THE TWENTY-THIRD SILK SCOTT, Part 3

Autumn/Winter 1995. It's engine and gearbox time!

Ged Rumble

To recap: as I mentioned in part 1, when I first started the engine it gave out the most awful shrill ringing noise. My immediate thought was "Bloody hell. What's that?", and I switched the engine off in a flash. No wonder Fred Nicklin didn't use the bike in Menorca after he bought it off Ray Ellam in June 1992. He must have wondered what he'd got hold of. The alternator was groaning and clattering, and I thought this might be a contributing factor to the noise. I made a crankcase door out of some $^3/_8$" alloy plate and tried again. No groaning and clattering now, but that other noise was still there. With the engine dismantled I found the cause of my noise problem and felt relieved and got on with the cycle parts. The frame is up and rolling now, the cycle parts are all finished, so it's time to do the engine.

The first thing I noticed on stripping the engine were fine scratches in the bores. These were caused by sand when Ray Ellam had the bike in Kenya, and before his own style air filter was fitted (see part 2).

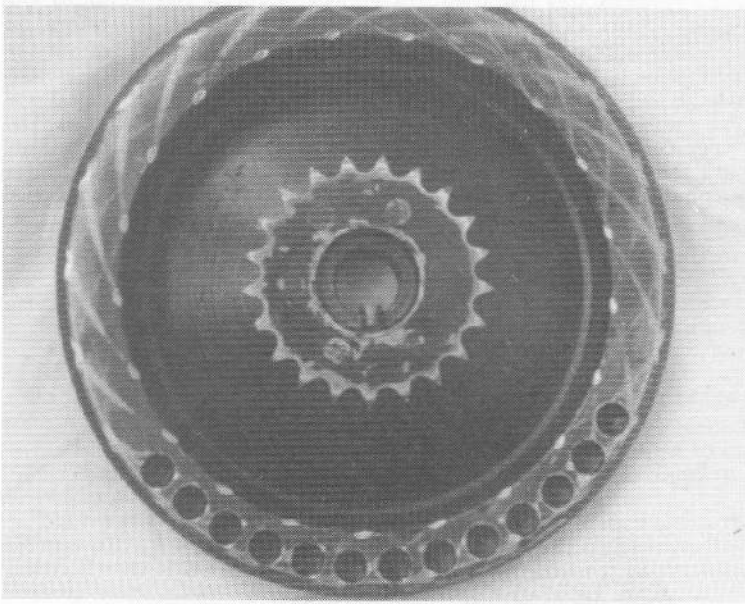
After removal of the con-rods, the big-end rollers looked completely shot. The radii on the corners didn't exist, they were all chipped away, though the con-rod and crankpin bushes looked O.K. I had a new set of rollers to hand, so I thought "Let's see if these fit O.K.". In they went until I arrived at 180°. The next roller was really tight, and after that the only way to get the remainder in would have been to force them into place.

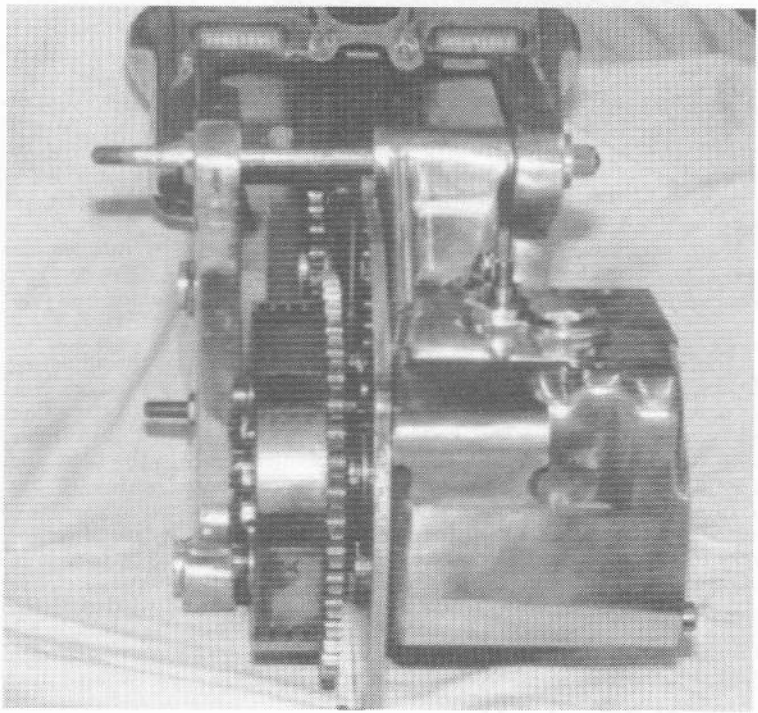
I have been involved in machine tool engineering all my working life, and have never seen a bearing fit as tight as this. I know there are different points of view on the running fit of a Scott big-end, but no way would I fit a bearing that tight. However, somebody at Silk Engineering did! They must have used a 'Brummajum screwdriver' to fit those last few rollers. (That's a big hammer to those of you not from this neck of the woods.)

So, it was barrel and cranks in the car, and off to see Scott Doctor Ian Pearce in Bridgenorth. A light hone of the bores removed most of the scratches. Ian found the big-ends not only tight, but oval. I suppose the ovality could have been caused by stretching the big-end eyes to get the rollers in? A tickle on the grinder and all was O.K. The rollers now fit without any effort.

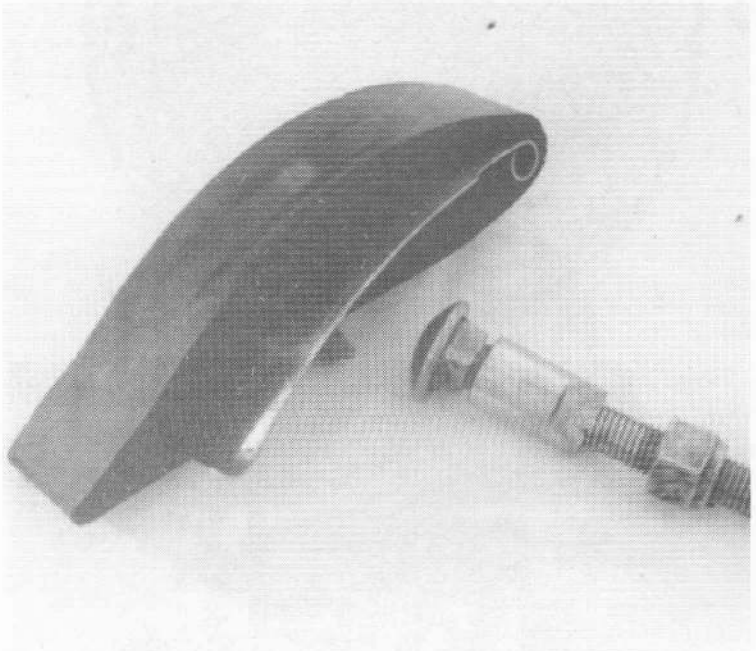
Now to that awful noise. This was caused by the chain pins thrashing around against the flywheel. The pins were carving a cross-hatch pattern across the side face of the flywheel (see photo). The engine and clutch sprockets were 0.070" out of line the wrong way (see photo. The shot is exaggerated to make the error more obvious).

Opposite page:
Cross-hatching pattern on flywheel (above) caused by misalignment (below).



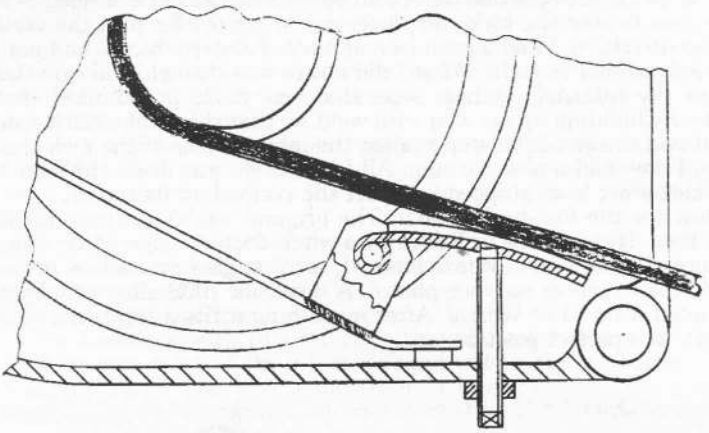


The gearbox has fixed centres and can't be moved to adjust the primary chain, as I believe some Silk Scott boxes can. Therefore, an adjustable slipper is used to take up the chain slack. It fits on the chain guide in the crankcase, and is adjusted by a screw arrangement through the crankcase base. This assembly, !?!?, was an awful piece of work made by Bodgit & Scarper Engineering by the look of it. The slipper consisted of a piece chopped out of an Austin Maxi timing chain tensioner, or so I'm led to believe by local V.M.C.C. members (see photo). The nitrile rubber was not bonded to the steel, and moved about all over the place.



Another classic piece of engineering from Bodgits was the adjusting device. It was a piece of $^{9}/_{16}$" dia. bar, $^{7}/_{8}$" long, drilled through 3/8" dia. In one end was hammered the head of a $^{3}/_{8}$" coach bolt, in the other end was the adjusting screw. This was a piece of $^{3}/_{8}$" BSF all thread, with the threads ground off so it would revolve easily in the hole, and a couple of spanner flats on the end. A flat was ground on the $^{9}/_{16}$" bar to fit against the end of the chain guide to stop this assembly(!) revolving when the adjusting screw was turned. The whole assembly was very flimsy and when it was used the primary chain was pushed even harder into the flywheel, and the noise increased two-fold.

A new and more substantial bracket was made and welded to the chain guide. A Triumph slipper was modified to suit the job in hand. The result is a solid job on which the chain runs without any sideways drift. I have it in mind to do this mod to my 1931 Flyer when I next have the engine out (see sketch).

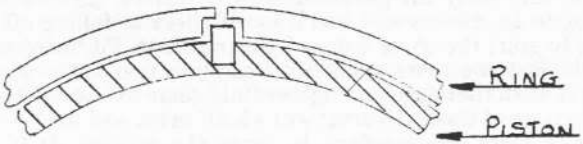


The new tensioner

When Ray Ellam had the bike in Kenya, he found the timing on the cylinders to be unequal. To equalise it at 5/16 B.T.D.C. he had to set the left-hand contact breaker at 0.020" and the right-hand at 0.012". When I came to reassemble the engine I found the key slot in the near-side crank to be 0.012" oversize. Now that is an awful lot, and I thought the reason for the unequal timing. To correct this was fiddly, but not difficult. I first checked to see if the slot was centred in the crank. It was, thank heaven!

The microscope I use at work to check case hardness depth has a graticule with 0.01 mm graduations. Using this to check, I peened the top edge of each side of the slot down by 0.006", until the key was a snug fit in the top edge of the key slot. The cranks in this engine are not case hardened. The crank was then lapped into the flywheel to remove any slight bruising. I was over the moon when, after the final assembly, I found less than 1° error between the cylinders at top dead centre. The points gap could now be set the same on both sets of contacts.

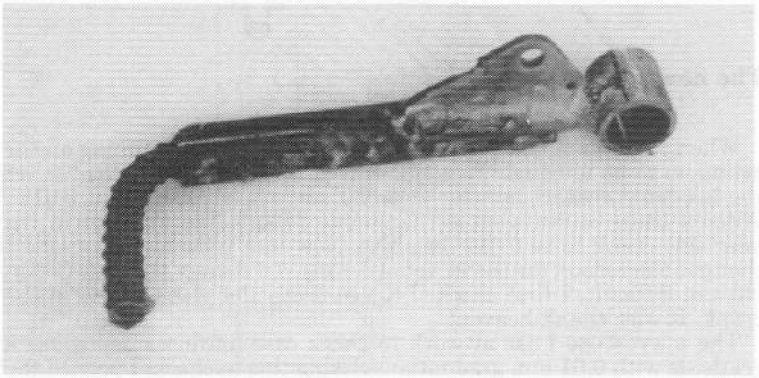
The engine went together without problems. New +0.030" rings from Tim Sharpe slid in the bores with +0.006"/0.008" gap without need for adjustment. My pistons have round pegs as ring stops like the Silk, and you can set the straight ring gap perfectly. A much better idea than the Scott angle stops.



The Silk round peg ring stop

The kick-start boss had part of an open-ended spanner welded to it. This was to stop the kick-start lever returning too far past the vertical on its return. I had a good look at a few Velocette boxes, and not a welded spanner in sight. What I did notice was the external cam that keeps the internal ratchets separated was more pronounced than mine. By building up my cam with weld, so that the ratchet/kick-start shaft was drawn out to stop against the internal face of the kick-start boss, I now had a positive stop. All I had to do was dress the cam so the kick-start lever stopped just past the vertical on its return.

Now for the foot-brake pedal. The original wasn't genuine Bogits this time. It was made in Kenya by a witch doctor's apprentice, using a piece of tube with a bronze bush, $^1/_2$" x $^1/_2$" angle iron and six inches of $^3/_8$" construction rod (see photo). A new Silk 700S alloy pedal was obtained from Clive Worral. After machining it fits a treat, the right length in a perfect position.



The water inlet pipes at the base of the cylinder water jacket were made from welded seamed tube and were rotten at the threads, so they just pulled out of the water jacket. Fortunately the threads in the cast iron were O.K., but there were only three full threads at the jacket's thinnest point. A bit dodgy really. I made up new pipes in brass, and rescrewed them to $^7/_8$ x 26 t.p.i. on top limit for a really snug fit in the water jacket. Ater chroming I used thread lock when fitting, and have had no leaks at all.

When rewiring I used the Silk 700S diagram more or less. I did rearrange the electrics under the petrol tank so that both coils faced forwards, and the petrol tap was easy to get at.

So here we are then. After two years work there she sits. Paint, chrome and alloy all gleaming, full of petrol, oil and water, and waiting to go. However, I had a morbid fear of falling off my perch, trying to start the thing before I get to ride it. I'd heard many times over the last two years a Silk Scott can be a real sod to start.

It was then that cigarette lighter fluid came to mind. I have a friend who has one of those 'Heartatachi' chain saws, and to stay alive while trying to start this machine he gives the sponge air filter a good dowsing in lighter fuel. This guarantees it starts on first pull every time.

So here we go. Air closed, flood carb., soak filter in ciggy fuel, ignition off, a few prods to suck this superjuice into the engine, nervous perspiration bubbling on my upper lip, thoughts of a Silk Scott kickback sending me through the garage roof, ignition on, one long swing and GOTCHA! YAHOO! Away it went. I couldn't believe my luck. I was still on terra firma!

Once the MoT test and paperwork were sorted, I was on the road in June 1995. But sure enough, another problem soon reared its ugly head. Oil distribution from the Silk pump was not as it should have been.

The Silk pump is a pressure pump based on the 'Best & Lloyd', and a lovely piece of engineering. However, the single outlet from the pump piston splits to feed three outlet pipes. One goes to each crankcase, and one to the chain oiler.

The drawback with this set-up is that the crankcase which sucks the best gets most of the oil, as I found out to my cost! Last year's V.M.C.C. run in October resulted in a blue big-end. The con-rod bearing ring and crankpin bush were sorted by Tim Sharpe, and when I got these assembled the head scratching began.

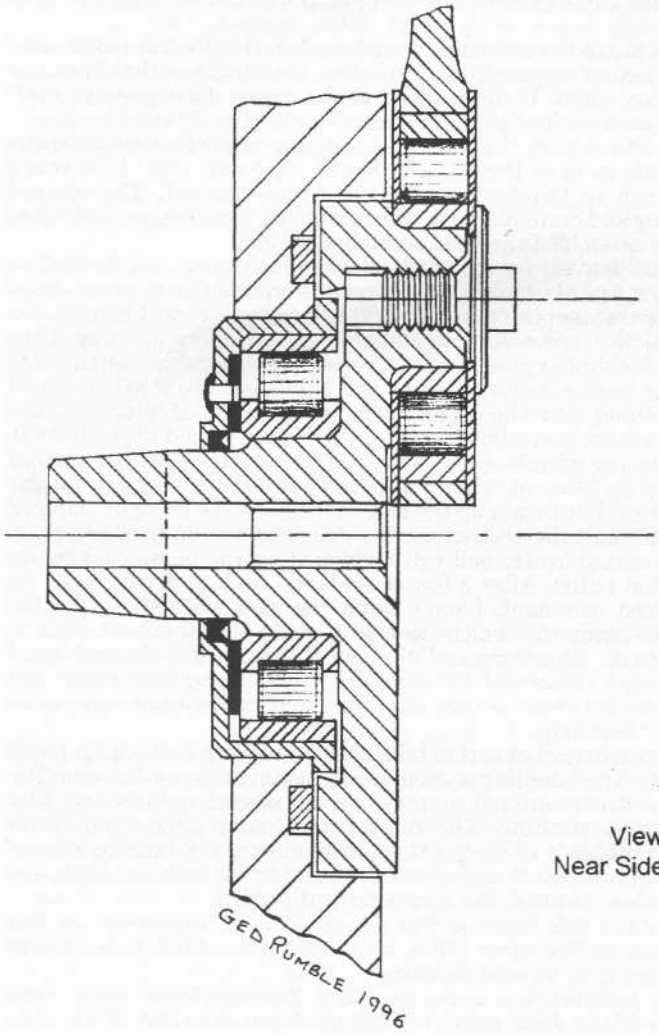
The pump delivers far too much oil when fully open, so I decided on a set-up that lots of us use on our Flyers — around five to seven drops per minute through the pump and 50 to 1 petroil. First I bought two mini airline flow restrictors which have controlled flow one way. They were attached to the pump outlets, restricting flow to the engine. Oil flow to the engine is controlled by the handlebar lever. When closed you get nothing, and when open much too much. By opening the lever a little at a time, and adjusting the restrictors, I ended up with six to seven drops per minute either side at a fast tickover. I then marked the handlebar lever at what I now call my drive mode. To oil the primary chain I just open up the lever a little. As the extra oil pumped can't go through the restrictors, it's delivered to the primary chain through a spring-loaded ball valve which stops the pump sucking air through that outlet. After a few seconds it's back to drive mode. As I'm no speed merchant, I don't think the case will arrive that the speed of the pump will send oil non-stop to the primary chain when in the drive mode. This summer I' find out if I've cracked the problem. I would be very interested through *Yowl* to find out how other Silk Scott owners have set up their oil pumps, and maybe I can improve on mine with their help.

So, pump apart, what sort of bike have I ended up with? It's a lovely bike to ride. The handling is good, it's lightweight, powerful, and flexible. It two-strokes around country lanes in second and third without a hint of four-stroking. The huge twin leading shoe front brake provides confidence when the thought of emergency braking crosses my mind. Minus points are a bottom gear that's a little too high, and top is too close to third. But that's just nit-picking.

If this 23rd Silk Scott is the last one made, registered by Silk Engineering in December 1975, all I can say is "Well done George Silk. You got it right with this one."

Having purchased a copy of *Scott Technicalities* from Glyn Chambers at the 1995 rally, I found no detail drawings of the Silk

23rd Silk-Scott Crank Assembly



View:
Near Side Front

crank apart from the exploded view on page 2.3.18, which isn't very explicit. So here is my cross-section drawing of the crank assembly of my engine. It may be different to cranks in other Silk Scott engines, what with George and his mates experimenting all the time. The crank disc is 4" diameter and $^1/_2$" thick at its outer edge. The crankpin is $^{13}/_{16}$" diameter and has a $^3/_8$" BSF tapped hole, rather than $^1/_2$" like the Scott. This all adds strength.

Substantial machining of the crankcase had to take place to enable these cranks to be fitted. The main bearing is a metric roller race No. N206. The thrust races are bi-metal, with one face Oilite bronze, Glacier Metal No. DU18D. The oil seals are Barnwell 1.25—1.00—0.12.

Just compare this crank to a standard Flyer crank. It's massive! I hope it's as strong as it looks. One thing is for sure, I won't be able to fit Scott cranks in the engine again if I break one of these. Where would I be able to obtain a new one?

On the V.M.C.C. run in October 1995, when I blued one of the big-ends, a member asked if I had any trouble with my Mk1 Concentric carb. "It seems O.K. to me," I said, as I'm no expert in juice to gas conversion. "You should have," he said,"it shouldn't be inclined in a downdraught condition by more than 15° from the vertical."

There was a short adaptor block between the engine and the carb., without any change in the angle of the carb.-mounting flange. This meant the carb was mounted at a downdraught angle of 40° from the vertical."

I took his point, and during the winter 1995/6 made a new tubular manifold in aluminium. It's about 3" long, curved, formed oval at the engine end, and had flanges welded on to it to fit the engine and carb. The downdraught angle is now 15°. I don't think it's made any difference to performance, but I feel it may well help stop any risk of flooding, and the petrol level in the float chamber is now correct.

On the Derbyshire run, 2nd June 1996, my footchange lever broke somewhere around the top of Winnats Pass. I thought "Oh, sod it! I'm not walking all the way down there and back in the hope of finding it." So with great difficulty I hand-changed the bike back to The Grouse Inn with what was left of the foot-change linkage on the gearbox. With luck one of the following riders spotted the lever in the road and thought "that's one of the Silks". Sharp-eyed lot these lads in the Northern Section.

I was very pleased to be given it back at the end of the run. As it turned out it would save me a lot of work making a new one. Using the bits as a pattern, Bob Brougham kindly offered to cast me a new one in 45 ton bronze. It was returned to me in a week. I machined and polished it, had it chromed, and the bike was ready for the Vale of Belvoir Run on 30th June 1996. *(See photo on p.53)*

To close, I've recently received a letter from Fred Sacksteder in the U.S.A. He has a Silk Scott and we've been corresponding over the last six months with information on restoration etc. Fred's Silk Scott was registered in 1973 and his V5 states his engine no. is DPY4267. The engine in the bike, however, is DPY5400. Now, one guess where DPY4267 really is? Yes, it's in my bike. And its number is printed large as life on my V5, and my bike was registered two years later than Fred's. Ho hum! Makes you wonder what was going on in Derby 21 years ago, doesn't it?