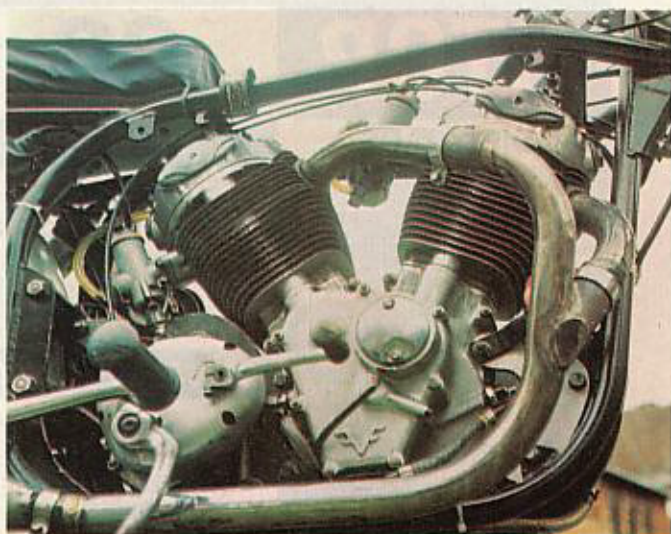


# Happiness is V shaped

Two 500cc BSA B50 motors combined to produce a 1000cc V twin. The 10 to 1 compression pistons are connected to the crank with Matchless con-rods. Rollerbearing crankshaft was home-made as were the crankcase halves.





# Dave Walker meets an engine designer who is turned on by V-twins...to the extent that he made his own.



There are lots of them around. Honda, Ducati, Morini, Motor Guzzi and uncle Tom Weslake and all, make V-twin engines. Now we add to that impressive list the Gerald Fitzpatrick 1000-V. Gerald who?

Gerald Fitzpatrick is a V-twin enthusiast of long standing. He also happens to be an engine designer with the knowledge and ability to turn his ideas into reality. With all those companies producing vee engines, why did Gerald go to all the trouble of making his own? You might just as well ask why people climb mountains? They just want to.

Gerald's interest in engines started some twenty years ago when a friend gave him — yes, gave him — a crashed Brough Superior outfit. Gerald junked the chair and rebuilt the bike. He was particularly impressed with the big V-twin motor. Naturally, the engine was not without its faults and some years later Gerald decided to improve on the original JAP design by building a special.

Since the Cafe Racer image did not exactly suit Gerald's personality, his first special took on a decidedly vintage look. The frame was from a 1933 Brough and the front forks, from a Vincent, were grafted onto it. The motor is the really amazing part of the bike. The crankcases are JAP but the crankshaft was home made.

There are no fairies at the bottom of Gerald's garden, just a lathe and a small pillar drill. The crankshaft for the special was turned up here, as were the alloy barrels. Liners were from a petrol lorry but the heads were genuine 350 JAP speedway type, breathing through two fairly large Amal Concentric carbs. Keeping with the sporty image, two magnetos are fitted, one driven from the crank the other via a chain from the first.

The whole bike is so light it probably doesn't need a gearbox at all but one is fitted. A Burman box was gutted and Manx Norton ratios grafted in for the top three gears, first remaining as standard. Since the box was from a hand-change motorcycle, a positive stop mechanism had to be fitted alongside the foot change gear lever.

To add the finishing touches to the machine a single saddle was fitted and a petrol tank made (at considerable expense) which resembled the Brough tank of the Brooklands era. All the valve gear is exposed and the lubrication is via a total loss system.

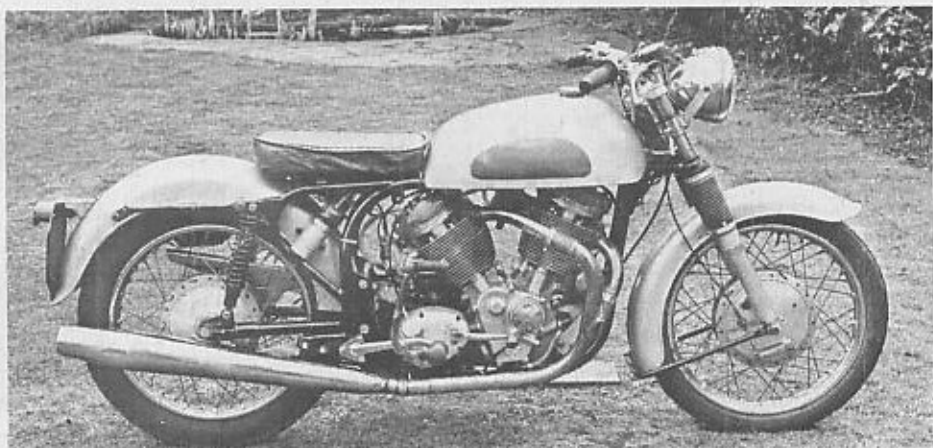
To the untrained eye this bike looks like an old nail but when Gerald was running it on the road, some eight years ago, he had many a Honda four owner looking at the small print in his warranty book. At a Vincent owners' club sprint meeting in 1970 this special clocked 13.8 seconds for the standing quarter — on a wet track. The bike was easily the quickest 750 and was only beaten in the unlimited class by an Egli-framed Vincent 1000.

So much for the untrained eye. When Vintage enthusiasts look at the machine they invariably throw up their hands in horror. So many genuine "vintage" parts thrown together to produce a bastard machine, a terrible waste. Gerald thinks that these "original at any cost" types are all wrong and I agree with him. Gerald had a lot of fun building and riding this bike and that is what motorcycling is all about.

So, getting a little tired of leaving an oil trail in his path Gerald started looking around at frames to house a more up-to-date twin. For a little over £50 an early slimline Norton Dominator was obtained with a blown engine — was there any other type? The engine, oil tank and battery box were junked and the resulting space



# Happiness is V shaped

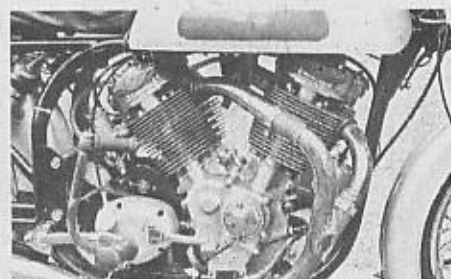


Above: a modern machine with a decidedly vintage look. A dual seat is to be added later. Below: the huge 1000cc motor fits snugly inside the main loop of the Norton frame.

measured up. Gerald knew that V-motor would fit because he had already seen a Vincent Norton around. A 90-degree motor would not go in, however, and the maximum possible angle was around 60 degrees. Since a 60-degree Vee twin doesn't have perfect primary balance Gerald designed the motor to take a counter balance shaft. This was only going to be fitted if it proved necessary: some vibration can be a good thing on a bike, it gives the machinery "character".

For the top end of the motor BSA B50 barrels and heads were selected. These were the right cylinder bore size and were readily available from breakers' yards. The CCM motocross bikes use this motor, although heavily modified, so it can be tuned to give real thumping power. Two of them on one crankshaft should be at least half as good again.

Having decided upon the bore and stroke Gerald sat down with pencil and paper to lay



out the basic crankcase and shaft design. Some weeks later he emerged to seek out a pattern maker and get an estimate. His wife had reported him to the police as a missing person.

All this happened some two years ago and various pattern makers quoted between £500 and £1000 to make up a full set of wooden patterns ready for casting. This meant one of two things, the Fitzpatrick Vee would remain as a series of lines on several pieces of paper or Gerald would become a carpenter. He chose the latter and began to bend the ears of the pattern makers at his place of work.

The smell of sawdust and glue filled the Fitzpatrick home for some months before the patterns were ready. The next stage was a trip to the local foundry where the patterns were handed over and tongue in cheek an estimate was asked for, on a one-off basis. No problem, they simply charged by weight so the Fitzpatrick V crankcases were cast for a mere £17. After months of planning and drawing the engine was now coming to life.

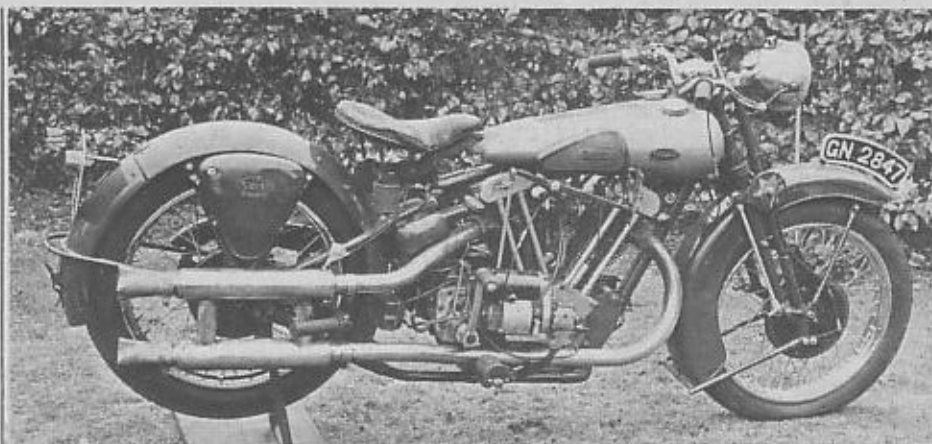
Once more Gerald disappeared into his shed and the alloy chips started to fly. Because of the limited swing of his lathe the height of the crankcase at the barrel joint had to stop a little short of the desired position. To get around this packing pieces were made up at a later date. Gerald was not happy about this but he had no alternative.

Making up the crankshaft was not a headache for Gerald because he had done this already with his vintage special. This all sounds very simple but the crankshaft has to be the right size and weight to provide the required balance. Gerald arranged things so that a counter balance of  $\frac{1}{2}$  the total flywheel weight would give perfect primary balance. The crank wheels were turned up on the long suffering lathe but the big end pin had to have its surface ground and hardened. This operation was entrusted to a local engineering company who did an acceptable job at an unacceptable price.

Since grinding and hardening the big end

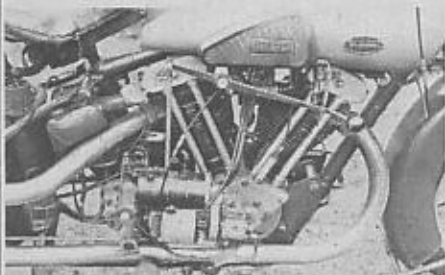
All you need to cast a V-twin crankcase. Gerald Fitzpatrick displays his wooden patterns.



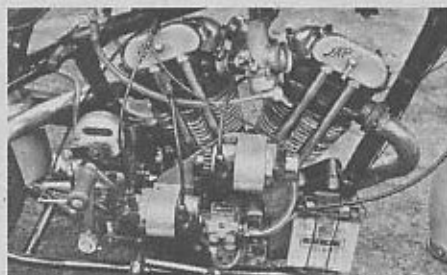


Above: Gerald Fitzpatrick's first love, his restored Brough Superior.

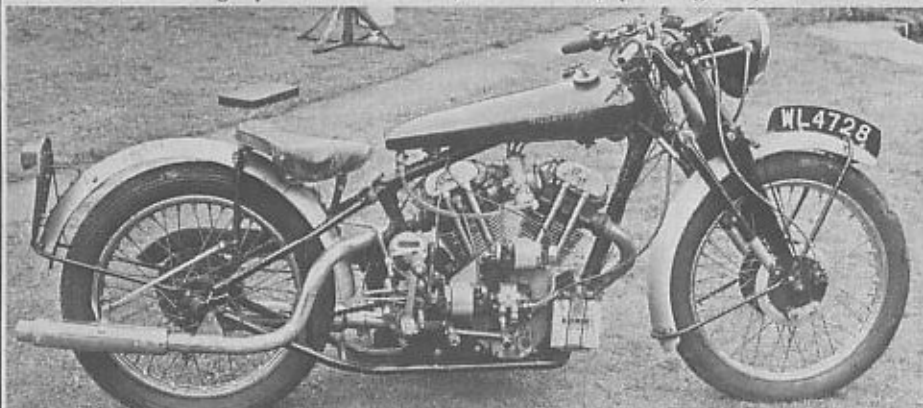
Below left: a close up of the JAP motor which powered so many classic machines.



Above right: it looks like a classic JAP V-twin but in fact it's a "bitza".



Below: Gerald's vintage special with bitza this, and bitza that, sprouting everywhere.



pin had cost a small fortune Gerald decided against making up his rods. The Harley-Davidson rods looked just right but a phone call to the importers proved less than encouraging. They would be happy to sell Gerald a couple of con-rods—but he had to have the rest of the engine with them.

Somewhat put off Gerald sorted through his vintage spares box and unearthed a couple of Matchless rods which would do the job. The bottom end of the motor was taking shape quite nicely. The drive for the camshafts looks quite straightforward but apparently gave Gerald quite a few sleepless nights. With the drive coming from the crankshaft to the front cylinder's cams it then had to transmit to the back pot and from there to the balance shaft-cum-engine breather valve. This was not such a problem in itself—the trick was in getting them all to run at the right speeds and stay in synch with the crankshaft.

The front camshaft is used to drive the contact breakers for the coil ignition set up.

With both exhaust ports facing the front the carbs were tipped at rather awkward angles. The front Monobloc unit had to be

angled a few degrees towards the horizontal with a spacer. The rear unit, at present, has rather a steep updraught but that will be put right with another angled spacer at a later date. The siamesed exhaust pipes are a temporary arrangement and feed into a rather nice Bonneville silencer.

The footrests and brake pedal set up are from the Norton Commando as is the gearbox and primary drive. A transmission shock absorber is mounted in the rear wheel. Just to get things rolling the oil tank is mounted in front of the chain case and the battery is carried in a saddlebag on the rear mudguard. So that he would feel at home Gerald has fitted some Brough shaped bars and a single seat. A dual seat will be fitted as soon as the local breaker can come up with a decent example.

The rest of the cycle parts are standard Norton items which can be found on most exploding Dominators. Of the rear shocks Gerald says they "go up and down", which is all that is required for the time being. The rear tyre, however, is a very dated Avon SM which would be more at home on a sidecar with its square section tread.

During all our talking about the good old days I had been sitting on the Brough Superior pretending to be Lawrence of Arabia. When Gerald went off to open the gates I hopped onto the special and did a few imaginary laps of Brooklands (earning the legendary 100mph gold star, of course).

By the time the Norton framed 1000 was running I was looking round for a leather helmet and flying goggles; I had to settle for a Bell Star with the visor left open.

Gerald had the all alloy motor rattling away nicely and he handed her over to me; I stalled it. As I swung out the kick starter I noticed for the first time that it had been extended considerably. Gerald leapt to my rescue explaining that kickstarting a 1,000cc V-motor with a ten to one compression was something of a knack. What he really meant was, the motor had a kickback which would fire an eleven stone weakling into orbit.

In spite of the very high gearing the bike pulled away quite easily, the gearbox sprocket was nearly as big as the rear wheel, giving 22mph per 1,000rpm in top. First and second gears were fairly close with third making a useful overdrive in town. In top the bike could be slowed to around 40mph, something like 1,900rpm and would still pull away without fuss.

Initially I felt none too safe. The seat seemed a little on the small side and I kept sliding back as the bike surged forward. With dubious damping and an unsuitable rear tyre I didn't try any "ground clearance checks" but the weight was never a problem. The brakes were well up to the performance, the rear unit being very powerful yet progressive. At the front end there are plans to fit a twin leading shoe brakeplate. It's very difficult to describe how it feels to ride this machine. It does not have outstanding road holding, acceleration or braking yet for me it was more fun to ride than most machines.

The bike could best be described as having character. When you sit astride a Japanese machine it's unemotional, you could be riding a sewing machine. Thumping along on the Fitzpatrick 1000 is a new experience. The bars are wide and low and the large chrome headlamp seems to fill the road, everything is larger than life. The chronometric speedo tells you that road speed lies somewhere between 20 and 40mph and that all is well with the world. The fact that oil, from a missing breather, is spraying all over your left Wellington boot doesn't seem to matter.

The engine vibrates pleasantly, it doesn't try to shake the teeth from your head, it's more like a mobile massage machine, it feels good. The exhaust note is firm but mellow, definitely rhythmic thanks to the V-twin's irregular firing intervals. Torque everywhere in the engine's rev range encourages you to be lazy. When a hill approaches, or you want to go quicker, you simply open the throttle, to slow down you close it and let the engine compression do the rest.

After an all too brief test run we handed the bike back to its owner and the owner back to his wife. As we headed home in our boring old Cortina I couldn't make up my mind whether I was a converted Vee twin freak or a nostalgic day tripper into the not so distant past; either way it's an experience I would not have wanted to miss.