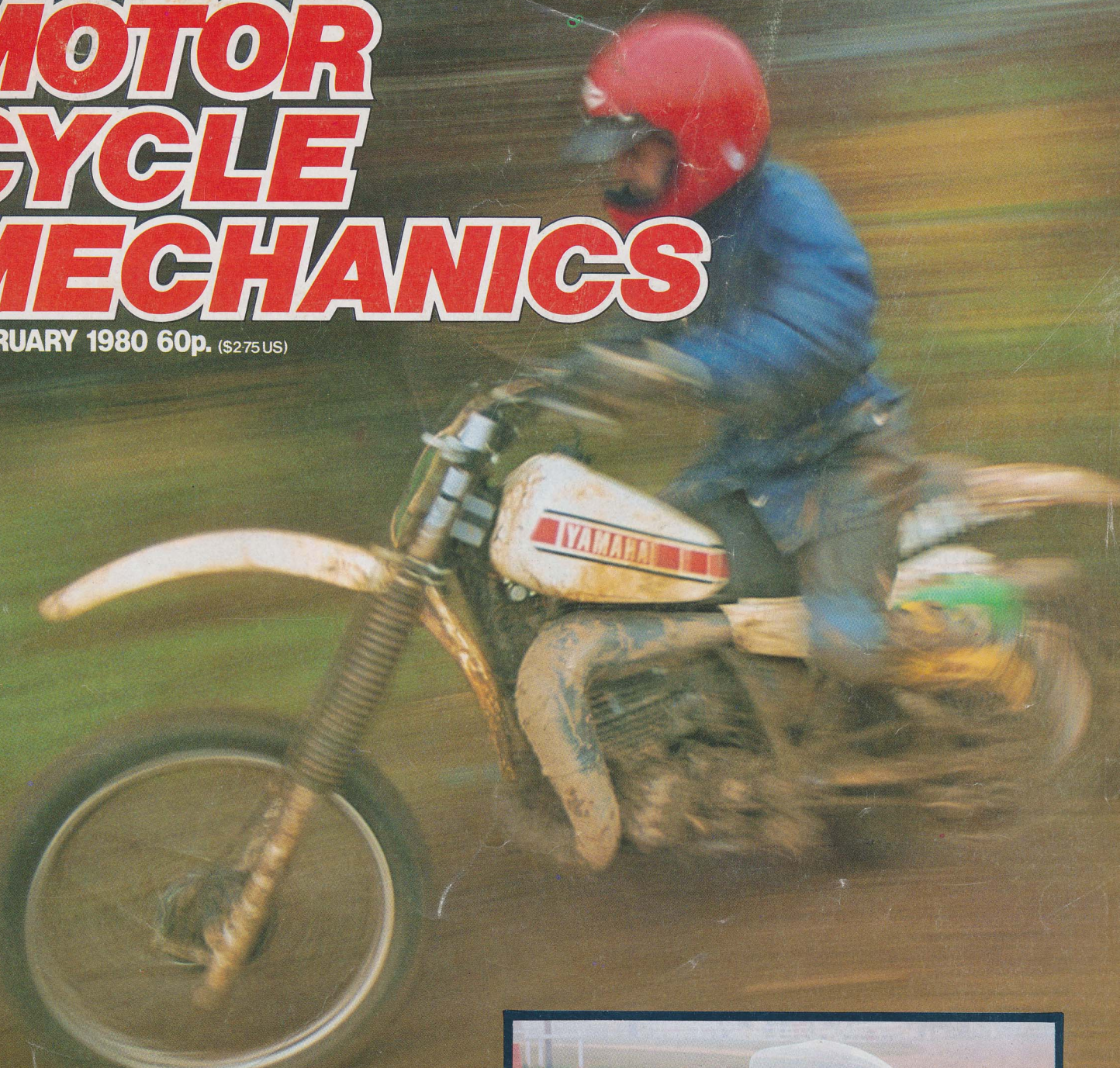


MOTOR CYCLE MECHANICS

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Yamaha's wild ones

LIGHTING-
our critical survey

Kawasaki's workaday
wonders



143mph Honda 900FZ tune-up



It's deceptive. Apart from the dropped bars and a slice of foam from the seat, the Martin North RD400 production racer looks pretty tame. It does have rear-sets and the silencers have been tucked in slightly, but that's about it. Riding the bike is another story.

We first came across Martin and his RD while we were at Snetterton testing a group of standard 400cc roadsters. The speed at which we were passed, out-cornered and out-braked was impressive to say the least and, after half an hour of begging, Martin foolishly agreed to let us track test his bike at the end of the season.

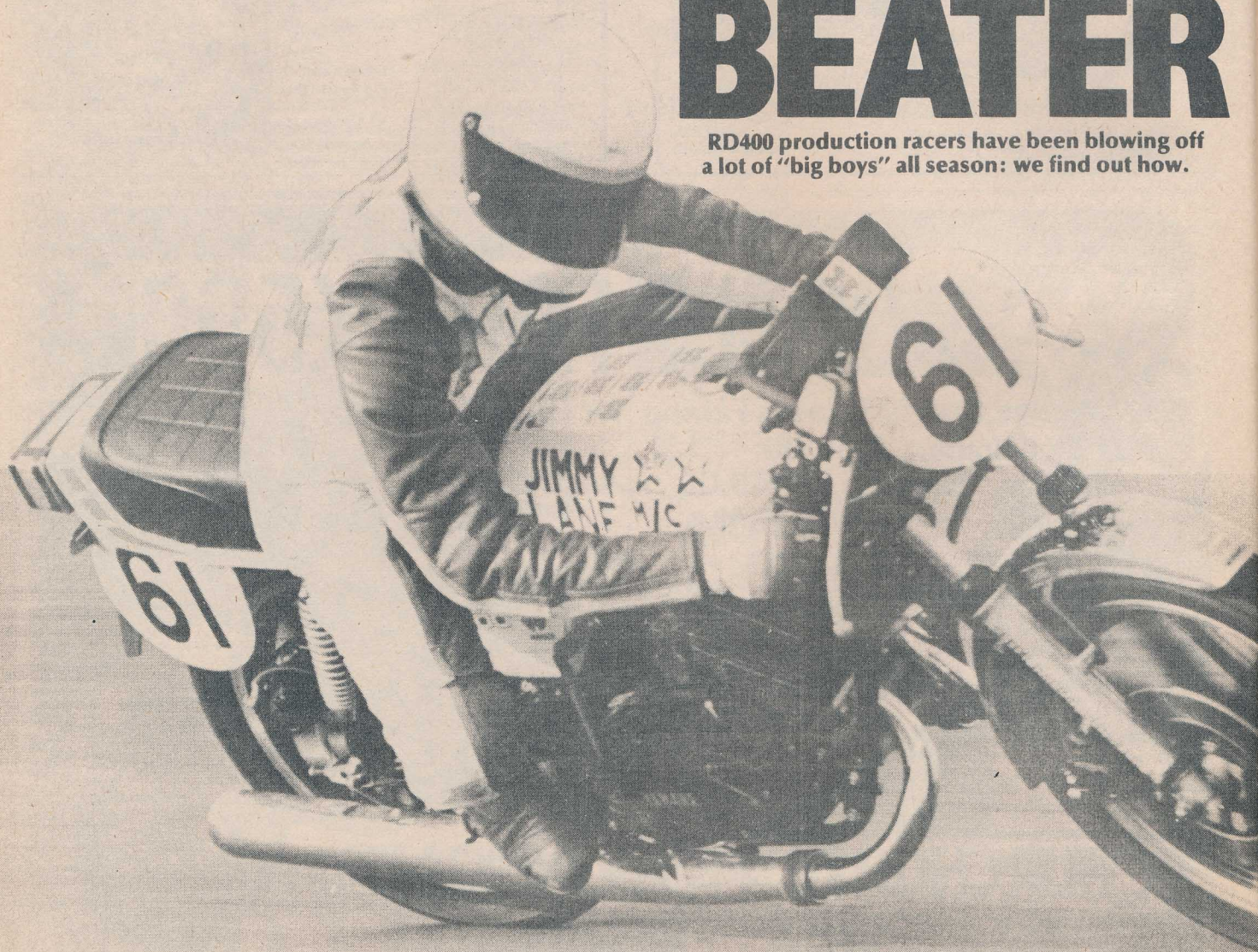
Unfortunately I don't have the right mental approach to bikes in the 400cc class. When I sit on them they look and feel like 250s, when I ride them I tend to credit them with 250 performance and ride accordingly. On the North production racer this was a big mistake.

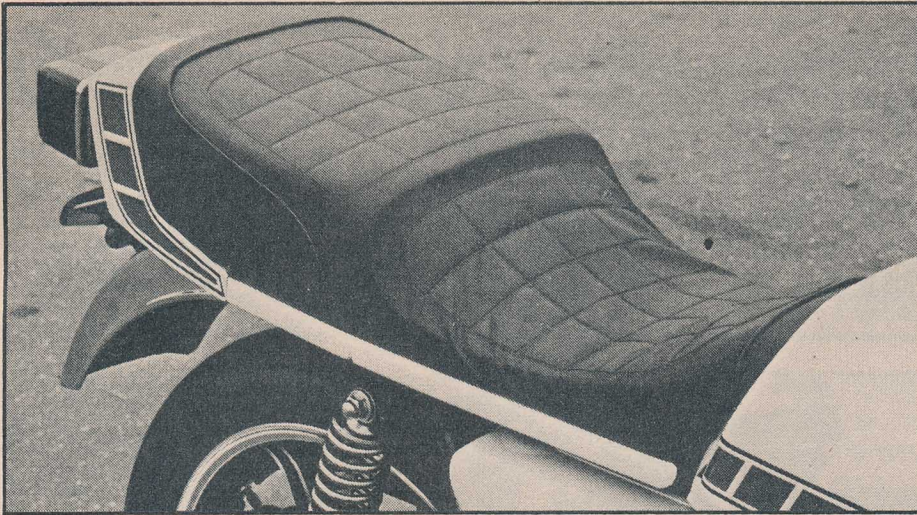
At the start of our track session Martin explained that the bike had just been rebuilt with a new crankshaft and he was going to do a few laps to bed things in and check out the bike in general. All was in order and Martin handed the bike over saying there was very little traffic on the circuit but to watch out for the slippery patches at the

THE LITRE

BEATER

RD400 production racers have been blowing off a lot of "big boys" all season: we find out how.





For a low drag riding position seat foam has to be cut out.

hairpin and on the exit from Coram curve. "Don't worry", I said, "I'll be real careful."

My first worry was that the gear pedal had been reversed giving down for up changes, and up for down. My second problem appeared as soon as I lifted my feet onto the footrests; the pegs were very high and caused my leathers to tighten drastically in a strategic area. My eyes were watering so badly I had to stop in the pit road to: "adjust my dress".

Once under way the bike didn't feel like an RD at all. The steering felt almost loose, and I had to make a conscious effort to keep the bike on line. Martin had filled the forks with 30 grade oil to tighten up the front end, while the standard rear units were retained, being set to their softest position. I did a couple of laps sitting up, trying to get a feel for the steering, and then gave it the gun on the main straight.

The very forward riding position tended to cancel out the thrust from the motor, it wasn't frightening, but it did feel quick. Going up into fifth however, proved too much for the clutch and it started to slip. The revs would sing on and then be clawed back as the clutch decided it would bite after all. I did a few more laps and pulled in to report to Martin. A quick check showed nothing amiss and I ventured out once more with instructions to try "rolling on the power" rather than snapping the throttle open.

By now I was starting to get the hang of things, building up a little confidence, and starting to explore the braking potential. Martin had fitted EBC brake pads and said

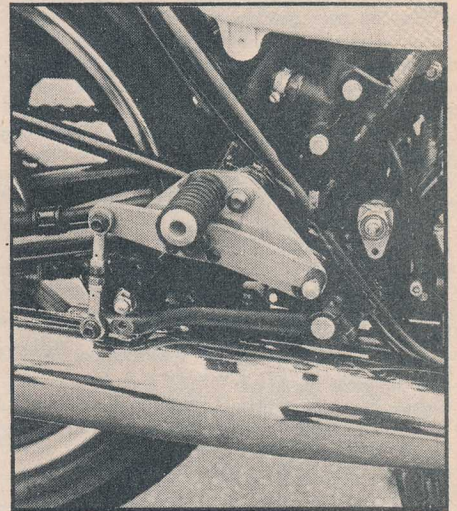


Home-made ace bars give the effect of clip-ons and are tailored to the rider.

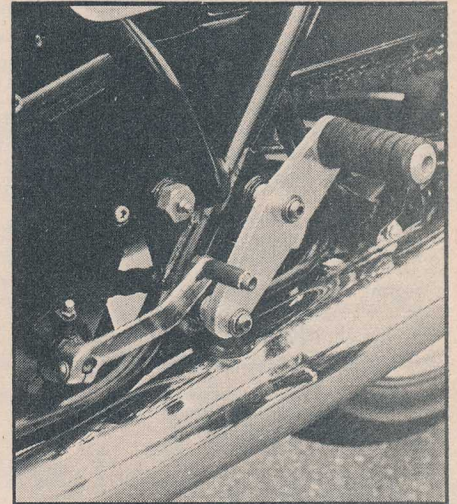
they were better than the standard item although they did need a lot of running in. Initial application gave little result and with the heavy front fork oil all but eliminating dive, it didn't feel as though it was stopping very well at all. However, all it really needed was a good hard squeeze on the lever to get the bike pulling up well short of the corner.

Martin had warned me that the track was very slippery and that he had already felt a couple of rear wheel slides without really trying. Taking this into account I started to ease into corners a little quicker on each lap. As Martin pointed out, the suspension is set up the way he likes it, and doesn't really start to work until you corner hard with the power on. He was dead right, the faster I went the safer it felt and the whole bike began to tighten up.

On the back straight the bike was reaching peak revs in top at a little over the halfway point. I thought it could easily pull a higher gear but Martin said he prefers to come out of the corners quicker with the lower gearing, even if it means losing out a little at the end of the straight. Just as I was starting to enjoy the ride I slipped up; or to be more explicit I slipped down — at the hairpin. The speed of the bike really was deceptive — any my brain kept slipping back into 250 thought patterns. The net result was that I arrived at the hairpin going



The high rearsets required this new rose-jointed brake pedal and linkage.



Reversing the gear lever reverses the gearchange pattern.

THE LITRE BEATER

POWER FIGURES

RPM	4,500	5,000	5,500	6,000	6,500	7,000	7,500	8,000
BHP	20.3	20.4	26.3			47.8	48.5	45.2
ft/lb	24	22	25.6			35.3	33.7	29.1

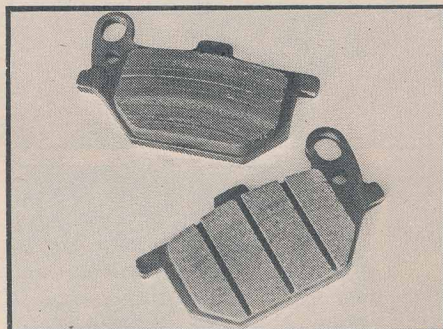
◀ a fraction too quickly and the front wheel went away as I flicked the bike into the turn. Fortunately the damage was mainly superficial and the bike was okay to ride the next day at MIRA.

As a precaution against any unforeseen damage the first few laps at MIRA were taken at a steady pace, yet even sitting up and coming off the banking slowly, we managed to record 108mph. The standard RD400 did exactly 108 — with the rider flat out on the tank.

Since the bike was steering perfectly I edged up the banking and tucked away behind the two clocks. The bike was reaching maximum rpm in top just after leaving the banking and it was just a question of waiting for the timing lights to pass. The tacho indicated that the motor was already "over the top". We knew that the rev counter was reading slow by about 600rpm and the power peak was long past, as the lights tripped at 113mph with an indicated 7,500rpm on the tacho.

Martin was really disappointed. On Snetterton gearing he had calculated a top speed of around 120mph — which seemed to tie in with what other riders thought they were doing on the same circuit. However, just recently we have run several racing machines through the timing lights and it would appear that road racers in general are not going quite as quickly as they think they are.

We decided to raise the gearing but Martin only had a rear sprocket with one less tooth on it. This was fitted and I went out to try again. The soft setting on the rear dampers was causing something of a problem in that the centrifugal force on the banking was compressing the dampers. This created



The original grooved pads have been replaced by recently introduced EBC items.

a weaving motion on the rougher surfaced sections and made for some interesting exits onto the straight. With the new gearing the engine was already past its peak power before the lights, which it passed at 115.2mph. A little further up the road the tacho crept up to its previous state of over-revving and the bike was then doing around 117mph.

Under the right conditions, and with the right gearing, the Martin North racer would probably reach 120mph. But in racing the object of the exercise is to win races and Martin has the gearing sorted just about right as it is. Finally we ran the engine on the dynamometer to find out exactly what power it was giving, and where. The standard engine produces 38bhp @ 7,500rpm and has a big step in the power curve at 5,500rpm. The North racer also takes full throttle up to 5,500rpm but from there the

power comes in with such a bang that we couldn't hold it on the brake. Peak power occurs at the same rpm as the stock engine but leaps to 48.5bhp.

The power output is especially impressive as the engine runs with the stock RD silencers. Martin doesn't want to tell the world exactly what they have done to the engine, but basically the spec is as follows: oil pump disconnected and petroil mixture used. Exhaust port raised and the barrels lifted to advance all port timings. Transfers matched to the crankcase and re-shaped. Intake and exhaust standard but with air cleaner element removed. The cylinder heads have been machined to increase the compression ratio and the squish bands have been re-shaped to match.

A 27 per cent increase in power is good news for the rider, but the clutch isn't so happy about it. On Martin's bike he had squeezed the rubber rings from the unit and squeezed in another plate to increase the pressure. Even so, it was still letting go on the brake at peak power and any further tuning is going to need a better clutch unit.

Next season Martin will be Yamaha mounted once more, but this time on a TZ. The production bike is being sold but the tuning experience gained from it is going to be used on a "special" for 500cc club racing. Without the restrictions imposed by production regulations it is hoped to get even more power from the RD motor with big carbs and expansion chambers, at the same time shedding a lot of weight by chopping the standard frame. If all goes well we will feature this bike at a later date.

By Dave Walker

Serving his road race apprenticeship abroad an RD400 Yamaha Martin North has put in some very quick lap times and given riders of bigger bore machinery a shock.

