THE FASTEST GUZZI IN THE WEST

Or anywhere else, for that matter. This one beat the Jap fours to win the American Endurance Championship/*Alan Cathcart*

SOMEHOW IT seems to have escaped the attention of the motorcycle press outside the USA, but in 1985 a remarkable thing happened. A modified Moto Guzzi Le Mans won the American Motorcyclists Association (AMA) Endurance Championship, the longest, largest and best-supported long-distance series in the world after the World Endurance title hunt, with 13 rounds run all over the USA.

In case you think this Italian pushrod V-twin took the title by default, think again. Its competition included full-race, tricked-out Japanese fours, primarily GPZ900s with an FJ1100 bored out to 1224cc, and a VF1000R Honda with many components originating from the Japanese factory. Nor was it a question of simply outlasting the multi-cylinder machinery – the Guzzi won four of the 13 rounds, none of them longer than six hours and therefore calling for speed as much as sturdiness. To underline this fact, the Guzzi won the Paul Revere 250, the shortest race in the AMA championship, of a mere three-hour dash round the blindingly fast Daytona banking at night. Though the Italian bike's excellent fuel consumption enabled the team to do the whole race with just a single pit stop, they still won by more than two minutes at an average of over 94mph, scooping the lion's share of the $20,000 prize money in front of 30,000 spectators.

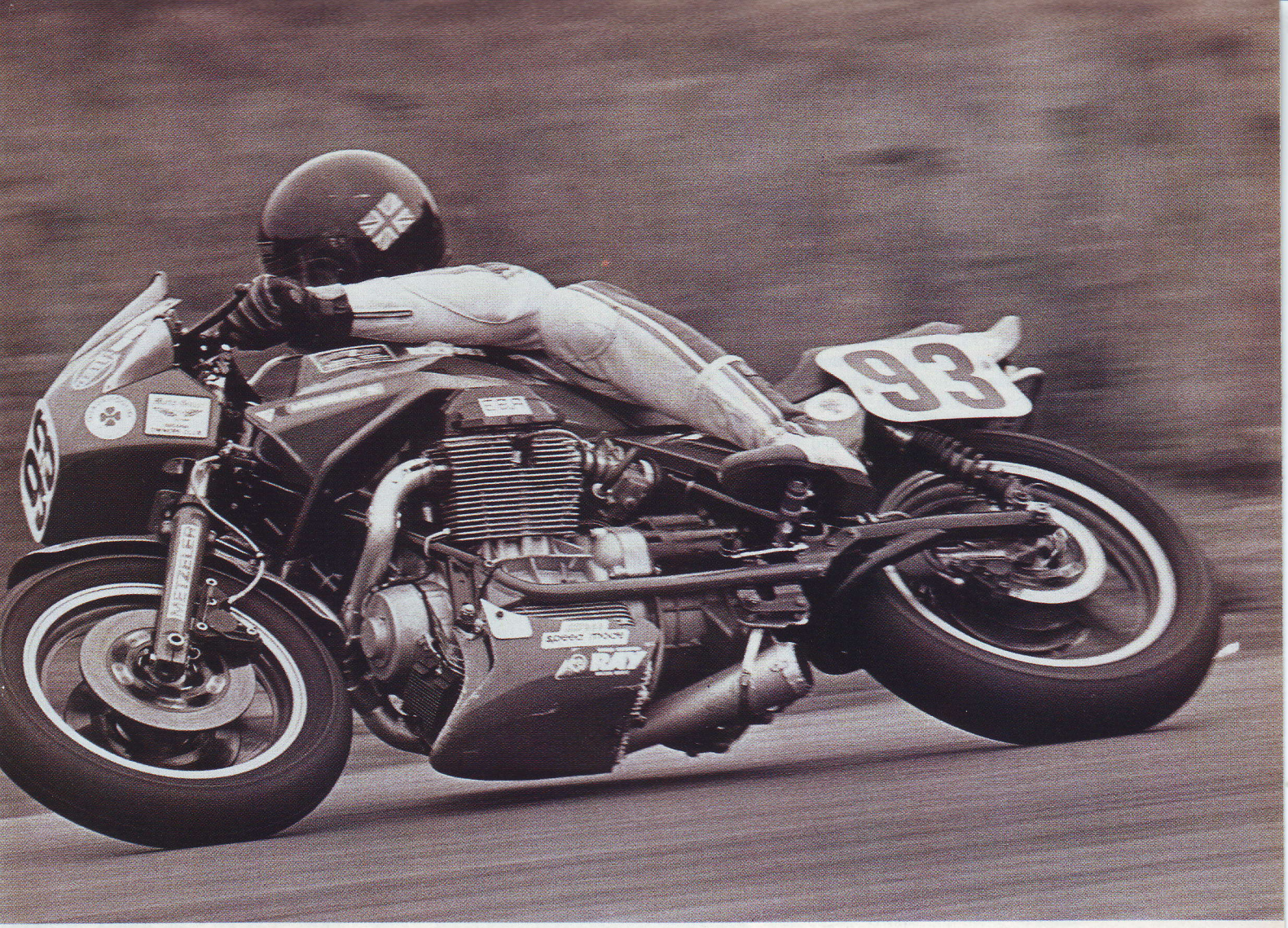
Though the three-man riding team of Greg Smrz, Larry Shorts and Nick Phillips was responsible for guiding the Guzzi to success on the track, they're the first to admit that theirs was only the most visible part of the team effort which resulted in the bike's surprising success. In fact, the team's name gives a clue to the rationale for its existence: Dr John's Team Moto Guzzi. Dr J turns out to be a 39-year-old Philadelphia dentist, John Wittner, who founded the team two years ago, formed part of the riding strength for a while, and now concentrates on preparing the uncannily fast and reliable engine.

Why, I asked John as we stood admiring the remarkably standard-looking bike, a Guzzi? If you want to be different, surely a Ducati would have been a better bet? 'Not really,' replied Wittner, 'there're lots of Dukes around, and I wanted to run something different still. Anyway, my background is in mechanical engineering, and I raced bikes for a dozen years before I took up dentistry eight years ago. Working as a mechanic, I developed a respect for Guzzi's rugged engineering, plus I guess I'm a traditionalist at heart. When I decided to start racing again two years ago, a Moto Guzzi was my first choice.'

Going straight to the top, Wittner persuaded Maserati North America (who are the Guzzi importers for the US) to provide him with an 850 Le Mans III for the newly-inaugurated 1984 AMA Endurance series. Although the championship rules require only that the bike starts out as a standard street model, with practically unlimited modification permitted, the team went to their first race just three weeks after receiving the bike, which was 'wire-locked and not much else'. Victory first time out in the middleweight class, which combines 650cc fours and 850cc twins, led to further development as the season progressed, a 100 per cent finishing record and the class title at season's end. 'Last year's bike was like a kitchen appliance,' says John, 'having it break down was the last thing we ever worried about. In over 8000 racing miles it never failed – then in between times I'd throw a number plate on it and ride it on the street. Guzzi were real pleased, but the only negative thing was we didn't have enough speed to go for the overall win, though we finished second a couple of times and took six class wins. Then the 950cc Le Mans IV came out, and that was a whole new ball game.'

Guzzi US provided one of the first of the new models to reach the USA, fitted with a 16-inch front wheel as standard and various other modifications, including an 88×78mm, 948cc engine. In this form, fitted with a mild camshaft offering only 1mm more lift, flowed heads and a two-into-one exhaust, the team went to Daytona in March '85 for the Battle of the Twins. Smrz finished fifth on a near-standard bike against the likes of Lucchinelli and Adamo on the works

PHIL MASTERS



Dr John's Guzzi has won races from two to 30 hours long beating fields of from 45 to 80 starters

Cagivas, and the factory Harley. 'We knew then we had one hell of a bike,' says Wittner. 'Since then we've developed it a lot, and by the July Daytona race it was much faster still, as well as being pretty reliable and much less thirsty than the fours. Funnily enough, each time we got some extra horsepower, we found we also picked up more fuel economy: now we can run for two hours 55 mins on each 32 litre tankful on a twisty track like Loudon, and get nearly two hours per tank at Daytona. It's fast but frugal.'

Giant-killing Guzzis are nothing new in the USA, but nearly ten years on, it's rare indeed to find a pushrod twin that can hold its own against the sophisticated breed of Oriental fours. How did John Wittner do it?

'From mid-season we stretched the engine to 992cc with special 90mm bore Gilardoni cylinders with chrome bores, and US-made pistons machined from TRW forgings by JE Pistons in California. These are actually lighter than the original Assos and have a flatter crown with about half the meat, which enabled us to get a better combustion shape. We now use Le Mans III heads, with highly modified combustion chambers but the smaller valves – 44mm inlets against the LM4's 47mm manhole covers, and 37mm exhausts against 40mm. Those big valves are quite heavy, and to use the cam profiles we wanted we needed the smaller valves, plus in any case I found on the flow bench that we got the same flow with the smaller LM3 valves as with the bigger ones, but a much wider spread of power and improved ►

All-important attention to detail shows in the chain link sideplates welded over exhaust seams and the hose clamps already in place in case of accident damage. How could the factory ever paint that motor black?

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combustion which actually offers more power in certain rev ranges. We have about twice the squish area with the LM3 head but around 30 per cent less combustion space, so we've ended up with a higher port velocity, faster combustion and a cooler running engine. We still only have single-plug ignition, but we can run 4° less advance than with the big valve heads – that's 30 to 31° against 34 to 34.5°.'

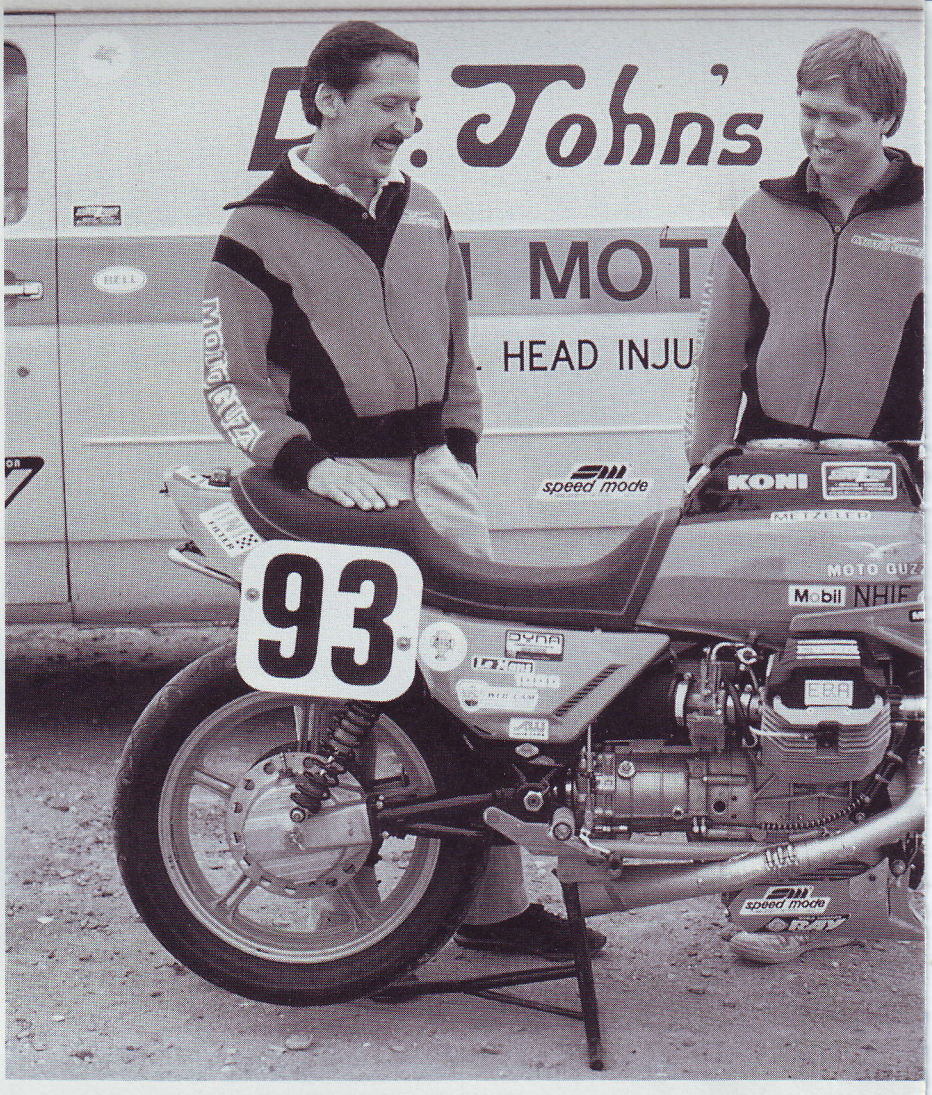
Instead of the standard Dellorto carbs, Wittner runs a pair of 41.3mm flat-slide Lectrons, tapered to 40mm to boost mixture velocity: 'We get a strong signal at the discharge port: you can whack those slides wide open at anywhere above 5000rpm and the engine will respond without a stutter. Plus our fuel economy improved with the Lectrons, and they weigh half the Dellortos.'

Dr John admits that the Guzzi now runs a 'very aggressive set of cam profiles: you have to, to get a twin to run as fast as this does!' The camshaft currently employed is the 17th of a series ground to Wittner's specification by Webb Cams, another Californian operation, who have been invaluable in assisting with the development of the bike. These use no less than 12.5mm lift – exceptionally high for plain followers – but in spite of this the team have had no problems with the otherwise standard Guzzi valve gear: cam timing is a symmetrical 52/88 and 88/52 with lobe centres at 105° to each other. John uses conservative valve-to-valve clearances to minimise the adverse effects of a missed gear, but in two seasons the bike's only top-end problems have been with broken inner valve springs – there are two fitted to each valve. 'Getting even the smaller valves to follow the cam is tough,' says Wittner. 'We tried 300-pound springs but the inners broke every race, though it never stopped us finishing. Now we're down to 275-pound items, and though there's no valve float, they still break on occasion. We really haven't found a solution yet.'

The Carillo rods are fitted to a standard Guzzi crankshaft, using original main bearings and a modified sump using knowledge gleaned from NASCAR stock car racing. 'A Guzzi crank is just a slice off an American V8 anyway,' says John, 'and it's absolutely impossible to wear out a Guzzi bottom end in endurance racing. We do owe a lot of reliability to the oil we use, though. We went to Daytona in March running 20/50 SAE mineral racing oil, then switched in practice to Mobil 5/30 SAE synthetic. With no other modifications and in the same atmospheric conditions we picked up 7mph on top speed on the banking, and a couple of seconds in lap times. People don't believe this, but it's true – plus the engine strips like new even after a 24-hour race.'

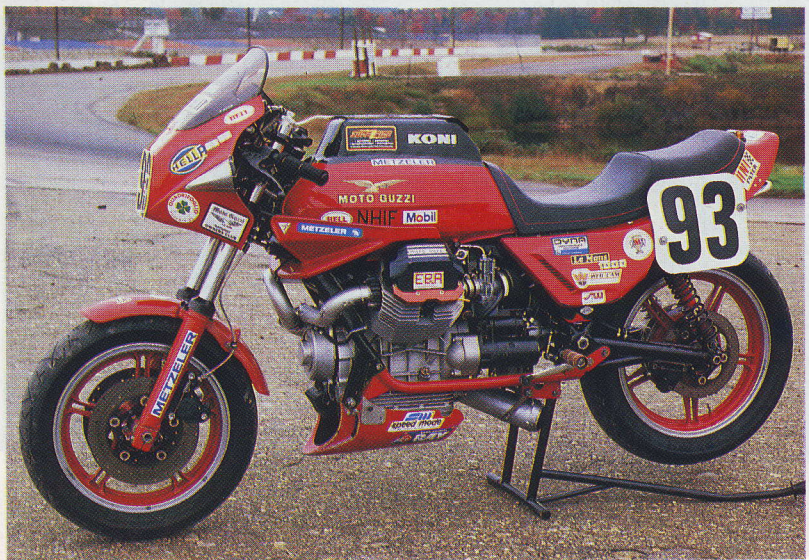
The Italian factory have supplied Dr John's with some blank crankshaft forgings which will be used to experiment with longer strokes in the future. At the moment, although the engine has never been on a dyno, Wittner believes it delivers 'better than 110hp' at the crank, running on anywhere from 11.2 to 11.6:1 compression, and 110-octane racing fuel. Electronic ignition, fitted to the front of the crank and employing the dead spark principle, was developed by the team's back-up engine man, Manfred Hecht, and saves a good deal of weight since the distributor and so on can be dispensed with. Even so, the Guzzi scales a quite porky 390lb for a twin, reflecting the fact that the generator is carried for all races, even 'sprints': adding lights only puts 8lb on to that figure. Another reason is the continued use of a steel flywheel, albeit much lightened and with a revised balance factor of 61 per cent. Wittner plans to experiment with an alloy flywheel next season. A sintered bronze, two-plate Surflex clutch is fitted, mated to the optional factory close-ratio gearbox developed some years ago for production racing, but with all the short shifting dogs removed in the interests of a slicker change. The team has collected a total of six alternative final drive ratios, including a couple tracked down in junk yards from older models. Wittner now claims to have the complete set of shaft drive ratios ever manufactured by Moto Guzzi!

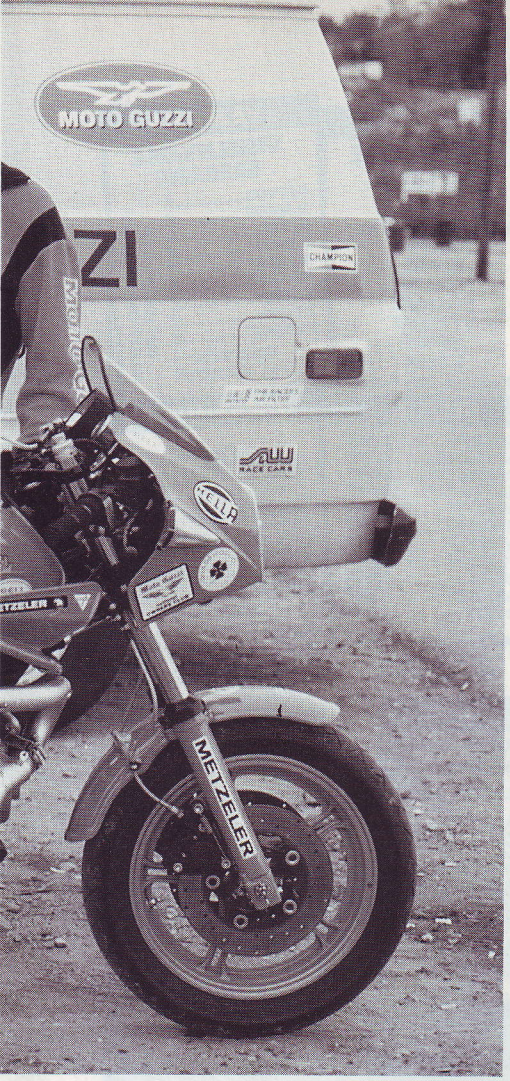
This meaty, power-packed engine is fitted to the standard LM4 steel chassis, still with the detachable lower frame rail and with a braced LM4 swingarm, itself much fatter than the LM3's component and already conveniently notched for a wider rear tyre. The frame is braced with two alloy torque plates, one running from



Dr John Wittner, on the left, with his team's lead rider Greg Smrz and very modest transport for national champions

That exhaust peeping out from the belly pan is vital One-quarter inch difference in the shape of the reverse-cone mega is critical. Cockpit looks almost standard till you notice the detailing





the clutch bellhousing, the other from the timing chest, to welded tabs on the chassis. The road bike's original 16-inch front and 18-inch rear wheels are fitted, shod with Metzeler slicks which provide uncanny grip but at the same time never seem to wear out, allowing the team to complete eight-hour races on the same set of rubber. Just as well: it takes three minutes to swap both wheels.

Standard Guzzi discs and Brembo calipers are employed, but the unique linked braking system has been disconnected. Opinion varies within the team of riders as to the merits of this in racing: Greg Smrz is a big fan, but the other two riders don't care for it, so by majority vote it's uncoupled. However, Wittner is working on a completely interconnected braking system for 1986, entailing both foot brake and hand lever operating both front and rear discs, with a car-type system to alter brake balance to suit individual rider preference and varying track conditions.

I've ridden quite a few twin-cylinder motorcycles, both road and racing, but I can't ever recall sitting on one that felt as solid, rugged and durable yet powerful as the Dr John's Guzzi. But first appearances are deceptive, as is the whole comportment of the Dr John's machine. It pulls like a tractor from low down, usable power becomes available at anywhere from 4800-5000rpm upwards, with a redline for test purposes of 8000 (although the team do go to 8300rpm when necessary) and the well-matched ratios of the surprisingly sweet-shifting close-ratio box, you have seemingly unlimited power on tap. But it does feel crude and rather lumbering at first, especially compared to the 750 Ducati I'd just been riding. But once bike and rider are both into their stride, the Guzzi's personality changes, and it blossoms into a willing, and responsive mount – albeit a steeplechaser rather than a sprinter, in spite of its impressive record in shorter races.

The main reason for this transformation is that the bike likes to be ridden on the power, and the first couple of laps while I got the hang of a strange bike and relatively unfamiliar circuit didn't show it in its true light. Though a basic understeerer as well, the Guzzi in fact handles better than a standard-framed 900 Ducati because the 16-inch front wheel gives lighter steering in corners without any noticeable tuck-in, at the expense of a slight but noticeable tendency to sit up under braking while cranked over. There is also an occasional weave on the straight when you hit a bump, like just past the pits at Loudon where the front end occasionally wiggled briefly.

In lightening the bike, John has achieved an accentuated forward weight bias, which settles the front end better on fast sweepers and removes the over-light straight-line steering I encountered on the standard Le Mans IV. And the special Koni rear units completely ironed out any trace of rear wheel patter in fast corners, provided I kept the power on. Before these new Konis, Wittner says, the bike would go round corners with daylight showing under the rear wheel, so bad was the shaft drive-induced wheel patter. Shaft drive will work the rear dampers on a bike as powerful as this Guzzi very hard indeed, and the performance of the gas-filled Konis was very impressive. Apart from that odd moment of lightness, the front end felt good too – the forks are in fact standard Guzzi LM4 components with Forcella Italia damper internals, and with the weight of the heavy bike to help them iron out most of the bumps, they do a good job.

Surprisingly, in view of the fact that there's no anti-dive system as such fitted, there was very little front-end dip under braking. One reason for this might have been that the brakes themselves felt rather wooden: Dr John was experimenting with new pads that day, and I don't think they were a success. If you're going to uncouple the brakes, I'd also fit the LM3's bigger 300mm front discs. I also felt reluctant to use too much back brake, for fear of loading up the rear wheel and freezing the suspension, causing hop on the overrun with the torque reaction of the shaftie engine. This did happen in one place, where the track runs steeply downhill into a tight right hander, but it was mainly my fault. I wasn't always able to squeeze hard enough on the soggy front brake *and* blip the throttle, so the flywheel inertia made itself felt and started the rear wheel chattering as it locked up under the reverse loads. Usually it sorted itself out by the time I cranked into the hairpin, though, and more practice would probably find a way round this particular problem.

But it is vital to keep the Guzzi on the power, especially through fast sweepers; as I found once I started experimenting with lines at Loudon's Turn Two, a fast left-hand sweeper followed immediately by a 180° right. Hustling the Guzzi through the fast left on the power meant that I ended up on the wrong side of the track for the right, so by changing line and making a late apex, while easing the throttle halfway through the turn to avoid running too wide, I found I could end up more or less in the right place. And those Metzelers really are impressive – it was the first time I'd ridden on them, and they had excellent grip as well as a good profile which allowed for easy changes of direction and power to be fed in early coming out of slow turns.

But the single most impressive aspect of the Dr John's Guzzi is that amazingly tractable, yet obviously powerful engine. It does vibrate a little more than a Ducati, but only slightly, and its remarkable spread of power makes gear-shifting almost redundant. Greg Smrz told me beforehand that I'd be better off using one gear higher than I might expect to need for all the corners, and he was completely right. The trick is to short-shift and let the acres of midrange power pull you round corners or down the straight, without worrying about unhooking the back wheel or sending the front end light. The carburation is really exceptional: there are no steps, no stutters and no hiccups, whether you feed in the power gently or crack the throttle open – it's all smooth, meaty horsepower on demand.

As North American Endurance champions, Dr John's Team Moto Guzzi has nowhere to go but down, according to Wittner, who was in Europe this winter trying to extend the team's operations to the World Championship scene next season. There is a possibility that they may get a racing version of the new eight-valve 750 for F1-governed world title rounds, with the bigger bike available for non-championship events like Montjuic and the Bol d'Or. If the necessary sponsorship can be raised, and the interest of the parent Guzzi factory aroused, we in Europe may yet have a chance to see one of the world's most improbable title-winning bikes in action in '86. Over-shadowed in recent years by the Ducati-Cagiva axis on the competition scene, this bike represents Guzzi's riposte, and a sensationally successful one at that. In the great tradition of long-legged (*gambalungho*) bikes from Mandello, the Dr John's Guzzi shows how good teamwork and fast riding allied with perfectionist preparation can yet again triumph over supposedly superior opposition.

Isn't it nice to know that a bike as basically stock as this can win in big-time racing?