and air can still find a passage through the cylinder holding-down bolt drillings. The culprit seems to be the machined faces in the pockets onto which abut the cylinder holding-down bolt washers, or collars. The machined faces, or counter-bores of each drilling is generally $^{3}/_{4}$" diameter, whereas the collar is $^{5}/_{8}$", so that with the passage of time, use and perhaps over-tightening, the collar cuts into the machined face, damaging the surface. The crankcases of the two Scotts I have owned had these faces damaged, or not to put too fine a point on it, 'well and truly graunched'. It is not until the bolts are withdrawn and the crankcase inverted that the condition of the faces can be readily examined, as when the engine is in the frame you either have to have your head touching the floor and peer upwards, or use a mirror.

If the faces are badly scored and/or undercut, the solution is fortunately relatively simple and does not require a visit to the machine shop. All that is needed is the purchase of a $^{3}/_{4}$" diameter tap re-seating cutter, usually available from a plumbers' merchant, and a few bits of material to make up a cutting tool similar to that illustrated in Fig. 1. This is hand operated in an almost identical manner to the kitchen tap re-seating tool, except, of course, it will be cutting 'up' instead of 'down'.

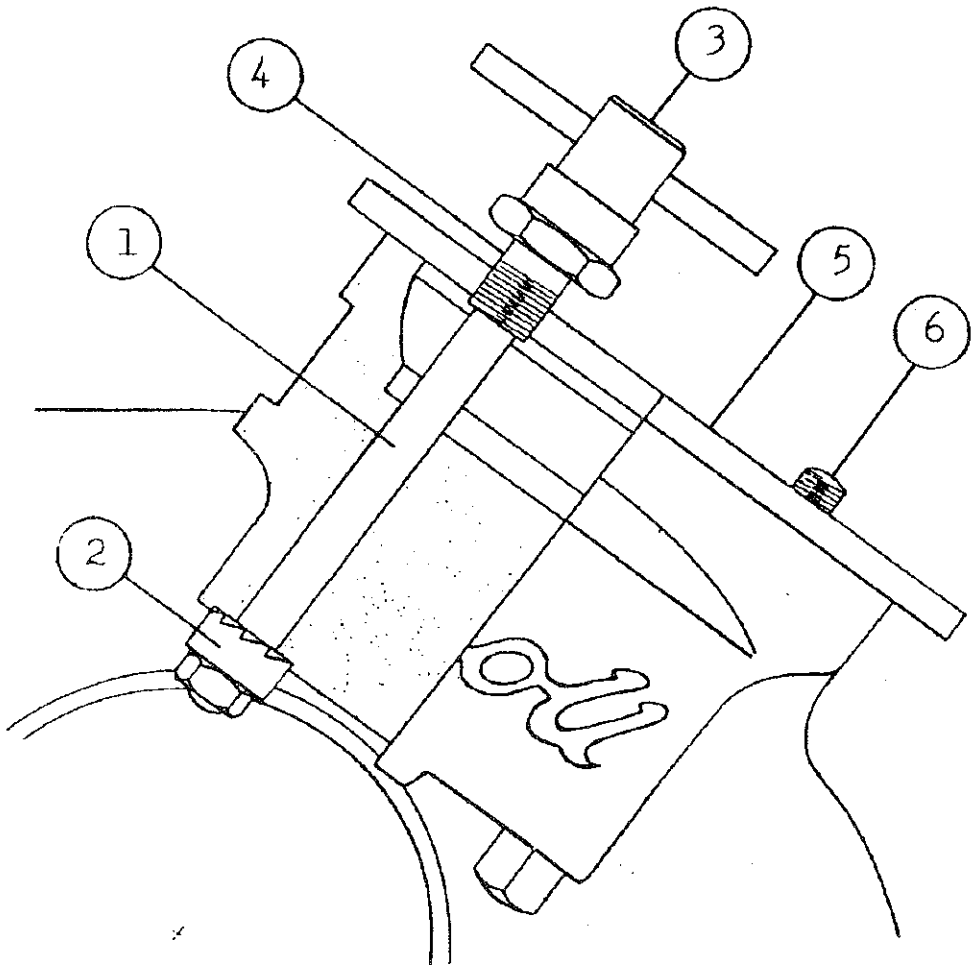


Fig 1. Tool for re-cutting cylinder holding-down bolt pockets.

The tool consists of a spindle (1) which is a sliding fit in the cylinder holding-down bolt drilling. The lower end is threaded to receive the cutter (2) whilst the other end has a larger diameter section with a tee handle (3). The spindle passes through the screwed sleeve (4) which is carried in a $^{1}/_{4}$" thick mild steel plate strong-back (5). A cylinder

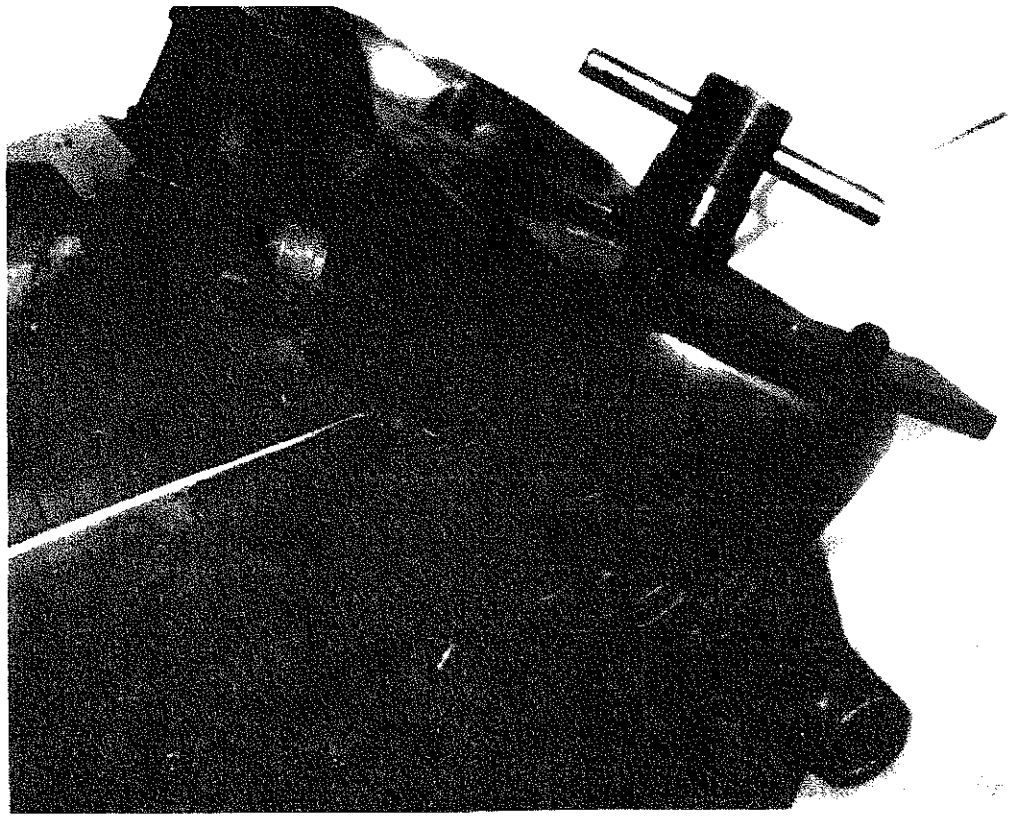


Fig 2. The tool set up for use.

holding-down bolt (6) is screwed into the strong-back and acts as a steady. In operation the screwed sleeve is adjusted until the cutter engages within the pocket, rotation of the tee handle providing the cutter motion. Small adjustment of the screwed sleeve allow additional cuts to be made until a satisfactory pocket surface is obtained. Fig. 2 shows the tool set up for use.

To improve matters further, a modified cylinder holding-down bolt collar can be employed, which provides a larger contact area against the machined face. This is illustrated at Fig. 3 and is such that 'originality ' enthusiasts should find it acceptable, as most of the larger diameter is hidden within the pocket. Finally a ring of that excellent silicon sealant, such as 'Instant Gasket' applied to the top face of the collar at assembly will ensure a long-lasting gas-tight seal.

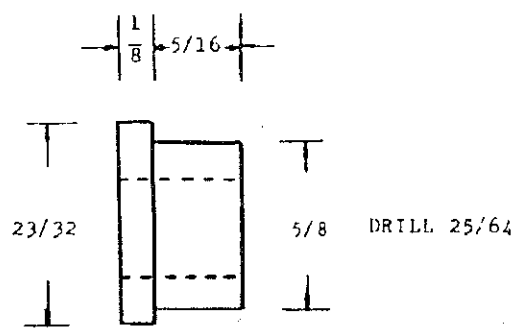


Fig 3. Modified cylinder holding down bolt collar.

Editor's Note: The following article, in three parts, contains some additions by the author to the originals published in Yowls. The diagrams on page 9.1.56, computer scanned by Eddie Saxton from a 1914 Scott brochure but not published in Yowl, is included in *Technicalities* as being of historical interest.

UA 7497
Part One
Written Oct 1989, Published in 'Yowl' Dec 89
This revision Tuesday, 16 June 1998

UA 7497 is on the road again after more than forty years of disuse. Insured, tested and taxed and ready for use whenever I'm feeling brave enough to try my luck in today's traffic with such an elderly machine.

UA 7497 is a 1929 2 speed Super Squirrel, frame number 2738, with a 1930 engine, number Y3422. It has a 7 inch Webb front brake in Scott forks, a BTH magneto and a Pilgrim pump on the magneto platform. There are no lights or speedometer. The handlebar levers are not inverted although the handlebars are of the inverted lever type. A twist-grip throttle is fitted.

It has been difficult to pin down it's history, but it seems to have been part of the result of a friend-of-a-friend's attempt to build himself one good Scott out of two bad ones in about 1940. I suppose he succeeded and UA 7497 was the bits left over when he had his good one complete. Mr F.L. Pearson of Horsforth, near Leeds, bought the leftovers as a (more or less) complete machine in 1940 for £1.00. He and his wife pushed it for miles round the Leeds Ring Road from Moortown to get it home. I believe it has not gone under its own power since then and the state of several parts confirms this, although it was taxed from time to time between 1948 and 1957.

The years of disuse were not wasted, however. The black bits were painted black, the red bits were painted red and the shiny bits were nickel plated and some transfers were applied. Eventually Mr Pearson found he could no longer carry on, and knowing that I was interested, he offered 7497 to me.

Jeff Clew, in his book "The Scott Motorcycle", says that he has yet to encounter anyone who has taken the middle road and tolerated a Scott as a second string. Well, UA 7497 is definitely number two here; number one will remain my Vincent until I no longer have the strength to start it. They are both in leagues of their own of course and the Vincent is still very much a super-bike and can be practical everyday transport even now, but a 2-speed Scott is something rather special in it's own way

It looked well enough when I got it home, but a closer examination showed that there was a great deal to do. The engine was a mess, as was the 2-speed unit. I had a spare 2-speed as part of the deal and that was even worse. One of the magnetos I had was in working order and I decided to use it. The other, a magdyno, was dead, so off it went to CER of Slough for repair.

The front brake is a Webb 7" unit and it seemed to be fairly good. The back brake was peculiar. The peculiarity turned out to be bearings of the shake, rattle but no roll variety When they were cleaned up they made a very entertaining noise, and would do nicely as babies' rattles. Of course, bearings that size are no longer made so I bought a pair of the nearest size and turned two sleeves and a new axle.

Meanwhile, during a period of reflection and saving, I took the engine and the two 2-speed units to Ken Lack in Sheffield where they joined his queue.

The carburettor was a quaint confection of Binks bits and a large amount of Araldite. That went to David Frank at Snaithe, and he bored it and made new slides, top and jets in a most pleasing manner.

My savings and Ken Lack's work matured at about the same time, so I collected my re-built engine and 2-speeds and put the bike back together again. I made up some control cables and got to the stage when engine runs looked a possibility I have fitted the close ratio unit running 20, 25, 40, 66 and 21 tooth sprockets (see p71 in the 1930 handbook); the other unit is high = 25, low 47 teeth. So it is pretty high geared at 3.93 and 6.3:1.

Then came **Snag No. 1.** The timing seemed to be progressive; that is, the points opened at a different point each time the magneto went round. This is when I found out, with Ken Lack's help, that the magneto sprocket should have 16 teeth, not 20. There was no 16 tooth magneto sprocket with the bike, only 20s, so I bought one.

Snag No. 2. This was when, due to my ignorance of things Scott, Binks and 2-stroke, I kicked the kick-starter return spring to death. After some thought about timing, starting mixture strength and getting a new spring, a further attempt resulted in a lot of noise and a lot of smoke, but she went!

SHE WENT!

Then came **Snag No. 3**. The oil pump drive arm fell off. It had split across the square hole so I made a new one from brass hexagon bar and a length of quarter inch rod. It might not be as strong as the original cast item, but I left as much metal on as I could and the rod was screwed, soldered and punch locked for security! I tried again. She went again. It took a long time to figure out why the oil pump had oil pouring out of it and not much was going into the engine. I was running on petroil just in case, and I kept an eye on the oil level in the crankcases, but oil poured out of the pump. I now know more about Pilgrim pumps and what happens if someone (it wasn't me, honest) puts the rotors in the wrong tunnels. With that sorted out I could lay a very satisfactory smokescreen up and down the road. Perhaps too much smoke, but at least oil gets to the engine now. The regulators are almost closed in an attempt to get the required rate of drips, but there seems to be too much still.

UA 7497 was transferred to my riding insurance, taken for an MOT, and I applied for a concession rate (£20) tax disc. The tax office asked for a weight certificate so she got trailered down to the local weighbridge. They had had some funny things there, they said, but it was their first motorbike. The weighbridge said that UA 7497 weighed 100kg so the ticket went off to the tax office. They sent me a tax disc and I was ready to find out more about 2-speed Scotts. The Registration certificate eventually came back saying the weight was 10kg. Must be the lightest Scott in the world.

Then **Snag No.4.** A 7in Webb front brake is too powerful for the Scott forks. Fortunately all that happened was that the brake anchor arm pulled out, got bent and the brake rod stopped the bike. After taking some more advice from Ken Lack, I got a length of ½" steel tube, brazed and pinned a length of threaded rod to one end and flattened the other end. The threaded end fitted into the brake cable abutment and the flattened end was bolted to the brakeplate. I made a new cable abutment and clamped it to the new torque arm. And all is well.

Now I can find out about Scotts.

Being used to a 'modern' four-stroke with a gearbox is not much help; I found this strange device terrifying at first. It seemed to 'set off' with you, and needed a firm, conscious control. Now I'm getting used to it, **Snag No. 5.**

The back tyre went flat. I had already bought a 20" front tyre to replace the ragged mess I had, and the rear was not much better. So I now had to get a Dunlop Trials Universal for the back as this appears to be the only type available in 20". The new tyre scraped against the (mostly sheet alloy and filler) home-made mudguard. A new steel mudguard was found at a local British Bike shop, some brackets made out of stainless steel and a crude front extension fitted until I get round to doing the job properly.

Now I'm getting used to it, I've done about 50 miles, and it is very pleasant. Light, easy to start and pulls like a steam engine. It batted up the hill from Ilkley to the Cow and Calf rocks with great enthusiasm and didn't want to do it in low. Only a few short trips so far, to see what falls off. The brakes are definitely of the 'Oh God' variety. You need to apply three days in advance if you want to stop, but they do work and will get sorted soon. The 2-speed device is opening a whole new world of entertainment to explore. Mr Pearson was pleased to see his old bike back on the road, and I was pleased to be riding it.

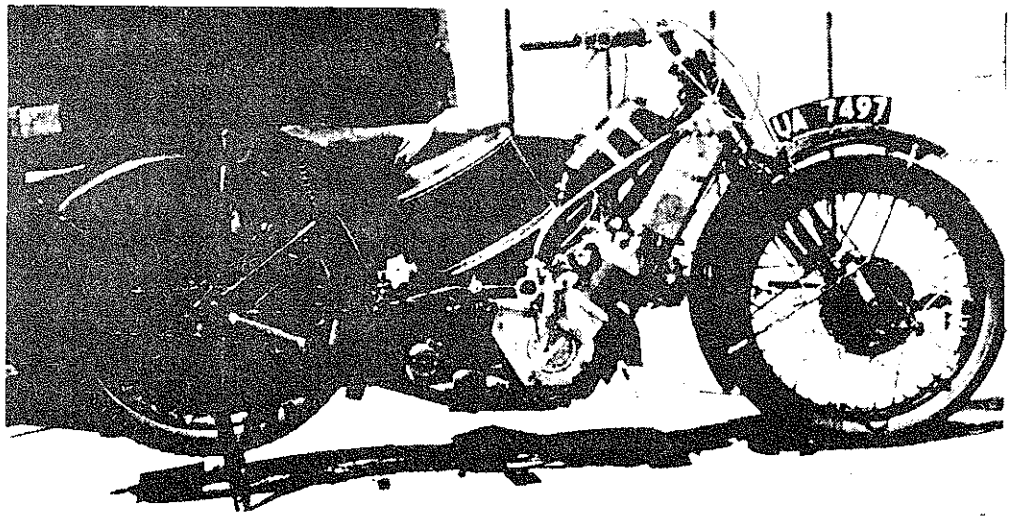
My especial thanks to Ken Lack, David Frank and of course, Leslie Pearson for helping me to experience a 2-speed Scott.

It is not a restoration. It is not a rebuild. It is not original or in any way famous, but it does go and it is on the road again.

Someone once said that the ideal state for an old bike was half way between one re-build and the next. I think I agree. Some of the glittering creations one sees from time to time are hardly for everyday use and are unlikely to have ever come out of a factory like that except as specially prepared examples for a trade show, but they look lovely don't they? It pleases me to think that UA 7497 is pretty typical of its kind when they were current in the 20s and 30s.

I would appreciate any advice or opinions I can get, so if anyone with a 2-speed would like to visit for a pot of tea and a natter, please get in touch. I'm fairly free most weekends.

Long live UA 7497.



UA 7497
Part Two
June 98

Some years ago (December 1989 to be exact) there appeared in Yowl Part one of this entertainment. You may recall that we got up to Snag 5, a shreddy tyre, and I foolishly imagined that there would be few problems to follow. I should have known better!

Snag No 6: 1990 saw about 100 miles covered with no trouble and I was beginning to like the little bike very much. 1991 was another successful, if low mileage year until I detected some very strange steering behaviour on my way through Otley. It felt like a flat front tyre, but on stopping to investigate I found that the front brake drum had come adrift from the hub. I arranged recovery via the RAC and looked closer at the damage. It was clear that someone had made a 7 inch brake drum to fit a Scott hub and not made it thick enough at a point about 3 inches from the axle where the hub flange ends. It was no thicker than a tobacco tin and it is a wonder it lasted so long. I suspected that the drum, which was working with a Webb plate and bolted to the Scott hub, was a home-made one and various conversations seemed to confirm this. Certainly replacements were not easily obtainable. Requests to advertisers who claimed to be able to provide a 'one-off' service usually resulted in mutterings about lots of money or enquiries as to how many I intended ordering. The answer "one" was clearly not acceptable. Godfrey Wormald suggested that I contact Paul Jackson of Out Lane, Huddersfield, a man with a good reputation as an engineer and as a man who welcomed interesting problems. I went and waved my semi-detached wheel in front of him and he said, "Leave it with me, I'll see what I can do. Ring me in a couple of weeks". Five days later he rang me to tell me that my wheel was ready for collection, and indeed it was. A new drum, turned out of a block of steel and thick enough for anything, wheel built and ready to fit with the drum trued up in the built wheel. The price was certainly right and I lost no time in fitting a tyre to the wheel and the wheel to the bike.

"Now," I thought, "I can get on with finding out all about riding a 2-speeder". And so it was to be for a while at least. 1992 saw me through about 450 miles including the Burnsall Run and a trip to Kirby Lonsdale to show the whiz-bang riders what a real 2-stroke was like.

Snag No 7: Starting was becoming a bit of a hit and miss (mostly miss) business but there was usually a hill to stop on, but things came to a head on the 1993 Burnsall Run when the KS spring and the chain anchor broke yet again. Something had to be done to sort this out once and for all. When I pulled the covers off to examine the problem I noticed that the chains seemed to move before the engine did.

This is **Snag No 8:** A closer look revealed that the engine sprockets were loose. That did it! I'd had it in mind to get a real rebuilder to go over the bike for some time and now seemed to be a good time to start looking. They were all as usual pretty well booked up for the foreseeable future but I eventually joined John Stathers' queue. In the fullness of time, that is to say, May 1996, he brought the bike back home all beautifully painted and plated and looking like a little jewel. A more plausible set of handlebars with inverted levers and a lever throttle had been fitted along with decent mudguards and a new toolbox. The saddle had been re-covered in leather. He had been unable to do anything about the starter ratchet but we hoped it would work for a bit, especially now there was a re-wound mag and an Amal carb instead of a Binks carb, both improvements I expected to make starting and running easier. And they did. Now I could really find out about Scotting on a 2-speeder. This feeling of euphoria lasted all of 5 miles — the ratchet slipped and jammed and the spring broke and the chain anchor broke and...

Snag No 9: Something *has* to be done about this kick starter ratchet.

I have been told that only the sleeve wears to any great extent but in my case the sleeve was the least worn of all! The ratchet teeth all had lost their tips and there were deep indentations where the chain wrapped round. Both cams were badly worn and the ring teeth were worn and chipped. All three parts needed changing and that right smartly. Trawling round the usual suppliers and experts soon led me to the conclusion that first, none was available, second, none was likely to be in the near future and third, if I was to get anywhere I was on my own. I did have several kind offers of spare sets to get me going for which I was truly grateful, but this would not solve the original problem so I felt I had to decline them. One or two people (not Scott men I must say) had friends who they felt could churn out a set with no problem. Further inquiries resulted in a lot of tooth sucking and head scratching and explanations of how intricate the device is to make but no signs of real interest. Eventually it all came down to the need for someone who was brave enough, desperate enough and rich enough (and probably daft enough) to underwrite a small production run from a proper professional engineering company rather than rely on amateurs, however gifted and experienced they might be. I wanted this done properly by someone who had a reputation for good work and was fully up-to-date in metallurgy and machining methods and who knew about intricate parts for bikes, if only because my own knowledge is very sketchy in these fields.

After a few non-starters (sic) I was eventually introduced to the proprietor of Autovalues Engineering Ltd of Bradford who use the trademark 'Morgo' for their range of oil pumps for Triumphs &c. A well known firm with a lot of experience in the trade. A sample was obtained from Ken Lack (for which, many thanks), his only example of the device which was being held for a customer, and passed on for evaluation. Meanwhile I had thought that since this device had been made since 1908 it could not be beyond the wit of man to make it today; the only problem was going to be "how much?". A useful rule of thumb for something which has always been made of the same materials and in much the same way for many years is to multiply the price by two for every ten years. It seems to work, if a bit roughly, for such things as Land Rovers and houses so I applied it to ratchet sets and came up with the figure of £90 more or less.•

The response was that sets could be made, they are not as easy as they look, about 20 to 25 sets would have to be made and the price would be about £90 each and surely I would be able to sell the surplus when there are over 400 2-speeders registered with the VMCC. The last was more in hope than confidence as far as I was concerned. Anyway I said "Go!" and they went.

There was a few problems in production but not insuperable, and no corners were to be cut. These parts were going to be right and of the best quality as befits a firm of this standing. If something goes badly wrong, don't fudge round it, junk the lot and start again seems to be the motto.

In due course I got a box of new ratchet sets in exchange for a (to me) large amount of cash and I fitted a set to UA 7497. The transformation was instant and impressive. It is wonderful to have positive engagement first time every time. I can use the starter with some confidence that it will work and not self-destruct.

•As a diversion, consider that the price of a Super Squirrel in 1929 was £52 - 10 - 0. Multiply that by two six times (bringing us to 1990) and you get £3360.00 which is not a totally unreasonable price to pay for a sporting two-stroke twin. See what I mean?

When spring 1998 arrives, I thought, I will really be able to find out all about riding a 2-speeder. Spring, such as it was, duly arrived and the whole day was spent riding round a short course locally to see how we got on. Fairly well is the answer, but eventually I broke the chain attachment piece and the spring yet again.

Snag No 10. What *was* I doing wrong? Was it installed or set up incorrectly? Who knows about these things? There are few clues in *Scott Technicalities* or in *Yowl* or in *The Book of the Scott*. Obviously I am missing something simple and basic here.

Phone calls to David Frank, Ken Lack *et al* provided some of the answers and a period of sitting down and staring at the device provided more.

Notes on the two-speed starter mechanism and some thoughts on how to make it work without destroying it.

First, assume that such things as carburation, compression, magneto condition and timing are all in order and that the mechanical condition of the ratchet is sound.

The two cams provide a positive disengagement of the ratchet and keep it so when at rest. The rest position must therefore be with the cam lobes opposite one another and this is achieved by adjusting the length of the actuating rod such that the fifth chain roller is in line with the sleeve fixing screw (i.e. at 12 o'clock). The sleeve might need shimming at its inner end to ensure that the ratchet is fully disengaged and remains so when high ratio is selected and any end play in the countershaft is taken up. Mine needed about 40 thou., but the least shimming consistent with disengagement will keep lost motion at the pedal to a minimum.

There is nothing to limit the forward travel of the starter. Clearly (and it took a little while for something so obvious as this to dawn on me) if the pedal is moved too far the chain will pull the connecting piece away from the ratchet and break it. The spring will probably break as well. At the end of the kick stroke THERE MUST BE AT LEAST ONE ROLLER OF CHAIN LEFT IN CONTACT WITH THE RATCHET.

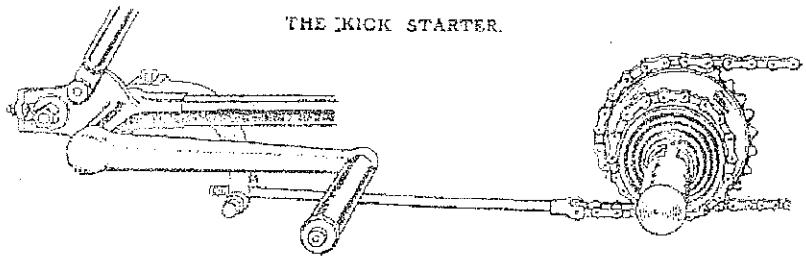
This is the key to the problem as I see it. No means of limiting travel capable of withstanding the full force of a vigorous kick can be provided and the weak links in the operating mechanism are the chain-ratchet connector and the possibility of overwinding the spring. The connector could be made much stronger but this just increases the likelihood of spring breakage so one must have recourse to technique. Two ideas from George Reeves have been published, (Yowl Nov 68, Scott Technicalities 10.3.10 and Yowl Nov 74, ST 8.8.01) which replace the scroll spring with a piece of clock spring to provide engagement and a length of Bowden inner and a spring to return the ratchet to its rest position but neither of these overcome the breaking connector problem nor do they limit the travel of the ratchet.

If the engine does not start with a fairly gentle PUSH on the pedal, which must, of course, be sufficient to turn the engine over fast enough to generate a spark, rather than the full blooded sort of kick needed for a large capacity four stroke (the sort of machine I am used to) then there is something wrong for which vigorous kicking is not the cure. Make an assessment of how far the pedal can be allowed to move and don't exceed it at any time.

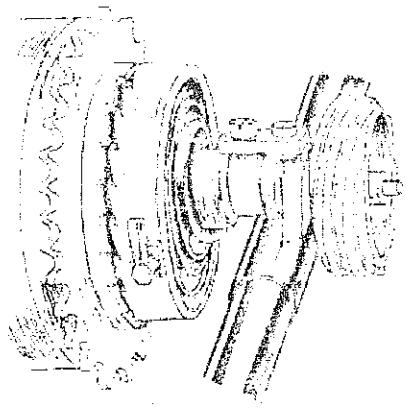
The permissible arc of travel of the pedal is about 90 degrees after ratchet engagement and this 90 degrees translates to about 180 degrees at the ratchet and 225 degrees at the engine. If, when the ratchet engages, one piston is on the way up on its cylinder compression stroke then the other is on its way down on its crankcase compression stroke—at about 90 degrees after TDC. The kick stroke should take this piston to about 45 degrees before TDC on its cylinder compression stroke and the flywheel should do the rest causing that cylinder to fire. Or maybe the other one does first—it don't really matter so long as one of 'em does—and that is enough movement to start the engine.

Set the controls for starting (timing, throttle &c.), and stand as far to the rear of the motorcycle as possible. Do not stand astride the machine or you will tend to push the lever too far and do not attempt to start the bike when it is on the stand. The half compression system is there to be used so use it; for starting at least. With your left foot for preference, press the pedal gently down until you feel the ratchet engage and then push it firmly down to the limit you have established earlier and release it smartly. A lot of the reaction against you is from the return spring on the pedal (if fitted) and this can be misleading you as to how much pressure is required to turn the engine over. I suspect that the type of spring that wraps round the pedal is much too strong for the job it does.

The 90 degree movement of the pedal should be quite enough to start the engine. Any more and damage is inevitable.

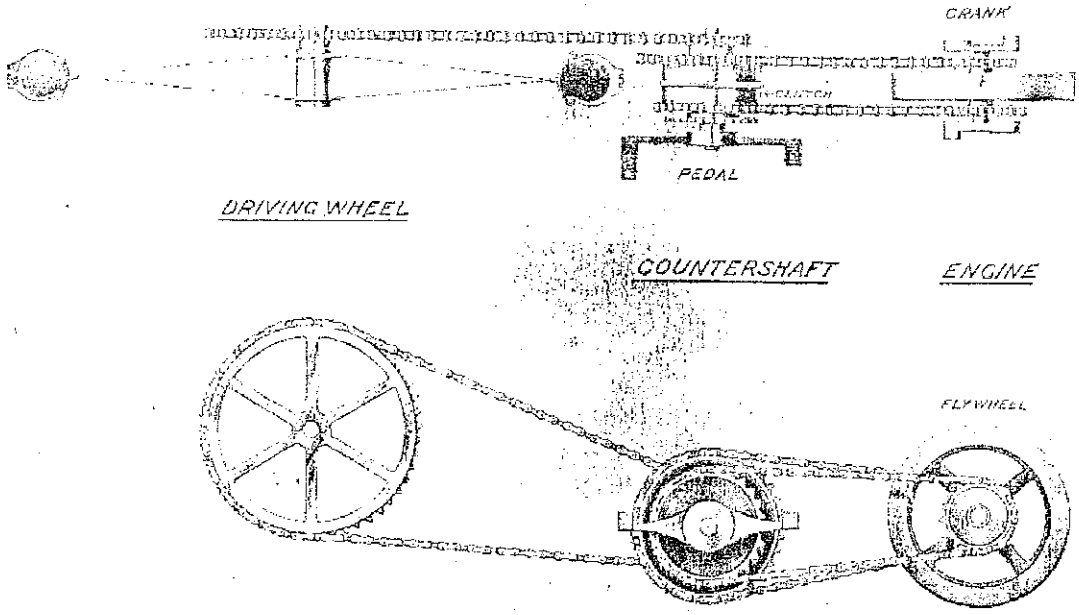


General Arrangement



RATCHET SPROCKET OF KICK STARTER.

The Ratchet



The Transmission

9.1.56

Careful attention to magneto condition and timing has paid the best dividends in my case but all the other usual suspects should be considered as well.

I don't suppose this is the end of the saga, but at least I think I've got a sound basis to work from and provided I take some care when using the starter I should have fewer broken springs &c. Any comments from readers will be appreciated.

Meanwhile I have a number of surplus ratchet sets for disposal. My ad in recent 'Yowl' and others has resulted in a few inquiries and sales, but I would like to point out that as far as I know I have the only stocks of these parts in the world and there is not likely to be any more made, certainly by Morgo, and certainly not to this high quality or at the current price of only £95. I would also like to point out that I am not 'in the trade'; I simply wish to unload the surplus at the price I paid for them.

I was advised that no-one would want rings because they are almost impossible to get out. The rings on my two units had slots in the periphery, as they should have, and were not difficult to extract and I have ground slots in the new ones. The rings can be destroyed in the process of getting them out, but since one is fitting a new ring this doesn't matter a bit. It is, after all, unwise to run a new part with an old one — all three parts should be replaced otherwise the tips of one set of teeth engage too deeply with the other and are in danger of getting their hardened points chipped off by taking the whole load of the starting force. This exposes un-hardened metal and the rest of the tooth soon wears away. Or, a new ratchet on an old sleeve tends to cockle over a bit leading to misengagement and damaged teeth.

UA 7497 Part 2-and-a-bit

5th February 1999

Part 2 seemed to tail off at the end a bit so I thought I'd add a little more.

Having a starter that didn't immediately self-destruct and a technique that also helped I have been able to ride a bit and think about general running behaviour rather than not riding for fear that I would get stuck every time I went out. If it does break, at least I have a complete spare ratchet set in my pocket and it doesn't take long to change it so long as you squeeze the mag chain runs together to avoid losing the timing. Even that is easy enough to reset.

I have a local test run of about 6 miles such that if I have trouble it is always an easy downhill run (push?) home. Several laps of this test run gave me a chance to assess the performance with these results.

Firstly, with the Pilgrim pump converted to drippers, *it didn't smoke*. The engine seemed to run and pull well enough but it only 2-stroked properly on-load, when accelerating or going up hill. I fitted an electronic bicycle speedometer and I found that clean running on a down slope was only possible at more than 45mph. Idling was very irregular and unpredictable; when stopped it idled for a few seconds and then speeded up for a while. Fiddling with the controls would get the idling back but only for a few seconds. Leaning it over to the left slowed it down. I thought that this was raising the float chamber and richening the mixture.

Suspecting either a weak mixture or a rich one or some combination of both at different speeds I experimented with slides, jets and petrol levels and also looked for air leaks. I ended up with a 6/4 air slide, the carburettor vertical and no leaks that I could find. Then I thought to check the ignition timing only to discover that it was way out – much too late. It *might* have slipped but I suspect I had not been paying attention when last I set it.

Sorting that made a difference! The engine started much more easily, only needing the gentle prod on the pedal the way I reckoned it should, and ran *much* better. Went just as fast too. A run on the Burley by-pass showed an easy 59mph and still accelerating. I really like this bike. On the 28th June I took it to Lotherton Hall for the Castleford Cavalcade. I could only get away from home in the afternoon so I was very late getting there. Very few vintage bikes were in evidence and only one Scott – another 2-speeder from 1927. He had entered and won the prize for his class. (This bike was later seen for sale in a well-known Stanningley shop for £3,900.) I found that I was still getting a lot of backfiring which tended to blow the fires out not to mention the transfer port gaskets especially on small throttle openings and when accelerating just a bit. It still only 2-strokes properly on-load and uphill.

Some more strange symptoms led me to suspect air locks in the petrol pipe especially when the petrol level in the tank was getting down a bit because nothing came out of the pipe when I undid it. I made up a new feed as short as I could out of non-corrodible truck brake pipe and that seemed to fix that.

Then I read Tich Allen's letter in *Yowl* (August 98) and the symptoms he described were exactly what I was experiencing: Sneezing. So I did what he had done and fitted a pair of gauzes in the transfer ports. I had previously been told that gauzes are not used by anyone any more and they don't do any good anyway. Not true. They made a big difference to my bike and all but stopped the sneezing. Slow running on a light load is now mostly very even and low speed control much improved. It will putter along as slow as you like very nicely. I did several runs round my test route and to Ilkley and all seemed well.

On the 11th Sept to Austin Stross for an MOT – no problems. Hollins Hill taken at a gallop much to the amazement of one old boy in his pensioners' Volvo who couldn't *believe* what had passed him. Titch Allen may well have been very close to the mark when he suggested that bodgers may have attacked ports with a file at some time in the past and to no good effect. There is no easy and convenient way to check this without a good deal of 2-stroke knowledge and a careful study of the engine. I have eventually realised that good 2-stroking might only be possible on-load.

Tiny engines, up to 200cc say, were the commonest uses for 2-strokes and they are usually so feeble that they are always on load, so they run OK. My Scott is 600cc and therefore a big powerful (?) engine driving a very light bike and is doing no work worth talking about until it gets well over 40mph on the level. So I've stopped worrying about it. Unless someone out there knows better . . . (I'm sure someone does and I'd value their opinions)

On 20th Sept to Lotherton again for the VMCC Veteran Rally. I had intended filming the veterans setting off and then catching up with John Stathers who was riding an Alldays-Matchless 2-stroke but when I went to start, petrol poured out of the carb top and wouldn't stop. I found that the tickler retaining pin was catching and holding the float down.

That fixed, guess what happened when I tried to re-start? Correct! The chain anchor piece broke. No problem, I'd got a spare, but by the time I'd fixed it was too late to follow the crowd so I stayed, had a sandwich and a brew and chatted with a number of vintage enthusiasts who were attending the rally. Since then I've made a much stronger anchor piece for evaluation.

A passing thought: the lie of the starter chain looks to be such that it tends to pull the ratchet away from the ring at the same time as the scroll spring is trying to pull it towards the ring and the spring is by far the weaker of the two forces. This may account for an occasional slip of the ratchet if too much pressure is put on the pedal too quickly.

Another passing thought (about veterans): when one considers the rigmarole of pedalling, pushing, running, jumping or handle winding necessary to get these ancients to go at all and the difficulty of getting them up hills or to stop it says something for the fortitude of the pioneer riders, and the Scott must have seemed even more revolutionary then than it does today.

I've also discovered the reverse gear! It comes as a bit of a shock the first time it happens. There you are, stopped at the lights, engine running normally (you think) after a slight hiccup and as you gently press down on the pedal to operate the low gear clutch your brain tells you that you are slowing down! This can't be right but it takes a moment for one's overloaded little brain to catch up with the rest of the world and realise what has happened. Then you have to stop the engine and re-start it, this time with it running the right way round. An interesting experience.

Jack Mercer (*Yowl* Aug 98) seems to have got himself hooked on his 2-speeder. I would say to him "Yes, my friend just haul back on that 'go' lever and enjoy! Remember that your bike is 500 or 600cc and only weighs just over 200lbs. Until you are humming along a bit it really isn't doing any work and a 2-sp likes to work. A good 2-sp in a hurry with the bit between its teeth is an awesome beast and will give a lot of people who think they've got fast vintage bikes quite a shock. You soon develop a certain nimbleness of the right foot."

This is what I think Vintage Scotting is all about. It is amazing how something that seems so delicate, not to say flimsy, can go at such a pace. Don't try it between Barden Tower and Burnsall, though, or you'll spend most of the time in the air! On a flatter road, give the old girl her head — she'll pull up her skirts and have a gallop – she'll love it and so will you. 2-speeding is REAL Scotting and one of the most enjoyable sensations in the world.

The last piece of the jig-saw (or Meccano set) that is a Scott has fallen into place with the fitting of a new quick thread drum set which has made it possible to have high engaged without keeping one's foot firmly on the pedal all the time. With that, I reckon I've got about as perfect a two-speeder as I ever will; all I need to do now is ride it as much as I can and try to wear something out!

It has taken a long time and cost a lot of money over the years but the bike is so thrilling to ride that I feel it has all been worth while. My heartfelt thanks to all those without whose help none of this would have been possible, and I hope to see you all at Scott or vintage events in the coming years.

Eddie Saxton