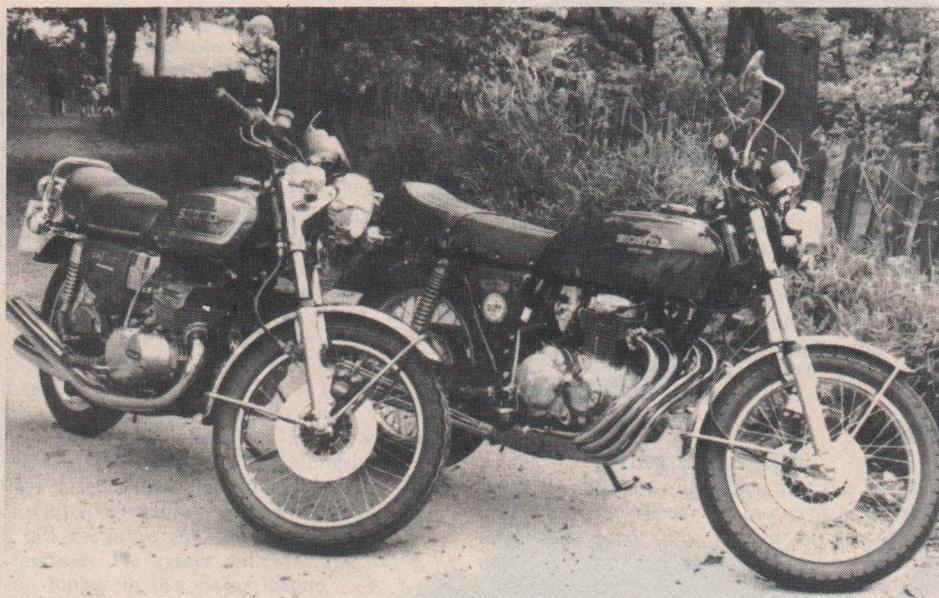


A Stroker for You?

TESTS WITH SUZUKI 380 AND HONDA 400



VERY RECENTLY, or so it seems, Kawasakis, Suzukis and nearly all Yamahas were two-strokes. Yet even then, at the peak of its popularity, the stroker could not claim the same monopoly on the road as it had achieved on the race track. The big reason was Honda, who persisted in making only four-strokes. Now, quite suddenly, Honda is justified! Kawasaki and Yamaha are increasingly committed to four-stroke programmes and even Suzuki, having tried the Wankel, are producing a four-stroke range to "supplement" their two-strokes. Honda faces a situation in which its three Japanese competitors are fielding two- and four-stroke ranges, but it is less likely now than ever that we shall see a road-going Honda two-stroke (apart from the moped). Times have turned against the stroker, its two great enemies being the soaring cost of petrol and those crippling clean air regulations. In the end, will the two-stroke survive or will it disappear from the scene, as it virtually has from the motor car?

It is worth digressing for a moment to consider that Saab and Auto Union DKW (now Audi) switched to four-strokes as soon as the emission controls appeared on the horizon. These two firms used basically the same three-cylinder two-stroke water-cooled engine that still powers the Wartburg. It had a good service record due to its robust simplicity and gave the 841 c.c. Saab an equal turn of speed with the much smaller bodied Mini of the same engine size. Even cruising close to its maximum around 70 m.p.h. seldom reduced the Saab's fuel consumption below 30 m.p.g. The engines were successful in competition too, both in the Saab Rally car (remember Eric Carlsson?) and in Formula Junior single-seater racing. Here the DKW two-strokes, no doubt backed up by motorcycling experience, ruled the roost until the arrival of the o.h.v. Anglia engine, when their further development was hampered by

over-heating of the middle cylinder. Nevertheless, the car never saw the sophisticated modern two-stroke engine as we know it today. Surging on the overrun revived the "freewheel" device in the transmission, lubrication was petrol almost until the end and a limited power band called for a lot of revs and clutchslip when getting off the mark.

Officially Japanese engineering sources say that the two-stroke will be able to meet all exhaust emission controls yet proposed. Few people believe them. Even the most sparingly lubricated two-stroke seems certain to offend the American environmentalists and incomplete combustion with high fuel consumption is a basic problem of a combined exhaust inlet and compression cycle that still begs a solution.

The great attraction of the two-stroke used to be its utilitarian simplicity allowing cheap construction, easy maintenance and reliability: even though the latter did not always work out. But the Japanese in particular saw beyond the utility angle to exploit the performance and smoothness of the double-firing frequency. The results speak for themselves, yet it must be said that in some respects the quest for sheer performance may have done the two-stroke as much harm as good. Hypercritical ignition timings and scavenging so "efficient" that a proportion of mixture is sucked through the cylinder without seeing compression or a spark are unhappy developments that take our eyes away from the fact that the two-stroke remains a simple and smooth device, is vastly better mannered than ever before, has become frugal of oil and no longer needs de-coking at every other service.

Nevertheless in terms of converting fuel into energy the four-stroke remains the more efficient. To give a practical instance, Kawasaki claim a 12-second standing quarter-mile for both the Z900 Four and 750H2 two-stroke triple. The

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four-stroke has the capacity advantage by which it achieves a performance comparable to the two-stroke, but at the same time it manages a much better fuel consumption. The H2 has now been withdrawn. So where really high performance is concerned the large capacity four-stroke can do the job, but the two-stroke still commands a sporting slot in the light and middle-weight classes where it can offer a higher level of performance for lower deposit and HP repayments without petrol consumption being too disastrous in absolute terms.

Straight comparisons may be difficult to find since four-strokes and two-strokes are frequently aimed as opposite sectors of their capacity brackets. The road-burning fuel-guzzling Kawasaki KH400 and the modest and miserly Z400 illustrates the two extremes as well as any. However it is a little different with Suzuki who still market two-strokes across the board. A GT380 and a Honda CB400 are not so very far apart, both aiming to provide sporting performance allied to superbike standards of smoothness and style in the increasingly popular middle-weight category.

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The comparison began at once. The looks of the two machines are so different - the Suzuki the more extrovert with its bright paint job and four upturned tail pipes, the Honda smaller and compact with a discreet four into one system. The Honda likes to be seen best from the front right side and feels a little bare from the left, although the drive chain is the more accessible for that. On a score of pipes our young neighbours, who took

a lively interest in the contest, were sure the Suzuki would be the winner.

There was plenty of outside interest, too. The Suzuki had previously impressed a local Norton-riding Police Officer and it so happened that the Honda found him operating a one way traffic light control on its way to work. In no time my AGV helmet had changed heads and the Honda was off up a side road. The bright blue 'Ago' contrasted with the sombre uniform but there is no doubt that Law and enthusiasm were effectively combined. The traffic lights were a little longer than usual changing. . . .

The fourth cylinder, electric starter and all those extra four-stroke mechanicals make the Honda more expensive by £70. That the price difference is not greater must reflect the extreme production efficiency of Honda, although the Suzuki's four silencers help to narrow the gap. Looked at from the Suzuki's angle, a two-stroke three costs little more than a four-stroke twin, a Z400 and CB360G being listed at £10 and £30 respectively cheaper than a GT380A.

Unlike its big brother 550, the Suzuki GT380 does not have an electric starter. This puts it lower down the "social scale" that seems to exist among motor bikes, but being a two-stroke it can easily be "kicked" with the hand even from cold. It is always a first timer and a sudden multiplicity of pops and a deal of oil smoke on full choke is the usual prelude to a slowish warm up. Apart from

some ringing in the ports there are few mechanical noises, the exhausts are not offensive but things sound fussed when the throttle is blipped on the stand. The Honda CB400 starts "one up" automatically with a press of the little black button and sounds just like a car. Both engines settle to 1,100 r.p.m. idling, the Honda the quieter although there are numerous mechanical chatters from the timing chain, valve gear and the Hy-Vo primary chain that can be heard lapping. The Honda does make the Suzuki sound unrefined, distantly like three Atcos standing in a row. Some buyers would prefer the Honda for this reason alone. (The fact that Atcos are also going four-stroke is outside the scope of this article.)

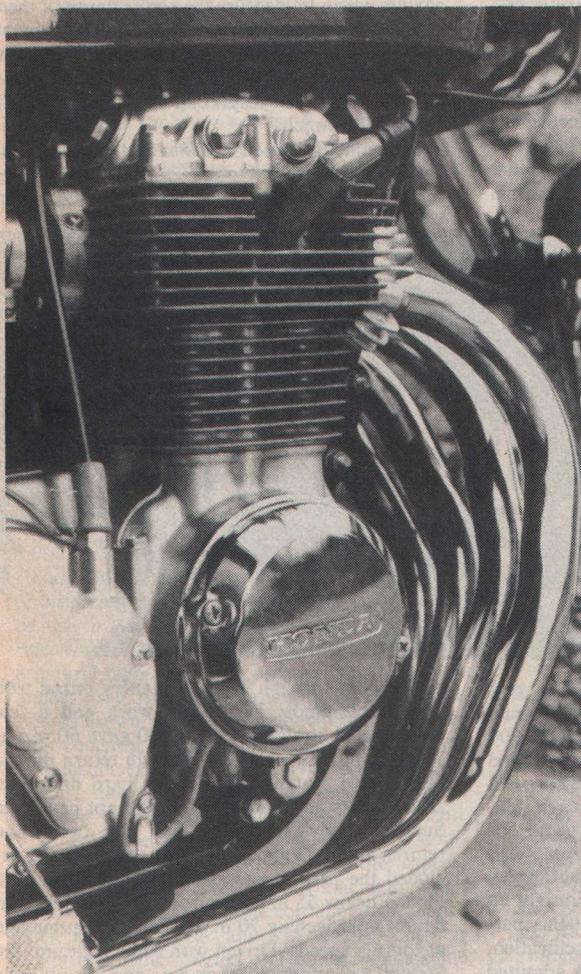
Put the Suzuki on the road and all is forgiven. Once under power everything irons out incredibly smoothly. It is tractable from 1,000 r.p.m. in sixth gear without being able to separate the firing impulses, although the deep moan and little acceleration from the motor do not encourage this experiment. The torque builds up slowly at first, becoming useful at 4,000 r.p.m., hot and strong as it passes 5,000 r.p.m. and onwards until 7,500, tailing off slightly to the 8,000 limit. There are no sudden unexpected thrusts and maximum torque at 6,000 r.p.m. coincides with an indicated 85 m.p.h. in sixth gear, no less!

The Honda at 408 c.c. is exactly 10 per cent bigger in displacement, from which it delivers an identical 37 brake horses to the Suzuki. Its maxi-

imum torque figure is inferior but very much more widely spread. On balance the CB400 surely loses little to its race-bred ancestors which first blazed the Honda trail, for although the power peaks at a modest (for Honda) 8,500 r.p.m. it will pull strongly from 2,000 r.p.m. right up to its very usable rev limit of 10,000 r.p.m. (Bill Smith says 11,000!). Such an extraordinary rev range may be taken for granted, but it is a fine achievement for any manufacturer and Honda manage to make the package so reliable with it.

Both machines have six speeds but the Honda is much lower geared to utilize its higher rev range and its ratios are packed closer together. First impression, after the Suzuki, were that the Honda was ridiculously low geared, particularly in first and second. A cynic could say that the Honda does not need so many gears. Maybe not. It is all a matter of market research - the CB400 is aimed at the man who wants six speeds and it is all part of its character. Sixth gear is not an overdrive ratio since maximum power coincides with only 92 m.p.h., from which it can be deduced that the power curve falls away quite gradually since the bike goes on to a maximum of fractionally over 100 m.p.h. The Suzuki may reach a similar top speed in fifth and will actually lose speed in sixth except in favourable conditions when it can exceed it handsomely.

Because of its low gearing and broader spread of power, the Honda is most noticeably the more

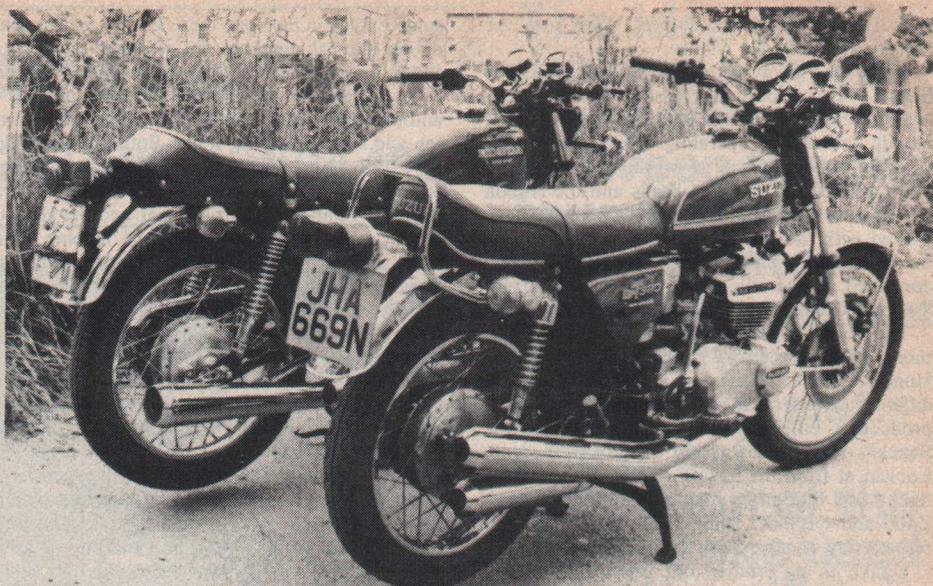


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flexible, particularly in sixth. In the space the Suzuki needs to accelerate from 30 to 55 m.p.h. in this gear, the Honda will have reached almost 60 m.p.h. Repeating the test over the same distance in third and fourth gears will accelerate the Honda from 30 to 72 m.p.h. to the Suzuki's 75 m.p.h., despite the Suzuki trailing initially because its pull away at 30 m.p.h. in third gear is still not quite competitive with the four-stroke. Generally the Suzuki needs to go a gear below the Honda when accelerating away from a corner or up out of a dip.

Two-strokes are often criticized as being less happy in town traffic. The Suzuki is very docile and controllable. Even long periods of idling never provoke plug oiling and when at last the chance comes to open up again, it gives of its best immediately without a period of woolliness or clearing of the throat. If the 380 has any disadvantage over its four-stroke rival it is the need to de-clutch a little sooner at crawling speeds since it tends to hunt on a closed throttle below 2,000 r.p.m. Sometimes it is easy to get stranded in too high a gear for a quick pull away. The more flexible However, the exceptionally fierce engine braking of the four-stroke calls for precise throttle control in both opening and closing directions to avoid jerky progress and surprising following traffic. I personally favour the free-wheeling tendencies of the two-stroke for gentle traffic driving, but for hard riding, particularly on the open road, most would agree that four-stroke engine braking is an advantage.



RD400 twin will decisively out-accelerate the four-no less than $6\frac{1}{2}$ pints every 1,500 miles. The quences to fuel consumption. Of some consolation to the Suzuki, it is less minutely fussy about ignition timing, does not go out of tune between services and is every bit as untemperamental as a four-stroke!

I was expertly assisted in the side-by-side performance comparisons by the previously mentioned Grade 1 police driver in his off-duty moments. His undoubted talent and ability with motorcycles came up to every expectation. It was interesting to note that whichever machine he was riding he was slightly handicapped by his greater weight and wind resistance, but it was significant that with the Suzuki held close to its normal

centre. Here it recorded a sixth speed maximum of between 103 and 108 m.p.h., the kind of figure that may be expected from a really well prepared CB400. Somebody at Bill Smith's obviously has a way with Hondas!

Apparently Honda are producing rolling road top-gear acceleration figures as a yardstick against which to measure the performance of their machines, which does away with the illegal burst up the road by the chief mechanic. Wasn't there a landmark a few yards up the road from Stevenage by which any self-respecting HRD would have reached 70 m.p.h.?

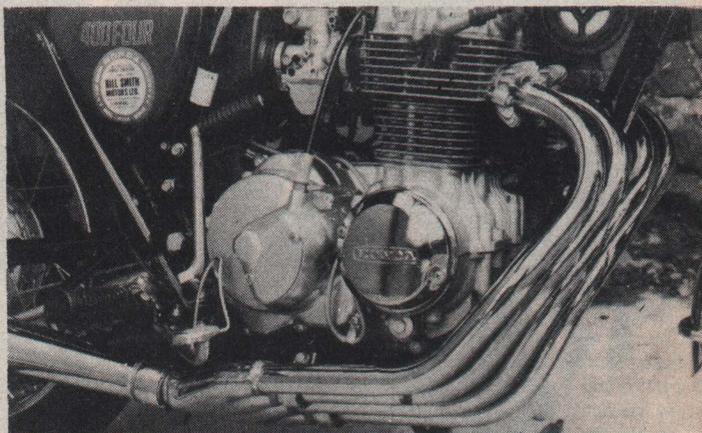
Both machines used two-star fuel, and as might be expected the Honda proved the more economical. Used on my daily professional run,



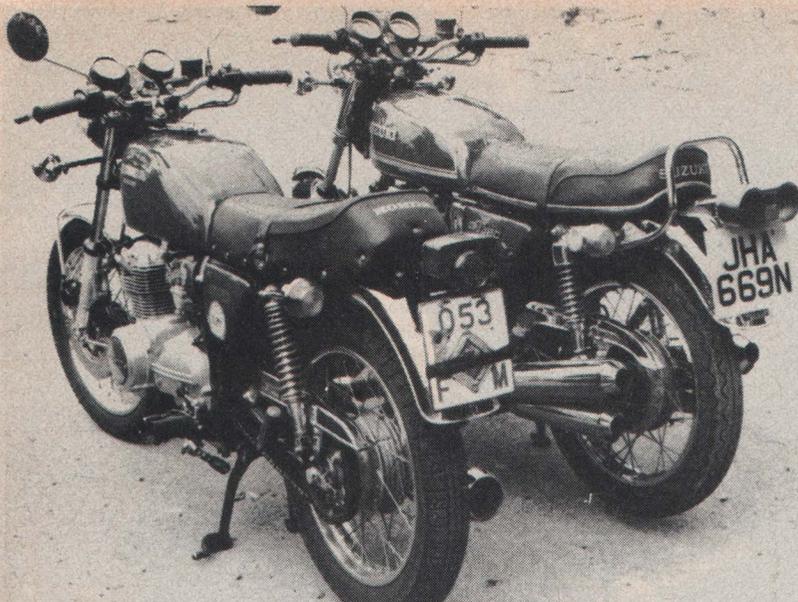
As might be expected the two-stroke Suzuki really comes into its own in the upper half of its rev range with turbine smoothness and a mellow howl which is so distinctively its own. A good GT380 may return a slightly faster standing quarter-mile in the upper 14s than the Honda at around the 15 second mark. Much of this may be due to its meteoric take off when the Suzuki has a distinct willingness to wheelie whereas the Honda does not show that kind of eagerness. Nevertheless it came as a surprise to find that when the two bikes competed on the road the two-stroke was not all that much quicker than the little Honda. I say little because the CB400 needs to rev so much harder to keep up, but keep up this one almost did by sheer determination. Two-stroke enthusiasts will be quick to point out that either a Kawasaki 400 triple or a Yamaha

roadgoing maximum in the mid-90s in fifth gear (neither rider wearing leathers), the Honda would keep him alongside at an astronomical 10,500 r.p.m. in fifth. Changing the Honda into sixth and dropping the revs to slightly above the theoretical point of peak power at 8,500 r.p.m. put him behind.

There is no doubt that the Suzuki was delivering the right amount of muscle, but the way the Honda's power continued to come in right up to 11,000 r.p.m. made us suspect that this particular CB400 was exceeding its specification, particularly when a local Honda agent admitted that he had never ridden a CB400 like it. However, Bill Smith assured us that it was a perfectly standard example straight from the crate and this was confirmed on a rolling road at Wrexham Scooters Ltd., a Honda Five Star service



ridden hard through mountain-lanery mixed with a bout of almost legal town work and a few de-restricted straights, the CB400 gave 60 m.p.g. This was a truly excellent effort in return for the fun it gave, but although it felt hard driven its speed points and journey times did not better the Suzuki's daily schedule when the two-stroke returns about 52 m.p.g. Even the tankful which included the performance testing did not drag the Honda below 55 m.p.g. and there is no doubt that figures approaching 70 m.p.g. would be attainable at touring speeds. Driven with some restraint, the Suzuki will manage 60 m.p.g. and its ultimate worst has been 44 m.p.g. Oil usually comes into two-stroke calculations but the GT380 does not leave a smokescreen except when ridden in real anger and one pint generally takes it an incredible 440 miles, while the CB400 needs an oil change of



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no less than $6\frac{1}{2}$ pints every 1,500 miles. The Suzuki would be the cheaper on oil if its gearbox didn't need nearly three pints every 2,000 miles – as it is they work out almost exactly the same.

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The answer is inevitably subjective, and lies not so much in what it does as the way in which it does it. It would be unfair to criticize the Honda as rough. The muffled exhaust note is very well diffused and quieter than the Suzuki but after stepping off the two-stroke triple, it was noticeable that the Four was not rotationally as smooth. There was a double image in the mirrors at around 5,000 r.p.m. and while not enough to describe as a 'tingle' there was a constant awareness through the handlebars as to how very fast the engine was turning. In fact the Honda is a most unrelaxed motorcycle and feels from its high revolutions to be motoring always faster than it is: 5,000 r.p.m. on the Suzuki is 70 m.p.h. but on the Honda only 55, and so on. Somehow the methods of progression are so opposite. The Honda asks to be driven hard and responds brilliantly but the rider is screwing it on all the time. The Suzuki has a natural high-speed gait, breathing like a ram-jet almost as if it had no moving parts at all. The rider is drawn along in a totally effortless manner. Consequently, it is exceptionally untiring over long distances and can be held for mile upon mile against the stop without a hint of wilting. Two-stroke enthusiasts will know what I mean!

It would be a pity to conclude such a comparison without brief mention of the other aspects of these two motorcycles. Both machines weigh almost exactly the same according to the handbook figures (377 lb and 375 lb dry) but it is doubtful whether Suzuki or Honda use the same set of scales. The Honda certainly feels lighter both to ride and to push around but this may be a psychological impression given by its smaller size and lower seat height. Both motorcycles handle impressively. The CB400 has been widely praised as the best of the present Honda range and cer-

tainly its riding position and its general compactness are near perfect, particularly for those of small to average build. It is one of those machines that becomes a part of its rider, so that it can be leaned into corners more with the mind than the body. It is extremely agile, but not perfect. The suspension becomes lively over uneven going and the sideways jumps of the rear and sometimes the front wheel call for constant corrections when pressing really hard. It also has a slight tendency to snake over poor surfaces particularly under deceleration. The Suzuki is also a fine-handling bike, rather more upright in its riding position and with slightly wider handlebars. It is only a mite less agile than the Honda partly due to the low profile Avon Roadrunners which quicken its steering response, and its stability over poor roads and at speed in a straight line is marginally better.

As for ride comfort, the movement at the saddle of the smaller Honda feels the greater but the Suzuki is spoiled by some harshness in the rear suspension which transmits more high-frequency road detail to its rider. Both machines have excellent clutches (the Suzuki's is the lighter) and equally capable disc/drum brake set-ups. It would be difficult to improve on the Suzuki's gear change but the Honda does, just.

In keeping with its safety slogans, the Honda has much the louder horn, and its instruments have that special something, particularly at night. Its switches click expensively and their layout is mutt-proof but they do not come so easily to the fingers as the Suzuki's. In fact the GT380 has a number of good features well worth a mention. It impresses as being the more solid machine, sturdily constructed in its cycle parts and in places better finished. It also has a wider centre-stand, the diaphragm petrol tap is an asset and the little electronic gear indicator figures help out whenever the mental arithmetic fails, as it easily does.

From the pillion seat the Hi-Speed wife, who knows nothing about two-strokes or four-strokes, voted for the Suzuki as being longer in the saddle and having its foot-rests stably mounted on the sub-frame. The Honda's are mounted on the swinging arms where they go up and down like stirrups although they do insulate against engine vibes. My police accomplice was evidently pleased with his evening and could not understand the criticism he hears of Japanese handling. Overall he thought he just preferred the Suzuki as he liked its looks better and felt that it was somehow "more

of a motorcycle". He departed saying that the Police Commandos could beat the pair of them – whether out of pride or as a warning, I do not know.

So in conclusion the four-stroke wins on points, the Honda CB400 a superb cafe racer, but the Suzuki GT380 is truly a grand tourer which could be said to win on appeal! This is not to say that the Honda will not tour or that the Suzuki cannot race. Am I prejudiced? Could be – the Suzuki does happen to be mine. The maintenance and servicing requirements of these two machines will be compared in the future article.

Most people choose the Honda, but either way the choice is a fine one to be able to make and if ever the politicians kill the two-stroke, such a choice will no longer be possible. For the future, the claims made for the Norton Wulf in the context of pollution could lead to interesting developments. Its greatest misfortune is to be born into a bankrupt family but its inner and outer stepped pistons eliminate the need for crankcase compression with its emission problems. Unfortunately, it will need money to develop and meanwhile one can imagine the Japanese coming up with something along similar lines. Somehow it has a familiar ring: another British invention gone East!

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