



Colin has been enthusiastic about Scott motorcycles ever since a young man, and owned four or possibly five of them over the years. Whether that was really enthusiasm or masochism is possibly a matter of debate – as the late Bob Currie was heard to say when he saw Colin's Scott and son John's Squariel parked together at Mallory Park: "*Now there's a couple of chaps who like trouble!*"

After Colin's TT Rep and then the three-speed Scott Super Squirrel had been sold, before they left London, he had virtually nothing to do with Scotts until the late 1960s. It was then, when working for the Land Registry and living in Hollingworth, Cheshire, that he met Norman Haskell, a part time motorcycle spares dealer in Stockport and soon to become a good friend. Early on, John had seriously crashed his Squariel-Steib outfit on Devil's Elbow above Hollingworth Lake, and badly damaged brother Ian's leg, incidentally also writing off the outfit almost completely. Norman was able to find another frame and other parts for John, enabling him to eventually resurrect the bike, but meanwhile sold him a 350cc Douglas Draganfly. By then John was down south at Shenstone College in Bromsgrove, and Colin finished rebuilding the Douglas for him while he was away. However, while it handled and rode very comfortably, it was heavy and badly underpowered, hence Colin usually referred to it as the '*Gutless Dragnotfly*'.

However, Norman then sold Colin an Ariel Arrow, which, although only being 250cc and air-cooled, it was nevertheless a British two-stroke twin, and so a step in the right direction. Colin restored the Ariel's mechanics and used it for fun for short while.

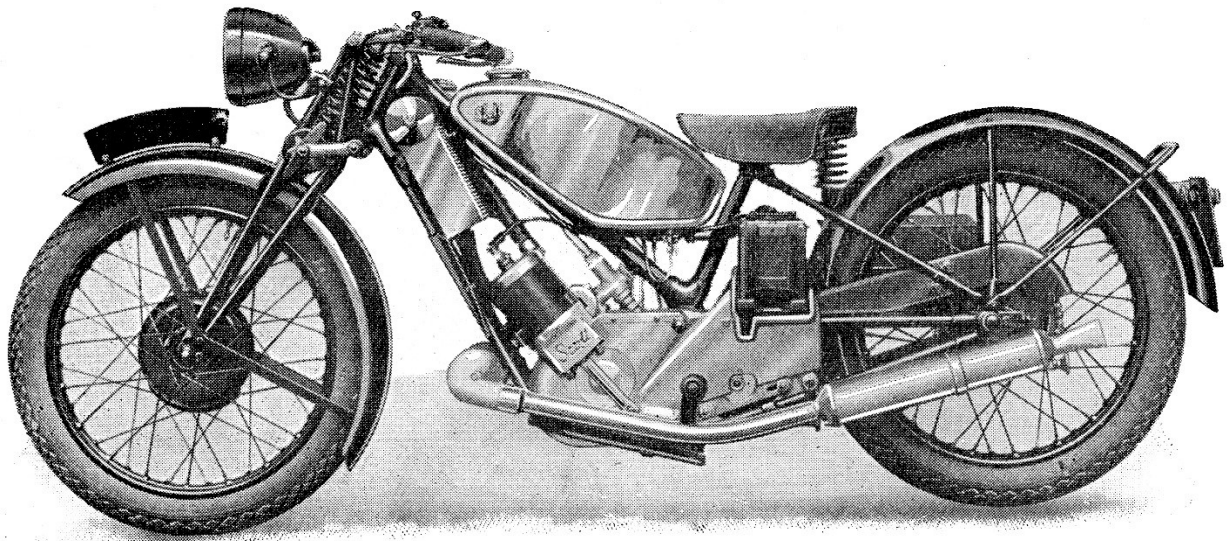
*"A nice little bike it was, once I had correctly re- assembled the bolt-together crankshaft! It really did have beautiful handling qualities, but its brakes were not so good....."*

### A Basket Case

Meanwhile, for some while Colin had been pestering Norman for a Scott he said he'd got stashed away, but which Norman seemed reluctant to part with. However, towards the end of Colin and Peggie's Farewell Party, before leaving for Stafford, Norman dropped his bombshell and offered Colin the basket-case Scott for £20! Unsurprisingly, he jumped at it. What a great leaving present!

The pile of bits had basically been a 1929 roadster of some ilk, but "*...it was the single down tube frame that was the main appeal for me*".

This design was common to both the Tourer and the Sprint Special at that time, although quite what his frame's origins were is debatable, as the stamped frame number is just '2'. Sadly, according to Jeff Clew's book '*The Yowling Two Stroke*', no record of frame numbers appears to exist. So it could not be verified, but, implausible as the number may be, it was quite acceptable to the Taxing Authorities, and that is what the logbook continues to record today.



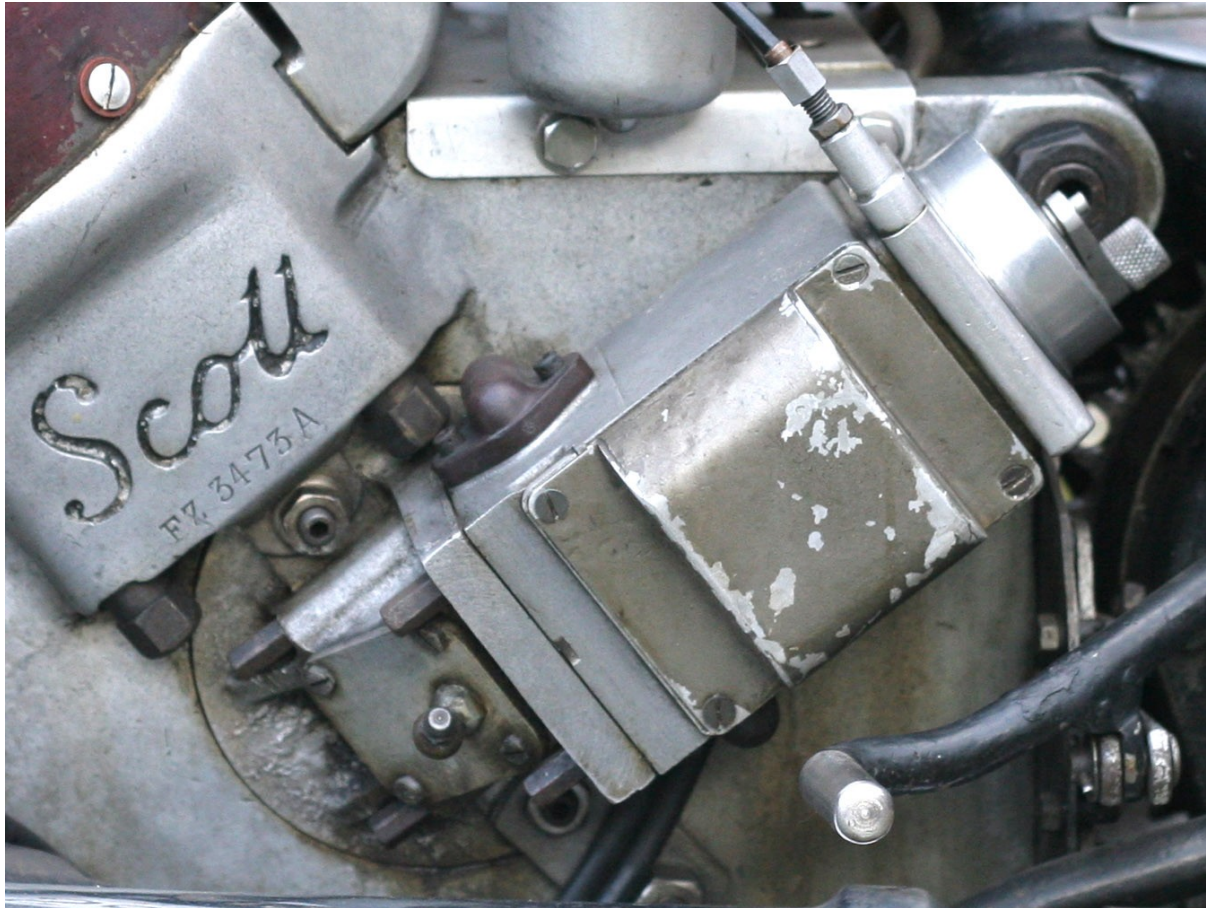
### 1931. Tourer Model

Colin aimed to build it as a competition machine right from the start, probably echoing his frustrated entry for the 1939 Brooklands Club-Members' Day event. However, time had passed and twisty sprints seemed more appropriate, and in any case, he had better workshop facilities and more ideas for improvements.....

#### **BTH Magneto**

Colin can't now recall quite where he started on his new project, but since further improvements on Alfred Angus Scott's design were high on the agenda, the chain driven magneto was first to go. Not that it actually had to go, as there wasn't one to be found in the basket-case. No matter, Colin knew where to find a couple of new ones! Although basically they are quite normal BTH instruments, admittedly they didn't look anything like motorcycle mags initially, as they were in fact ex-RAF starting magnetos for a Bristol Fighter. The drive was via a crank handle and high gearing, so that the ground crew would wind them up to produce a shower of sparks in the cylinders, producing ignition for starting by the crude but effective shot-gun principle. Typically, the government had ordered plenty of them and quite a few had survived, only to be finally discarded as government surplus at a tiny fraction of what it must have cost make. Still, we must have paid for them in the first place.

So, the end gear-casing of one was discarded and replaced by a bevel drive designed and made by Colin himself. The idea was to drive the mag directly from the nearside big-end pin, Scotts having overhung cranks. As was quite usual practice, a driving disc located with the pin and converted the motion to centre rotation of a small output shaft running on a pair of sealed ballraces in the centre of Colin's new crankcase door. This small shaft had a bevel gear fitted, engaged with a matching one on the magneto shaft. This was all housed in an alloy casting which both supported the gears and mounted the magneto against the vertical crankcase wall. Colin made the pattern for the bevel housing and crankcase door from wood, and then cast it himself in the metalwork shop of Fair Oak Comprehensive School in Rugeley, where John was teaching at the time. Incidentally, the gears had come from an industrial Singer sewing machine, supplied by Jake Challenger, Colin's neighbour in Walton on the Hill, Stafford.



The magneto was thus neatly mounted without a chain and timing was merely a matter of loosening the two crankcase-door straps and rotating the whole magneto. Incidentally, this arrangement had already been experimented with by the Scott factory, probably in 1933. There is a picture of it in John Underhill's first compilation '*The Scott Selection*', on page 88.

The points end of the magneto obviously had fixed timing originally, so Colin made a neat advance and retard housing with Bowden cable adjustment, turned from aluminium.

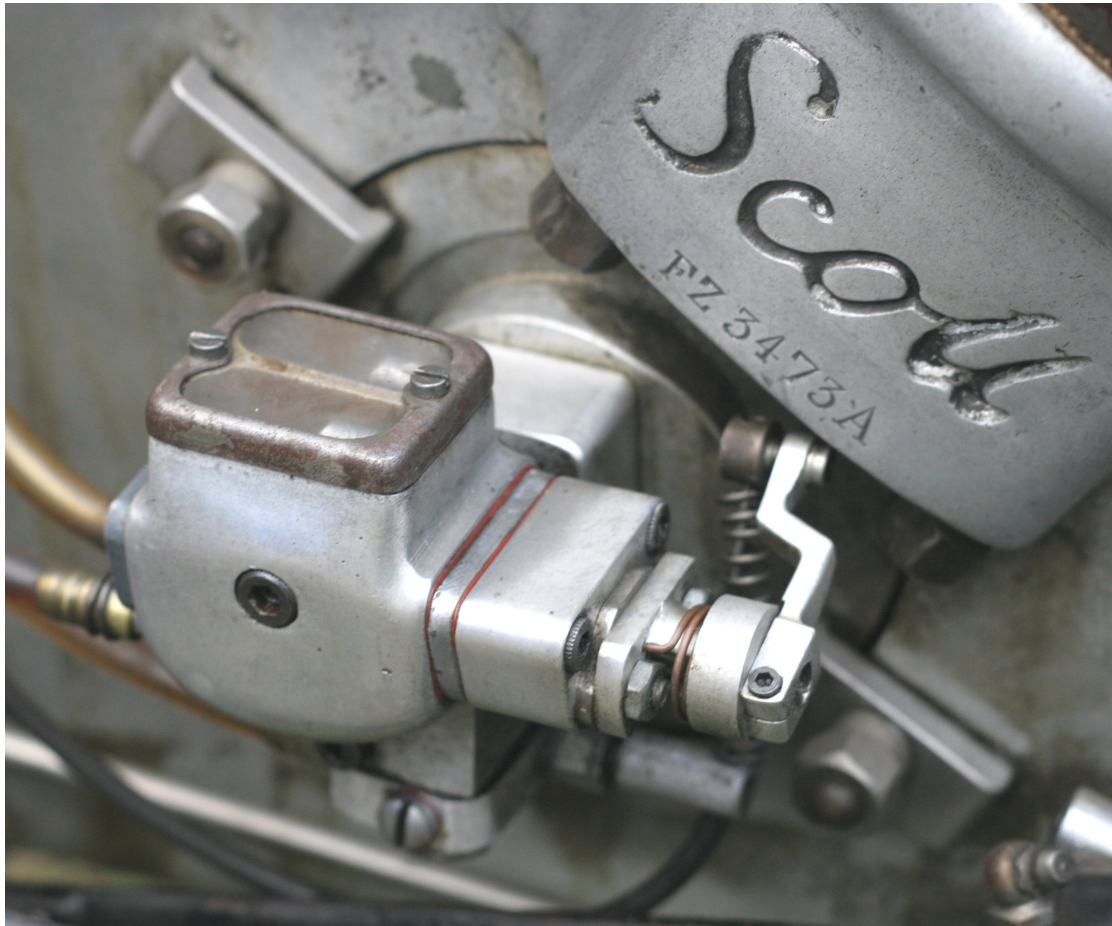
The whole setup worked perfectly from the start and has caused no problems at all since, so can fairly be described as being a complete success. The second mag is still in his Scott Spares Store, still in its military colours - and with little chance of it being needed for quite some time yet.

## **Oiling**

At the other side of the crankcase is the oil pump. This too is driven via a disc from a crank-pin, supported by another specially made crankcase door. Modifications were due here too, as the Pilgrim total loss oil pump as usually fitted to a Scott has to run at about twice the speed for which it was designed. Naturally, Pilgrim's main customers were makers of four-strokes, and their oil pumps were usually driven from the end of the camshaft, running at half engine speed.

Scotts, eschewing camshafts, had no built-in half engine speed outputs, so they either located the pump at the end of another chaindrive to gear it down, or put up with it running fast and set the adjuster at absolute minimum – which was far from ideal as regards oil delivery and wore the pump quickly. In any case, either of these two solutions was far too simple for Colin, so he designed a much more sophisticated – and complex – way of doing it.





In order to reduce the pump speed, Colin raided his spares boxes and came up with the internals of a Sturmey-Archer AW three-speed bicycle hub gear. Although the S-A gear is basically an epicyclic system, Colin only used the sun and a planet gear, so resulting a straight 2:1 reduction ratio. This he housed in an alloy casing, sandwiched between the crankcase door and the oil pump.

A further limitation of the original system was that the oil delivery rate was relatively constant, irrespective of the throttle setting and consequently engine load. The flow rate can be adjusted on a Pilgrim by turning a knob on its side – but this is just a little inconvenient at speed. So, Colin contrived a throttle-controlled oil-flow rate, by employing a quick thread in place of the fine adjustment screw thread as fitted normally. This was then operated by a spring-loaded lever which was connected to an extension of the throttle system, with the pump reaching full delivery at the point when the first throttle was fully open, as described later on. Its feed was to the mains and big ends only, and he had blanked off the cylinder wall feeds, using a drop of two-stroke oil in the petrol to look after the pistons. As per the magneto, this all worked as designed right from the start, and has suffered no real problems. Admittedly John did manage to momentarily seize it early on, towards the end of a fast run home from the Stafford Show, but it quickly freed up and has not occurred again.

There were one or two other mods done at approximately the same time – mainly to the engine, although Colin says he made no great attempts at tuning via modifications to the cylinder porting, although in fact he had a fair bit of experience in this field from successfully tuning ED model aero engines. However, cleaning up, a little gas flowing and ‘blueprint’ assembly were done for sure! In addition, he did buy a pair of enlarged transfer port castings from George Silk, which Roger Moss thinks may well have originated from him, and which Colin carefully matched and cleaned up internally.



## Engine

The crankcases were from the basket-case donor, being a 500cc Tourer from 1931 according to the engine number FZ3473A, originally having a square bore and stroke of 68mm, with a blind head. However, Colin exchanged the 500cc barrels and heads with his friend Ernie Scott for a detachable head 600cc barrel and crank, 73x71mm, probably from a 1938/39 Replica engine, and that compiles the composite engine in place today.

## Twin-choke Carburation

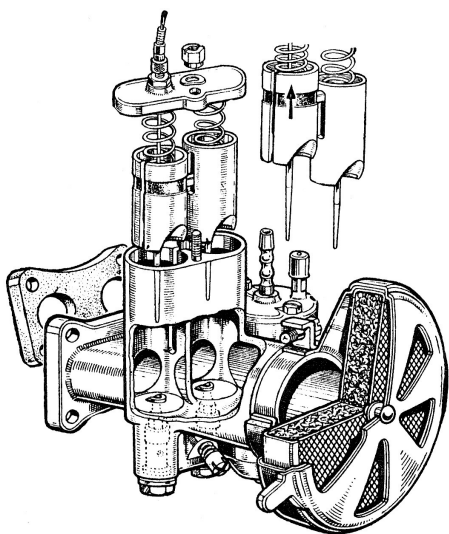
As delivered by Norman, the engine lacked the special Scott Amal carburettor, but back in the late 1930s Colin had played with the idea of twin carburettors. This was a feature never offered on production Scotts, and the obstructing frame and single induction port discouraged owners' modifications.

*"I suppose a single large carb suiting a competition 600 was possible of course, but its ability to cope with the full range of throttle would have been limited – and I hate having to blip it all the time!"*

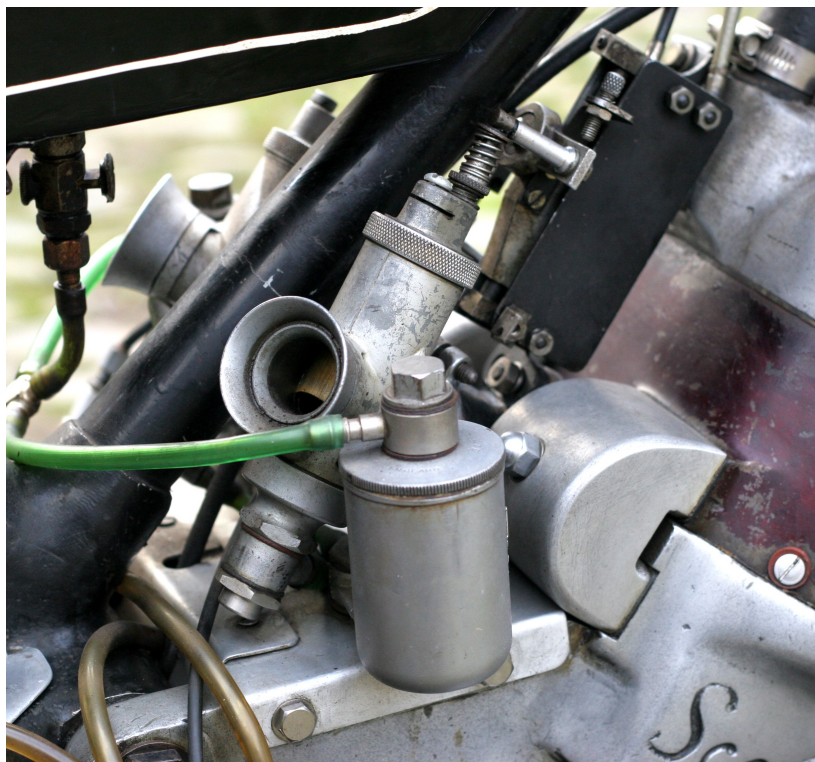
However, Colin had experience of an alternative arrangement on his Riley Nine Special Series engine, on which he had a pair of carburettors on the same induction manifold with them opening in series – effectively a twin choke carburettor.

He recalls the carbs were *"..of the same bore, with the first opening carb having all the fiddly bits: the pilot jet, cold-start, etc, while the other one was just an open choke."*

While this arrangement is familiar on cars, the Weber twin-choke downdraught of the 1970s being a common example, it is almost unknown on motorcycles. Nevertheless, Colin did come across a version offered in 1952 by Bing, the German carburettor firm. This was not easily available though, and probably not in a suitable bore, so Colin settled down to replicate the Riley set-up for his Scott.

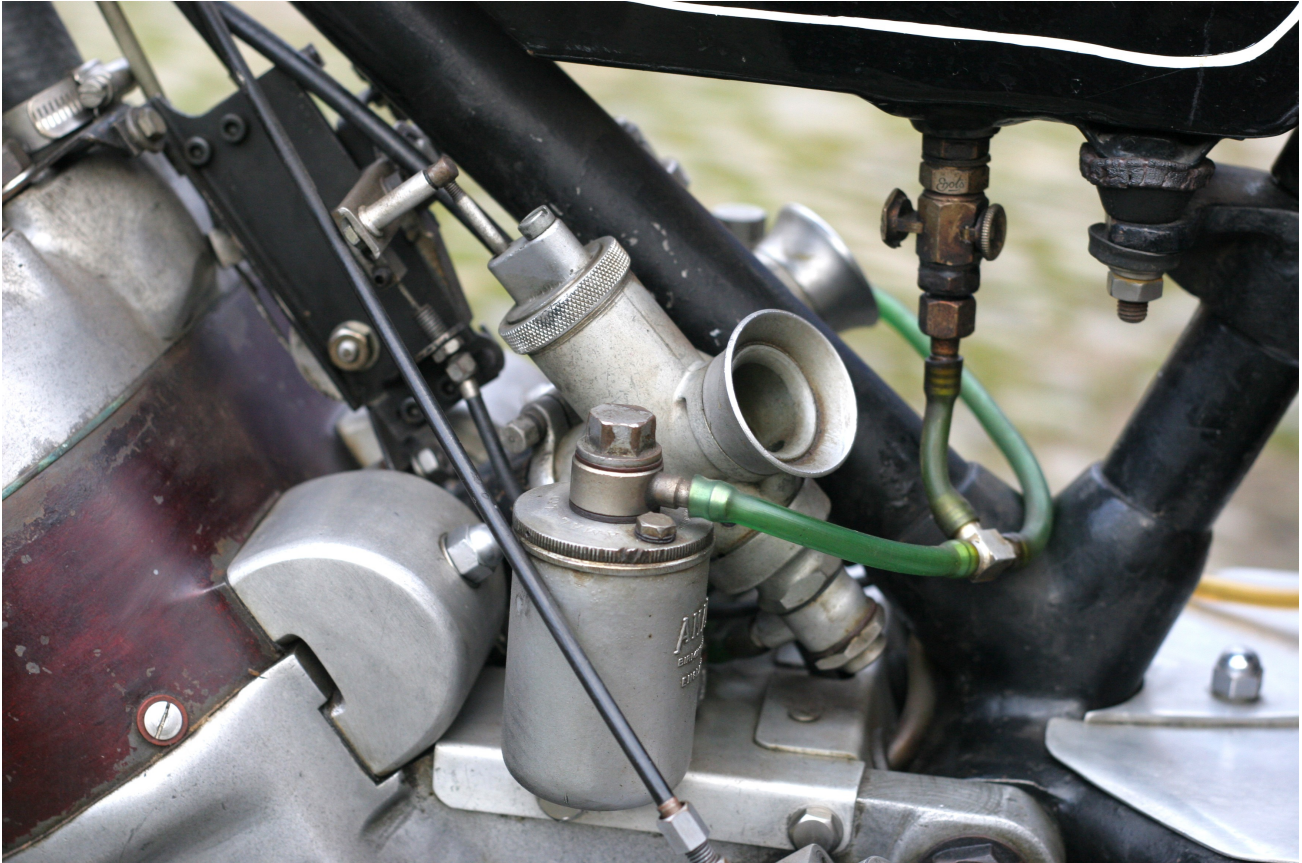


The single downtube frame sitting on his workbench was clearly suited to a Y shaped branch manifold taking two carbs either side of the downtube, and so he procured a matching pair of Amal remote float instruments



He then fabricated the manifold from steel tubing, bronze welding it together with the aid of his home-built arc welder. (This used a pair of carbon rods mounted in his own spring-grip to strike the arc, the plasma giving the heat source usually provided by an oxy-acetylene flame.)

The carbs were downdraught as normal, but the two float chambers were mounted on the level, on a platform on the crankcase.



Only the offside carburettor has a pilot jet, but no cold-start chokes are fitted. When the offside carb is fully open, the nearside carb starts to open. What is more, if the twistgrip is rolled against a spring further forward than the normal closed position, the slides are pushed further down and the jets are shut fully, so killing the engine. This negates the need for a mag cut-out, but also obviates the usual two-strokes' popping and banging on the over-run! Colin thinks this shut-off may have been his own idea, but certainly the ingenious device located above the carbs and which makes all this work, was all his. It employs a looped throttle cable running to the twist grip and back down again, operating a whiffle-bar from which two rods drop down to the carb slides to which they are attached. This means that the carbs are operated positively, there being no slide return springs. The lifting throttle cable opens the offside slide while progressively tilting the whiffle-bar until the offside slide hits the top of its carb, whereupon the lift is transferred to the nearside slide.

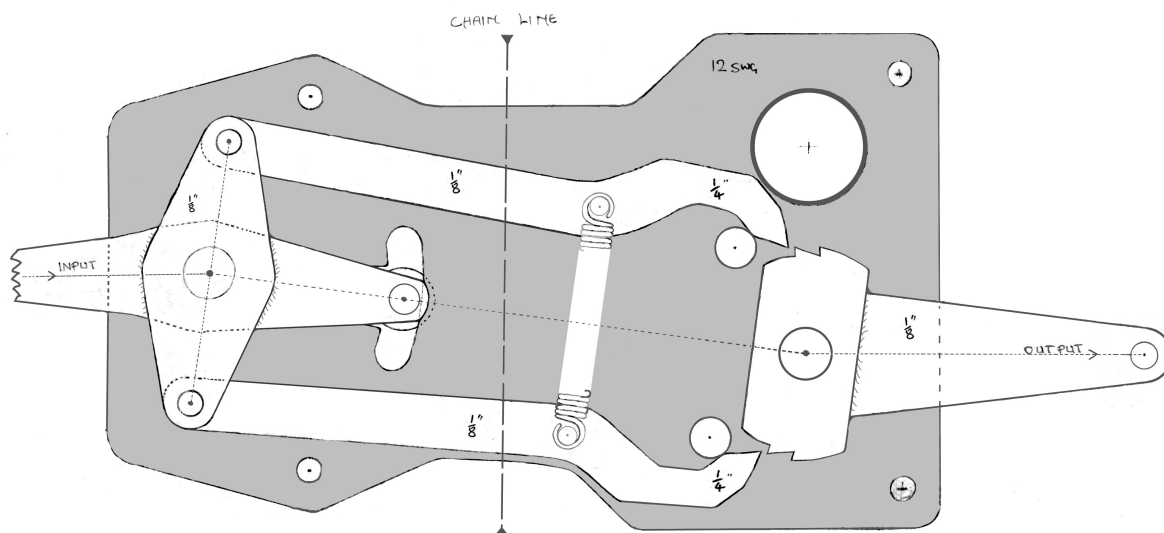
As well as this, the oil-pump control cable is connected so that it has fully operated by the time the first throttle is wide open. What is more, it all operated first time, and little fettling was needed to get it completely right. It is admittedly rather heavy to operate, and a full day's touring would be somewhat tiring, but it is just fine for a two to three minute hill-climb. The whole twin-choke system works well, much as planned, making it rather over-civilised for a competition machine! However, more important is that the impression is that full throttle is really rather good, although it has not been objectively tested by swapping from single to twin carbs on the track.....



## Footchange

The last significant feature of Colin's machine is the footchange. This mod had been on his mind while preparing for the Brooklands entry, after having read an article in *MotorCycling* in the late 1930s.

*"It described a way to convert the usual hand-change to a positive-stop foot-change, but not by merely copying Willis' Velocette device. I started sketching a design, but didn't really do anything until the '60s."*



CJKB's drawing for his Scott 3-speed positive-stop foot-change.

It was certainly unconventional, especially at the time as it was a left-hand change and the foot-lever initially operated radially – as was to be much later found on the Honda CX500 for a short time. It had been turned through 90 degrees compared to the '30s magazine article, the whole mechanism being bolted to the back of the crankcase's vertical face, and needing no irreparable modifications to any Scott components.





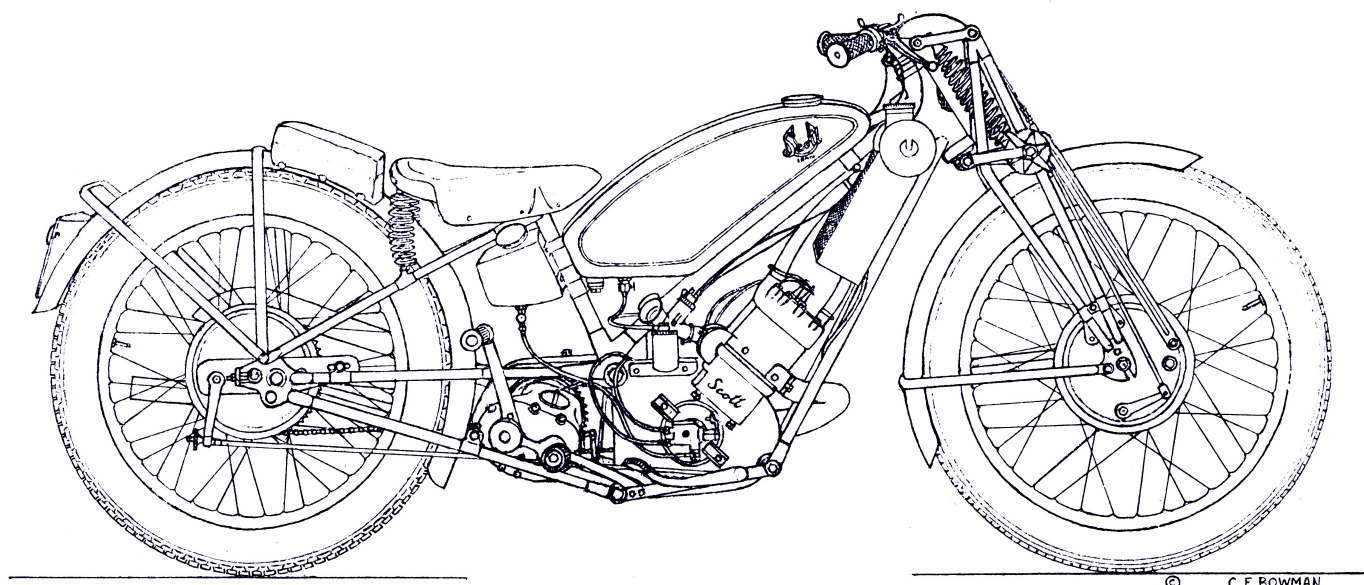
The foot lever was later modified to operate in a more conventional manner, acting through a lever pivoted well behind the gearbox. It works fine, not causing any problems so far – and of course allows far faster changes than the hand-change.

The gearbox currently has a close-ratio cluster, as per TT Rep, but he has three other sets available, ranging from a wide ratio Roadster set-up to an alternative close ratio set, but which has rather a big jump between 2<sup>nd</sup> and top.

### **Finishing The Job Off**

The exhaust system is based on the steel near-side siamese header-pipe which came in the original box of bits, with an alloy pipe and expansion silencer made by Colin. The silencer can be dismantled for cleaning.

The current radiator is a new one bought at a Scott Owners' Club gathering at Stanford Hall. It certainly looks better than the silver painted original and performs better too. (Incidentally, the old rad has since gone to Germany to eventually grace a water-cooled Ariel Square Four! This pleases Colin somewhat, as he has long held that the ideal Squariel would be a water-cooled 600cc Cammy - even having overhung cranks just like a Scott!)



Line drawing of Colin's machine, by Cliff Bowman

The cycle parts are, unsurprisingly, almost all Colin's choice of components. The forks are Webbs, which he completely rebuilt, with all new spindles and bronze bushes. He cannot remember, and thinks in fact that he never really knew the origin of the front hub, but it's a good design and works well. He made the alloy torque arm, taking the pull all the way up to the fork crown, and also made all the brake-cable and rod components. *"The rear hub is probably Royal Enfield - it's got the good cush-drive built into it."*

The mudguards were bought as new blanks and the stays were made from scratch to fit. The wheels are 21" front and 19" rear, both built by Colin.





However, Colin has collected a few prizes for taking a very interesting and well built machine to the SOC Annual Rally, winning first prize in the Competitive Machine class more than once.

The tank is rather special, as it started out as, probably, a Norman Nippy auto-cycle tank. Colin cut it up and made it into what looks very much like a scaled down Scott tank, again using his arc welder and carbon rods to bronze-weld it. John painted and lined it.

The overall result is a very slim machine, and one that really does not feel like a 600cc bike – until one opens the throttle!

Over the past thirty years it has not really been used as much as it deserves. Both Colin and John rode it on the road, and both have competed on it, as was always intended. It has run at, amongst other places, the Batings Dam hill climb and Curborough twisty sprint, and provided really good fun for all. Too much age on Colin's part, and too little determination on John's part has resulted in a sad lack of the right sort of pots on the sideboard, but hopefully there is time yet. (A small plaque for '*Best Non-Ariel Ridden to the Rally*' hardly counts)

