

The Ultimate Streetbike Magazine

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"On the first day of Christmas my true love gave to me.....

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# ON YER BIKE

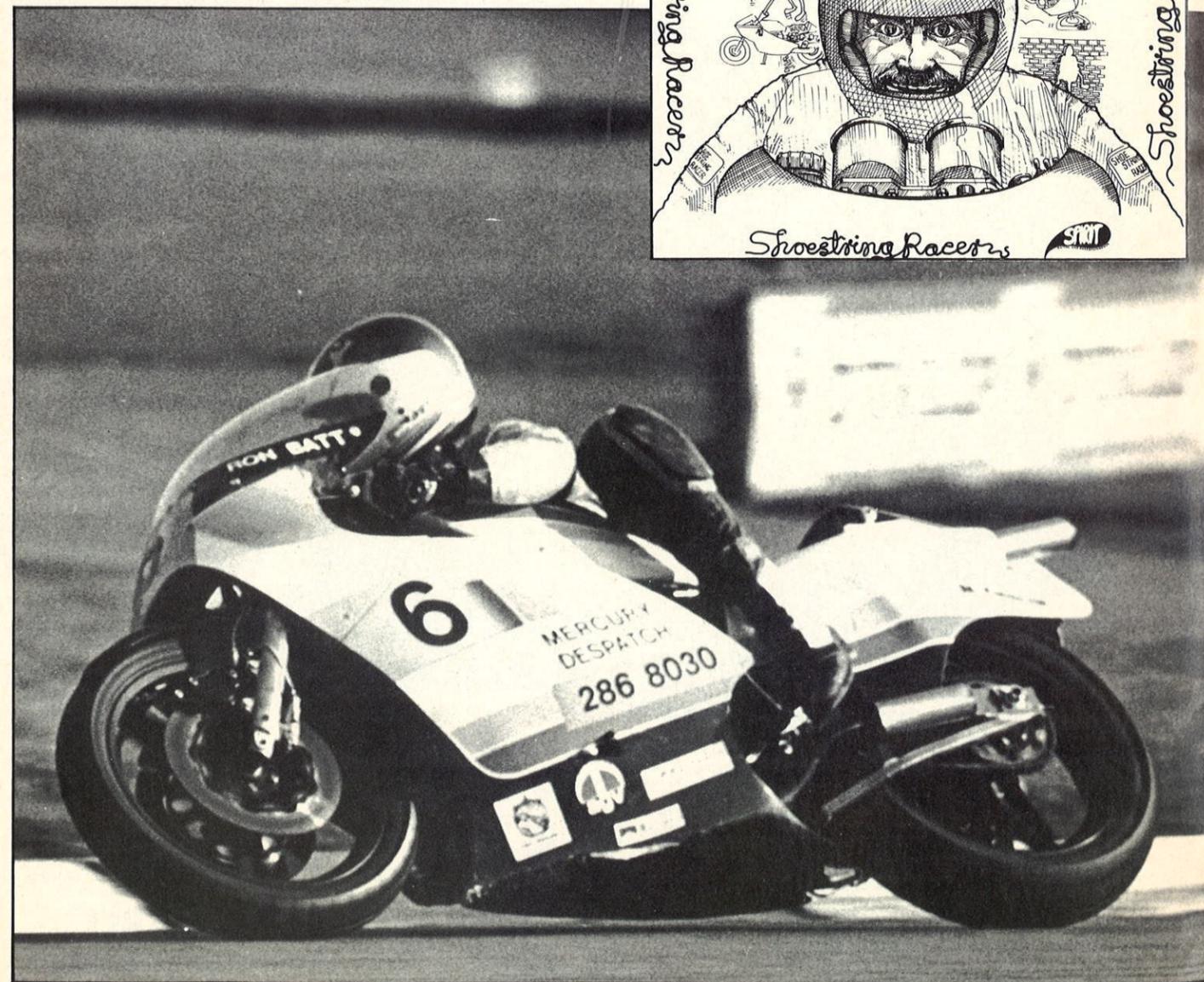
## INDOOR GAMES

About a year ago, Ron Batt visited this office with a board game he'd invented called 'Shoestring Racer'. We've been testing it during the occasional lunch hour for quite a while now and it's a subtle, fairly skilful game which accurately portrays everything that goes into winning a motorcycle race, as well as being a lot of fun to play. It certainly makes a change from all the crash and burn video games.

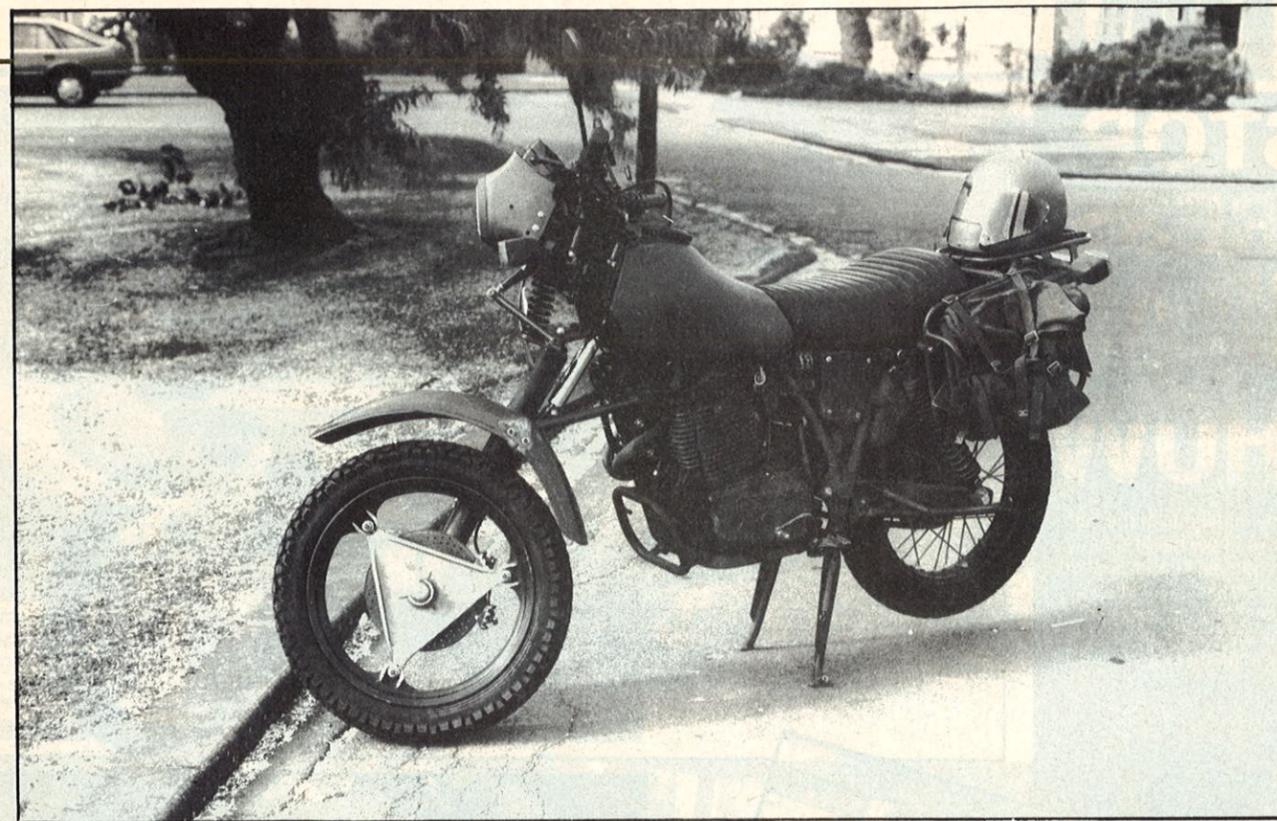
Designed for two to six players, the game is in two parts, the first being to build the best bike on paper by shopping for parts like fast engines, chassis, brakes and tyres in a limited time. Taking too long prevents you from reaching the second part of the game, the race, based loosely around the layout of

Brands Hatch. The best bike should have the best chance of winning provided it gets a good start, doesn't hit the oil or get baulked by the other riders. Overtaking involves a lot of careful planning. We've had games lasting less than an hour between two players or nearly three hours with six players.

The shoestring of the game's title refers more to the way the game was produced (on an overdraft) rather than to the quality of the idea. Manufacturing costs were kept low (there's a double-sided black and white cardboard playing surface plus plastic motorcycles) so the retail price could be kept low too. Yours for £4.95 from your local specialist game shop or for £5.99 inc p & p from Spirit Games, 200 Whitehorse Lane, London SE25 6UX.



Ron Batt, creator of the board game 'Shoestring Racer' earning some extra petrol money aboard his RG500



## QUICK CHANGE ARTISTE

Another wiz idea from the House of Hossack appeared on BBC's *Tomorrow's World* recently, an Armstrong army bike with twin wishbones, a single upright and a front wheel/tyre removal facility.

In the event of a blow out or flat, the wheel can be changed inside a minute simply by removing three bolts leaving the brakes, hub and

axle in situ. It's possible to carry a spare rim on the bike, but if you don't, then by laying the machine on its side, the tyre and tube can be removed without removing the wheel from the bike. Stick a new tube in and you can inflate it directly from a pressurised air reservoir in the suspension leg.

Naturally, you get all the other Hossack benefits as well — improved braking, steering, lighter weight and greater strength, lower

manufacture, assembly and maintenance costs plus interchangeability of wheels — front to rear.

The bike is currently being evaluated by the Ministry of Defence and there's no doubt that the market for military motorcycles is growing. Although the army bike goes against Hossack's much-loved principle of symmetry, the idea was to explore other areas of performance and the bike's axle

deflection rating is some 3000lb/in which is plenty strong enough.

Norman Hossack sees this 'bolt and ride' product as having particular applications in Third World countries where low costs and maintenance are high priorities. Also there's the enduro competition angle such as the Paris-Dakar rally.

For further info contact Hossack Developments at 443a Kenton Road, Kenton, Middlesex HA3 0XY (01-206-1695).



# Brick Batting

I'd rather have a bottle in front of me than a frontal lobotomy. What? Riding a stock BMW KRS back-to-back with a Hossack front end conversion

"The system is designed to give the rider a rewarding feeling of control. You can jump on, ride away and be flattered and impressed by the ride almost immediately."

Which is pretty much what happened. I collected Norman

Hossack's latest creation, a K100RS converted to double wishbone front suspension, on a rainy Monday morning and set off across town riding on cautious auto pilot, 9/10ths ginger and trepidation. Norman had warned me not to hit the front brakes too hard since the almost

total absence of dive can initially delude you into thinking you're not braking hard enough. From Kenton in Middlesex across the metropolis on wet roads was a miserable, slow journey. I stopped off to see a friend in Camden for lunch. An hour later, the roads were dry, the traffic had

cleared and I gave the Hossack K100, a first, decent, exploratory spin.

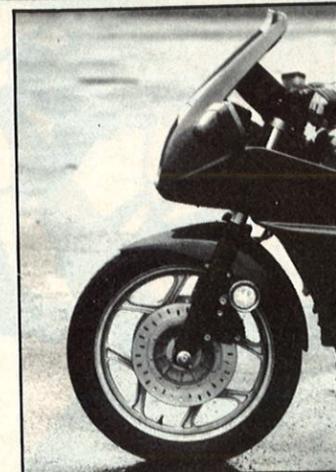
The ride was all through town and built-up areas, nothing special at all, but I remember it for one overwhelming impression, which was the degree of feel I was getting

from the front wheel and tyre. Within 15 miles of acquaintance, I'd absorbed and largely forgotten Norman's advice about the front brake because by now, the non-dive reaction seemed perfectly normal. I was also already well acquainted with the quicker steering but this feel from the front wheel was something else. At first I put it down simply to the fact that I was obliged to concentrate more on the front end just because I was supposed to be evaluating the system. To an extent this was true, I was concentrating harder, trying to feel what the front end was doing. But days later I found I could switch onto this added dimension of rider feel whenever I wanted and it just wasn't the same when I tried to do it

on a standard KRS I was running back-to-back with the Hossack.

With the standard bike, there were just too many handling distractions — dive primarily, quite nice neutral steering at best but too often the soft front suspension interferes with the steering when the going gets rough and you just have to wait for a level piece of pavement before you can get back on the gas.

Don't get me wrong, I like the standard K-series, I think they're a wonderful (dare I say, professional?) road users machine. On wet roads, shod with some excellent Pirelli MP7 tyres (you can't even force them to whiteline in the rain) I'd have to say the overall performance between the stocker and Hossack's



A question of attitude. Locking the front tyre at low speed shows the difference in suspension reaction.



bike is negligible. On dry roads, Norman's bike walks away. And it's the soggy front end dive and consequent lack of steering compliance that's the stocker's main problem. While you're waiting for the suspension to recover/settle on the stock bike, the Hossack is off and away. The Hossack brakes later and safer, steers quicker and displays front end feel in spades.

Norman Hossack knows we are talking marginal improvements here but it's the small, safety and sporting margins he's interested in. Together they all add up to make quite a difference.

The Hossack K100 conversion is pretty straightforward. Once in the jig and under the knife, the transformation begins with the removal of the steering head and approximately 8lbs of surplus steel tube being hacked away. Norman admires the stock, simple BMW frame — "It has hardly any bends and the welds are all very straightforward" — and makes the most of what it offers, mounting his wishbones and steering links to the existing framework.

The crucial bottom wishbone bolts onto new lugs just in front of where the old frame's engine mounts were. The short top wishbone pivots roughly where the bottom of the old steering head would've been. The tubes from the top wishbone run back under the tank and are braced at the back exactly as standard. The link between the top and bottom wishbones is standard (16 gauge?) BMW tubing. All very neat and well-finished with additional bracing at all the wishbone mounts.

The front forks go in favour of a box-section upright. Wishbone movement top and bottom is controlled by big, sealed, car type ball-joints, good for 60,000 miles or so. The spring, which is steered, is a Koni Dial-a-ride, preload adjustable. The system offers a true rising rate from 130-180lbs/in. You have to fit a new slightly smaller radiator but everything else is retained — front wheel and brakes, handlebars,

electrics, fuel tank and fairing. The multi-piece RS fairing has to be cut and shaped a bit underneath but everything else is left completely as standard. The result is neat, unobtrusive and very impressive. And it works.

The big difference between the Hossack K100 and his previous front end conversion on a GPz1100 (see *SuperBike* November '85) is that the shock is now steered rather than pivoting on the main frame. The new arrangement reduces the load on the bearings and has no negative effect on steering or suspension action.

Virtually everything else about the system is as it has always been. The Hossack design is nearly ten years old now and its worth has been amply demonstrated on the racetrack by Vernon Glashier who won the British National 500 Single Cylinder Championship on an XL500-powered Hossack in 1986 and 1987, an achievement that has just never been accorded the status it so richly deserves. Alright, so it wasn't in the GP world (though there too, the Hossack has some poor (Fior) imitators) but on a race-by-race basis, the low budget, one man Hossack effort has been more successful than many a money-no-object racing project like say, well, Elf.

The most significant and indeed the most immediately noticeable advantage of the double wishbone system is non-dive (*not* anti-dive). In fact, the K100 does have a small amount of dive built in just to acclimatise road riders. By varying the length of the wishbones, you can dial in any amount you want like zero, or even pro-lift (pretty pointless and undesirable). By separating braking and suspension loadings and consigning their common telescopic medium to the dustbin, the Hossack system eliminates downforce under braking.

"It's not anti-dive. It's neutral. There is weight transference just as you'd get even on a solid bicycle but you make the suspension compliant to control it. The dive itself is less

important than the fact that you remain in an unwound situation. You can still steer."

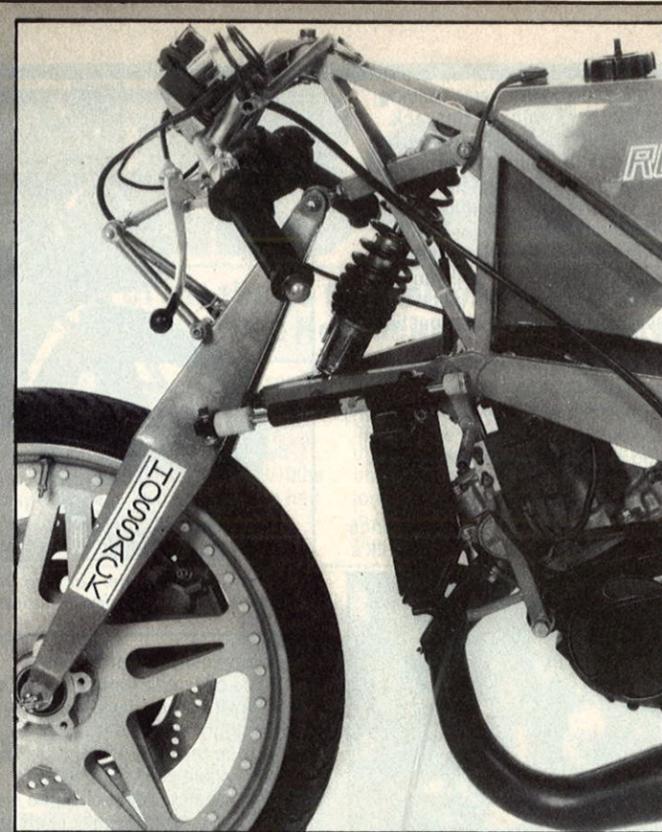
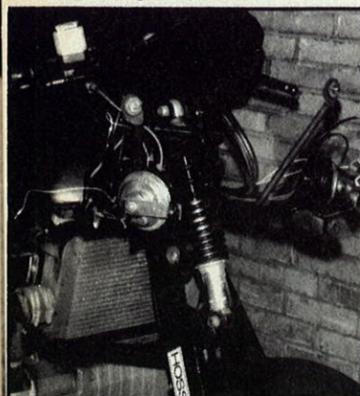
Racing Hossacks have proved able to skid their front wheels, hard on the brakes, without loss of attitude. Upon lock up, they don't tuck in as predictably as tele forked bikes. Larry Webb of PDQ in Slough and a convert to the cause, told me that on his Hossack GPz1100, he was braking for a T-junction one day and just went sailing on into the middle of the intersection. "I thought, blimey... complete brake failure. It was only afterwards that I saw that I'd hit a big patch of diesel, I was locked up through it and still stable."

The Hossack system may also in time solve problems being experienced with anti-lock brake systems. Much of the research and testing at the moment is hampered by the rigidity (or lack of) of tele forks. Hossack's box-section steel upright is approximately four times more rigid than the standard item.

For the K100 prototype road bike, Norman knew that faced with a conservative market, he had to make it look as neat and near standard as possible. Market reaction to alternative front suspension has often centred around the fact that alternatives look ungainly. Naturally, the KRS fairing helps here but the Hossack BMW imposes little visible change upon standard styling. From the side, it looks like it wears square forks. From head on, the 'tuning fork' appearance gives the game away.

In keeping with the conventionality theme of standard styling, handlebar and riding position, Norman went for familiar BMW territory in the steering geometry too — trail is 108mm (4.5in), the nominal head angle is a stock 26-degrees. Hossack believes there are no golden rules about head angle and trail, whatever you like you can have. On Larry Webb's GPz, they shortened the trail from a normal 104mm right down to 30mm trying to provoke instability at high speed. It never happened. Being well familiar with K-series BeeEms, I appreciated how exactly he'd copied their layout and thereby so effectively enhanced the differences

*With the fairing off, the complete assembly is revealed. Simple, compact, light and neat*



A darling little example of a racing Hossack. Built for Derek Loan, this Gamma 125 has an upright in lightweight steel weighing less than 4lbs (or about half the weight of the tyre). Rider Simon Westwood came 4th on the bike's debut. The team have two chassis and intend competing in the 125cc Single Cylinder WC probably dropping the Suzuki for a Morini or Rotax motor

in ride feel. The quicker steering comes from precision linkages, there's no slop just a direct input between bars and wheel. It's not over quick but strikes a nice balance, venturing into a happy hunting ground, stock owners have no access to. Oh yeah, there is no restriction in steering lock on the Hossack (unlike on the Elf and um, er... our own Q2).

The difference in front suspension action is less noticeable unless you consider it in conjunction with braking/steering situations. Over large bumps the standard bike clunks on soft springs and stiff dampers, the Hossack is better, but then it is a rising rate system. Chucking it deep into a turn on the brakes or overshooting (god forbid) and then trying to force it over more while still braking is where it really scores. The standard one just ploughs on and won't respond. Its handling has been called ponderous which isn't really fair. Lets say, it's not a machine you want to make Big Mistakes on — little ones are okay. On the Hossack, you can get away with it, no problem.

A final word on feel and front tyre feedback. When Vernon Glashier is racing his Honda, he can feel/hear the edge of tread on a KR124 which is a nice, useful warning that it's about to slide.

So how much then? For those K100 owners holding folding or with a well-folded front end contemplating a £3000 stock forks and fairing bill, the price is about

labour for the frame torching/hacking. The more orders he gets, the more the price will come down. The Hossack I rode is called a prototype simply because it's the original demo bike and Norman is still listening to rider's views and criticism as part of ongoing R and D. He's particularly interested in their initial impressions and is concerned that the first ride experience should be unalien.

"You take a ride on say, an FF machine and what happens...? For the first ten miles, you're wobbling up the road, oversteering just to try and keep it in a straight line."

Criticisms? Just the one really. There is a slight, slow speed steering reaction which feels exactly the same as a tight, steering head race, a sort of notchiness and resistance that you have to overcome. This disappears at 25mph and is really down to the quality of bearing used. Norman says the ball-joints exhibit 'start torque friction', the load necessary to get 'em moving is higher than once they are moving. It's a snivelling point really because a) you get used to it and b) above 25mph it's gone. The ball-joints are used because of rather greater wear and reliability than standard rose-joints which are susceptible to weather ingress. Of course you could put needle rollers inside the rose-joints (expensive) or indeed go to rubber bushes as he did on his army bike (see OYB intro pages).

"You don't need such a high

given that tele forks wave about over an inch to an inch and a half."

No waving about on the Hossack of course because steering geometry is maintained under all circumstances.

Other provocative thoughts from the gospel according to Norman? Some condensed wisdom.

"The public must be sick of alternative front suspension systems but until there are more on the streets, nothing will change. The Japanese must have been inspired, possibly worried, by all the small alternative chassis builders because the strong evidence is that they have done a lot of development and improvement over the last few years... For probably 90% of road riders, the telescopic fork is adequate. It's

the 10%, the people interested in marginal improvements that I'm interested in... I'm not even anti-tele forks. Everything bends together and even bend is tolerable as long as it doesn't induce steer. Axle movement is crucial. The answers are all to do with axle position in relation to the mass of the machine. All the rest, all the gubbins, no matter how you do it, is a means to an end... The centre of gravity with a rider aboard is

actually up near level with the top of the wheel... The relationship between the c of g and the front axle solves 90% of the problems... I'm interested in structure rather than frame stiffness. From structural considerations you get appropriate stiffness. For example, a GPZ600 and a Manx Norton are two fine handling bikes but are very soft between the axles. Only the appropriate amount of rigidity is required... though it's very different for a GP racer... When they finally get enough brakes into the Elf, the problems of a non-symmetrical system will appear."

Finally... distracted as ever, while writing this article, I came across a nice, sharp, picture of Kork Ballington aboard a Kawasaki 1000RX at the Salzburgring. He is hard on the brakes and has obviously arrived at great speed. The suspension is all used up, the sliders look visibly bound, wheelbase, rake, trail and stability have all diminished. Only an expert rider could cope with 800lbs of load bearing down on the front tyre's contact patch. On the Hossack, the suspension movement would've left the steering geometry and contact patch unaffected.

You don't have to be an expert to appreciate the difference. Since Norman had carefully removed all the BMW logos and replaced them with Hossack stickers, I eyed up other riders at the lights and in traffic and wondered how many could or would spot the difference. I suspect it was about 1 in 20. But for all of them, I felt obliged to prove a point. To be first out of the next roundabout or one-way system, hit the brakes hard and power out early. I was not disappointed. This is



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of Guildford

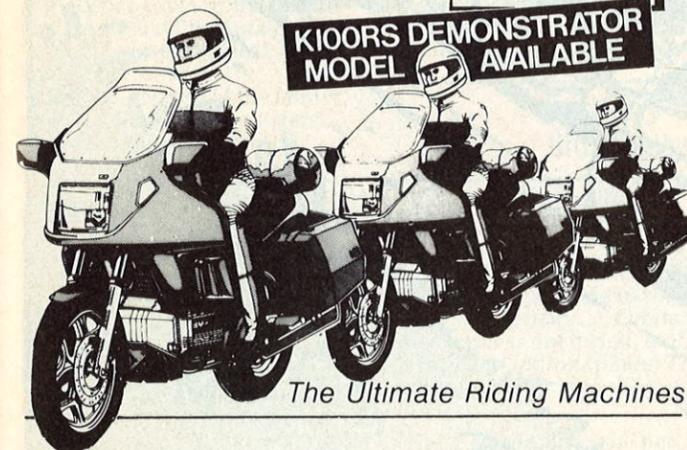
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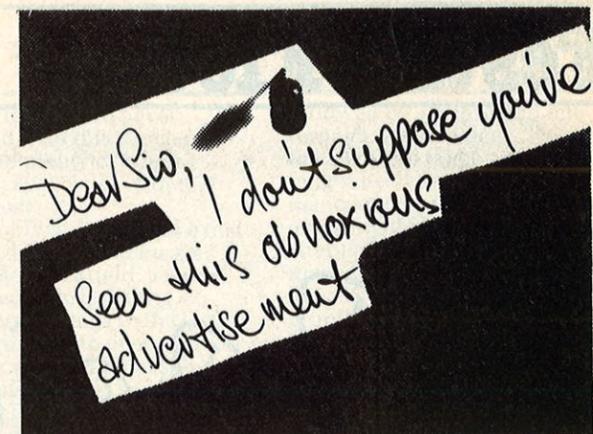
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