

Return of the Long Swinging Kick

FAMILY traditions are strange things. Not long after our marriage my wife and I decided that there was no fun in sitting around the television all over Christmas with dearly beloved but boring relatives, so we found a few kindred souls and went green roads riding in Wales. Each year since then has seen us in some hideout in the Principality, with an often wildly assorted collection of unusual machinery. The only thing the bikes had in common was the cycle of events upon which they operated – they were all four-strokes: 500 Triumph Twins, 200 and 350 singles, an XL350 Honda, an Indian Royal Enfield Bullet, a pre-production BSA250 Victor, a Commando with knobbies, and outfits with BSA, Ariel, Matchless and BMW power. . . all have been enjoyed to the full. What better occasion to test the latest four-stroke cross-country mount from Japan – the XT500? Thank you, Yamaha.

Given the problem of designing a single cylinder four-stroke trail machine, it would be natural to start by looking at what was already on offer, and I suspect that this is exactly what Yamaha did. Picture the scene in the Research and Development Department in far-off Iwata when the BSA B50 Victor was wheeled in. When the amusement had subsided there would be a further burst of hilarity when they were told, 'Make one like that, only better'. Whether or not this actually happened I will leave to you; but here is a brief list of the design similarities:

BSA single cylinder: all alloy vertical engine – two valves in a hemispherical head, exhaust lifter, roller bearing crank and big-end, dry sump, cradle frame with large down tube and tank rail used as oil reservoir, oil filler and dipstick behind steering head, oil outlet at base of down tube protected by sump guard. Small single leading-shoe drum

brakes with cable front and rod rear operation. Swinging arm mounted on needle roller bearings. Large silencer on right-hand side arranged to exhaust alongside rear lamp.

Yamaha – The very same.

See what I mean?

Let's have a close look at the cycle parts. A machine designed for use across country has rather different requirements from a conventional road machine. For some of its life, unless of course it is used only for commuting, it will be immersed in water, peat, mud, and even sea water, and such parts as fork tubes, wheel bearings, swinging arm bearings, sprockets and chain can suffer very quickly unless properly protected. Here, the Yamaha was no better than the BSA, with acres of unprotected chrome on the front forks, and the situation is not helped by the high front mudguard. . . *mudguard* did I say? The law requires fittings 'Sufficient so far as may be practical to catch mud and spray thrown up by the wheels'. Well, I'm sorry, but no way does that front mudguard comply with the regulations. It's like riding behind a brown fountain at any speed over 20 m.p.h., and what doesn't go over the headlamp finds its way over the rider – *all* over the rider – or down between the tank and frame, all among the wiring harness.

The rear chain is the same size as that fitted on B50s, and Manx Nortons, and Vincent Lightnings, so it should cope with the Yamaha's 30 b.h.p. without problems – but poorly guarded as it is, it will need adjusting every day unless conditions are dry and not dusty. There is no provision for a chain oiler – but on a trail machine it is difficult to provide a supply that is adequate in the bog and not too much everywhere else.

As far as the rest of the cycle parts go, Yamaha

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seem to have achieved a very good compromise. The footrests are not so far back nor so high that the rider's knees get cramped, and not so far forward that it becomes difficult to maintain equilibrium when standing on the rests. The steering geometry seems correct, too; like most features of a machine, the steering only becomes noticeable when it isn't right. On the Yamaha, even on packed snow, the rear wheel spent most of the time at the back, and although at the other end of the scale the steering at high speeds showed the vagueness one would expect on trials tyres, it is quite possible to coast downhill at 30 m.p.h. or more with both hands off the bars without difficulty – even if the road is rather winding. . .

That brings us to one of the machine's best features, the brakes. The stability of trials tyres does not permit really fierce braking from high speeds, even on tarmac, so fade did not appear, and apart from this the only vice seemed to be a tendency of the front brake to go on with a bang

first thing after a night of heavy rain. This, at least, should endear it to the hearts of stroke five BMW owners, but it is not good for the image if the first application is on leaf-mould when slowing down for a little old lady.

There are those in trail riding circles who scorn the use of the seat almost as much as others seem to scorn the use of the front wheel, but I am not to be counted in either of these groups. I feel that standing on the rests is almost as 'bad' as footing – that is to say, something to be done only when normal seated progress becomes impossible. I will admit that it is easier standing up – but if I wanted it easy I would keep to the tarmac. On the Yamaha, standing and sitting are both easy – the seat is very comfortable and even after 200 miles in front of a pile of Christmas luggage I would have been quite happy to go on to double the mileage (except that it would have put us a few miles off the coast of Ireland). I suspect that for shorter riders the seat may be a bit on the high

side – but my wife, who claims the same inside leg measurement as Lawrence of Arabia, could manage the machine on fairly easy going. Easy in this context doesn't mean no uphill or down, it means not *across* the camber where it becomes impossible to foot on the downhill side. My 12 stone gives 29½in seated, with the dampers in the middle position.

The bars are rather wide, even in the context of cross-country machinery, at 875mm (34in), and it is not possible to slide the levers inward to avoid damage should the bars come into accidental contact with the ground. When I collected the machine there were signs that some contact had already occurred, and it wasn't long before I, too, had assumed the prone position. The levers are nylon coated – avoiding the nasty grey mess that soils the gloves with aluminium levers – and the attention to detail in the arrangement of the controls is exemplary. The grips themselves are rubber, with rounded ridges and wide flanges at the inner ends, and the switches are as follows:

Left-hand side – Lights on/off, main beam/dip, flashers, horn.

Right-hand side – Engine run/stop, front brakeswitch.

The valve lifter is below the clutch lever, and has its own little bellows gaiter just like those on clutch, brake and throttle cables – those on clutch and brake adjusters are even made in two parts with ears so you can slide them apart and together again. The throttle is the usual Japanese twin-



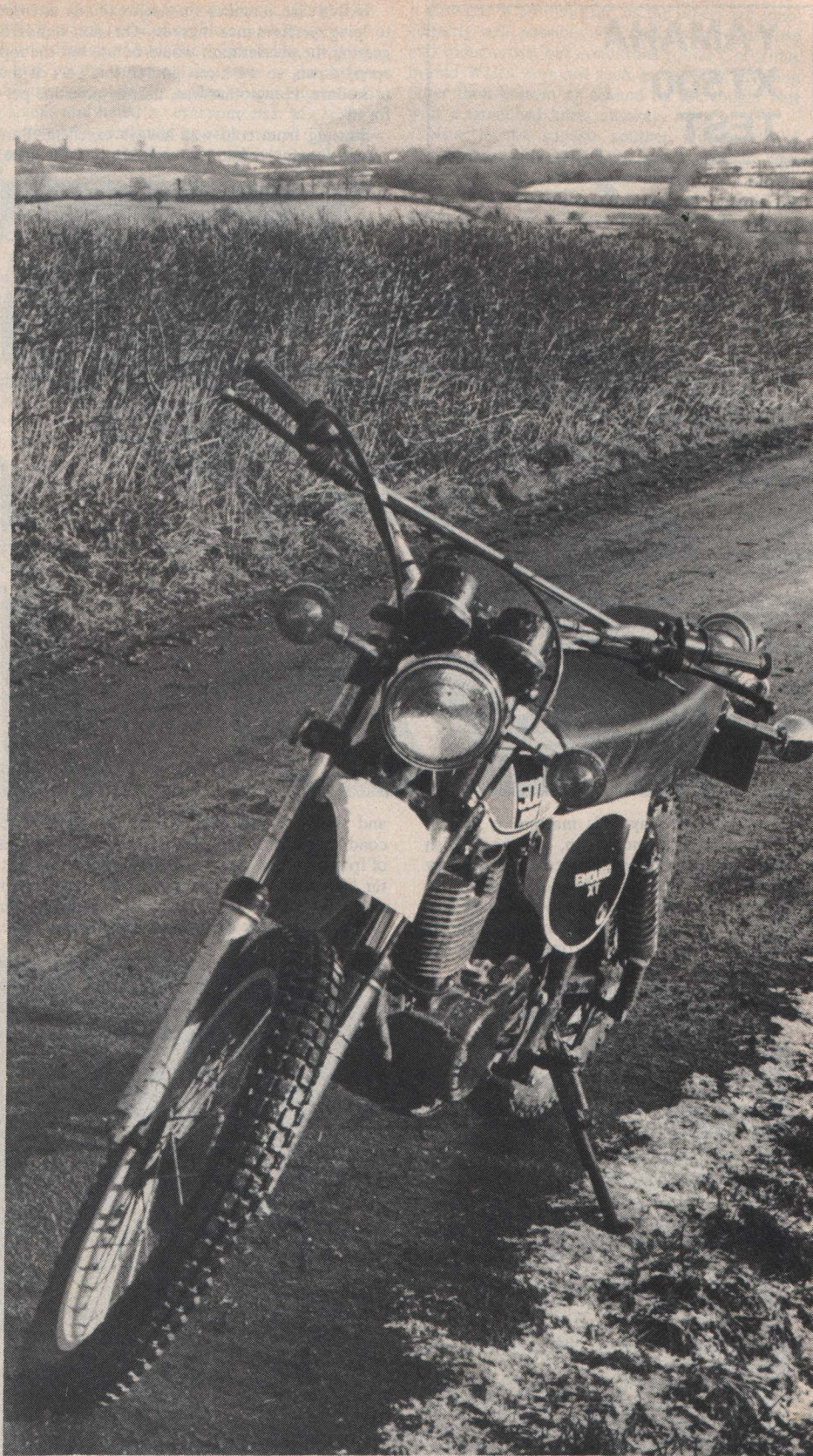
cable affair — with the cables in a big loop forwards of the bar, just waiting to catch in the branches of a thorn bush. Don't say it can't happen. . . . At the other end the cables turn a drum outside the carburettor which carries stops for tickover and fully open positions. Rotation of the drum lifts the slide in the usual Japanese way — making it possible to have a reasonable cable run *and* fit the carburettor neatly under the tank. This is, after all, the tallest motorcycle engine ever to come out of Japan. (I hope none of our readers is in the Japanese Vintage Club, or I might be contradicted here — just for the record I make it 20in from sump plug to head steady.)

The tank holds 8.8 litres, 1 $\frac{7}{8}$ gallons, and on the road there is 100 miles before going on reserve — not really enough for touring, but any more would



make the plot rather heavy first thing in the morning. At a claimed 139 kg (306 lb) net, it is no real lightweight anyway. Net, incidentally, means bone dry — on to that you must add engine oil, oil for the forks and acid for the battery, and petrol, say 25 lb more.

Before I say any more about the actual performance of the machine, let me rap Mitsui Machinery Sales ever so gently over the knuckles. There are several details of the test machine which are non-standard. I know why, it's simply that in their haste to see what sort of machine the XT500 is they were prepared to accept an XT500C in-

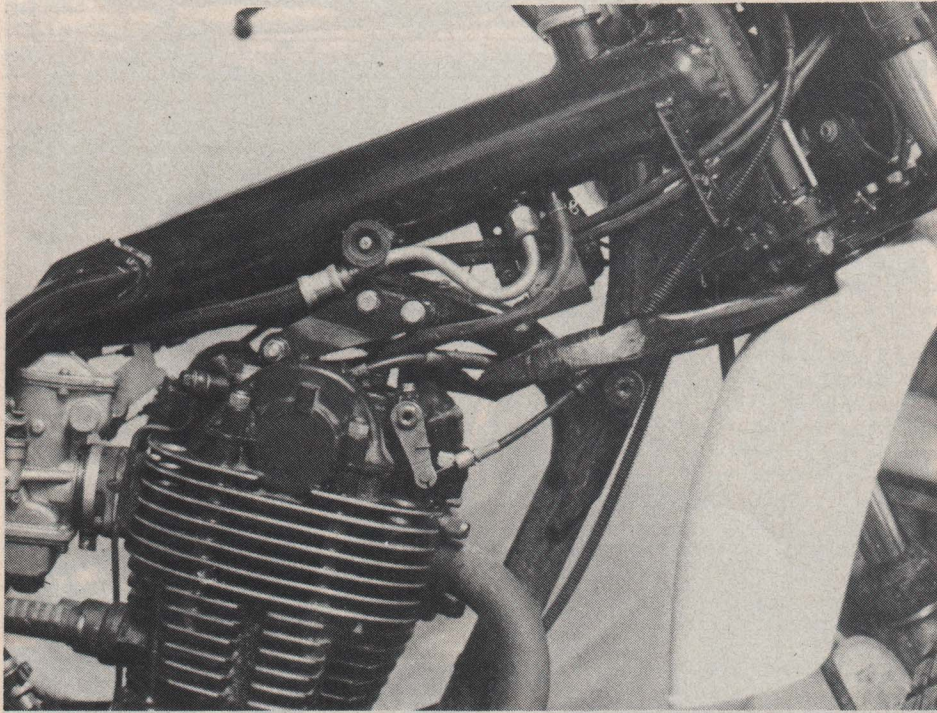


There are those in trail-riding circles who scorn the use of the seat . . . I am not one of them

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In this case, it makes a nonsense of any attempt to give performance figures. On non-standard gearing the acceleration would be up, but the top speed down, so we have ignored this part of the procedure. How, otherwise, did the machine perform?

Starting from cold was always excellent. Part way through the test I wrenched my right knee,

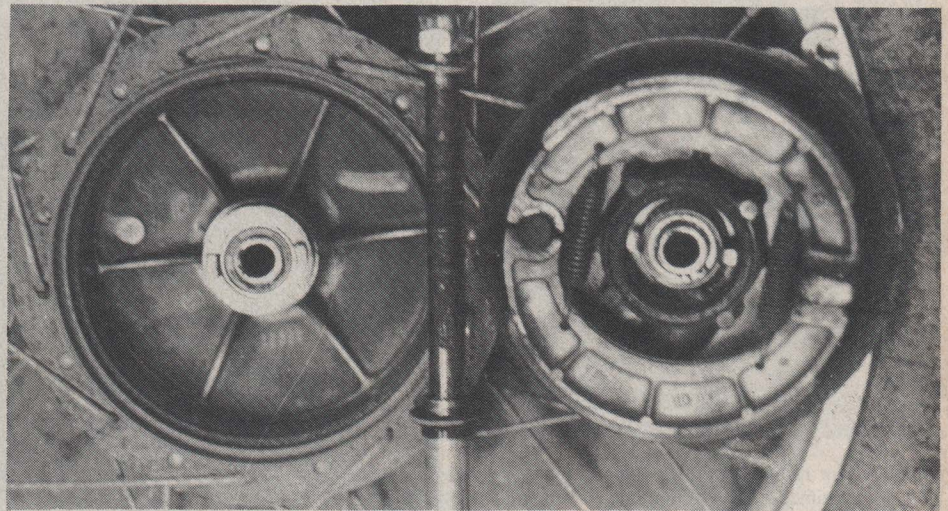


stead – that is to say, this machine is sold in America, Australia and so on, not the English model at all. The differences are not particularly significant, but if they were of no importance there would be no point in having two models distinguished by engine number prefix. The C model is 1E6, the English and European models are 1N5; the main details are:

1. Lower gearing on the test model – 44 teeth on the back sprocket, not 42.
2. Serrated steel footrests; the English model has rubbers.
3. One-piece headlamp unit – with (illegal) right-hand dip; the English model has a separate bulb and the light output is noticeably inferior.
4. The silencer on the test machine has a detachable spark arrestor and angled outlet, the English model is all one piece with a central outlet.
5. American rules insist on little holes in each brake plate to examine for lining wear – these are not drilled for England.
6. The American model has only two ignition switch positions, and no parking lamps – the English version has four positions. According to the workshop manual, the English sidelamp is 3w, which is illegal in any case.
7. The English model doesn't need, and doesn't have, side reflectors on the front forks or on the rear lamp.

Now it is not worth mentioning some of these details, because anyone who is going to use the bike seriously as a green roads machine won't need a sidelamp or side reflectors for instance, but we feel that it is rather naughty to make a test model available *without pointing out that it is non standard.*

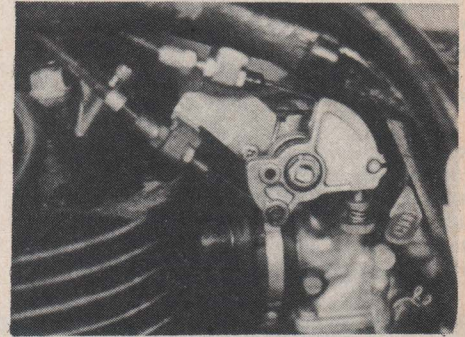
and yet I was still able to start the Yamaha second kick after it had been standing in 10 degrees of frost all night. The choke lever on the carburettor lifts a slide in a separate venturi with its own rich jet – a mini carb in effect, alongside the main one, and thus it is not necessary to have a tickler



button; the starting carburettor is pre-set to give the right, rich mixture. Of course, if you open the main slide when kicking the engine over, the mixture won't be as rich as it ought to be, so habitual throttle blippers are going to have difficulty with this one.

Apart from a rich mixture, all you need to start a cold engine is a decent spark and enough spin to get the newly lit mixture over its first compression. However, if you simply flail away at the

kickstarter you're likely to achieve nothing because the engine will naturally have come to rest just before compression. Even if you boot the lever hard enough to get over this first compression you have an exhaust stroke and an inlet stroke to go before the next compression by which time the momentum has gone and the engine won't go round again. What could happen, and sometimes does on Velocettes and other old-fashioned devices, is that a spark occurs here, and the expanding mixture promptly forces the piston back down the bore, and the kickstart back up to where it started from. The human ankle joint is not designed for this, and Yamaha have cleverly arranged that the kickstarter ratchet is automatically disconnected at the bottom of its stroke. Even if a kick-back does occur when the lever is at the bottom, no harm will come to your anatomy or to the gearbox internals.



So how do you make sure that you start from the right place in the sequence? This is what the mysterious technique is all about – you must start your kick just before the inlet stroke so that there is a cylinder full of nice new mixture, and so that there is enough momentum to bounce over that first compression. To achieve this, push down the kickstarter gently until you feel the resistance of compression. If you are particularly faint-hearted or your ankles are knitted from a particularly

soggy sort of string, you should do this before turning the ignition on. Even on the Yamaha, if a spark *should* occur half-way down the kickstarter will return smartly, but this won't be so bad, for two reasons – firstly you won't have drawn in a proper cylinderful, so the bang will only be a puff, and secondly, your knee will be bent and better able to resist the rebound. Now you are up against compression, let the kickstarter come back up, lift the valve lifter lever, and push the

kickstarter gently down to the bottom (not too hard or it will go too far). Switch on, let the kickstarter back up, take a deep breath, and give the lever a *long swinging kick* – that is, kick it so that if it didn't hit the footrest it would keep going until it was at the top again. Golfers will know what is required if I say "follow through". The magic sequence beloved of City and Guilds examiners will now occur, and in less time than it takes to read all this, you will have become one of the cognoscenti. No longer will Comet owners be able to look down their Girdraulics at you – no longer will the thrill of riding the fastest road drill in the world, the Gold Star, be denied you. You too can start a proper motorbike! Like Grandad used to ride.

Off we go then. Pull in the light clutch, sweet in operation, and into bottom gear with a short pedal movement. First surprise, for a trail machine, is the fairly high bottom gear at $16\frac{1}{2}$ to 1 (top gear is $5\frac{1}{2}$ to 1). The compression ratio is 9 to 1 and with its very light flywheels the motor is not keen on anything less than 2,000 r.p.m. It won't even tick-over at 1,000 r.p.m., needing 1,500 to be reliable, so all the tales you hear of the wonderful bottom end punch of the XT500 can be treated for what they are – romantic ramblings of a generation reared on ring-ding two-strokes rather than Ariels and Matchless. Root of the problem,

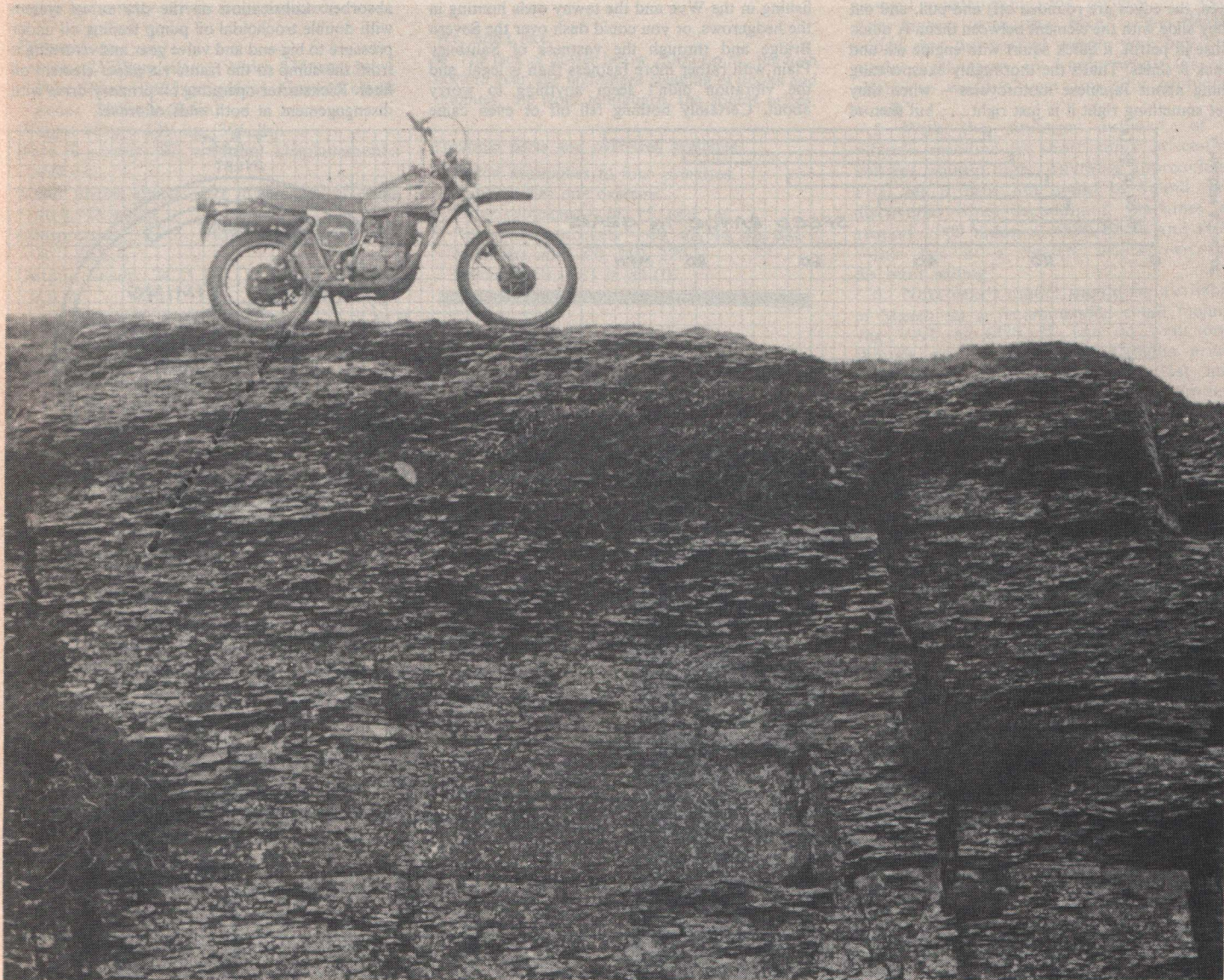
I suspect, is the flywheel magneto. With this system it is not possible to have a wide range of ignition advance without the spark fading away at one end of the scale or the other – the same problem as the energy transfer system beloved of Joe Lucas and hated by everyone else. My suspicion cannot be confirmed by reference to the auto advance in the workshop manual because I can find no reference to the little perisher. It's in the parts list as a "Governor", of all things!

Once the revs are kept above 2,000, not difficult with five gears only moderately spaced, the machine performs very well. The lack of slow-speed capability (2,000 r.p.m. in bottom is about 9 m.p.h.) will not affect desert racers, but it is an embarrassment in green roads riding. There are many such occasions – like following a young lady on a Honda 125 SL down a bramble-filled lane; following a herd of friesians, heavy in milk across a muddy farmyard; starting from rest half-way up a frozen one-in-five grassy bank. Yes, you say, but why did you stop half-way up a grassy bank? Well, there was this gate, see, and these sheep, see, and when the rest of the party had gone on there was a draught, see. . . .

Fortunately there is an excellent clutch – it should be good with 16 friction surfaces – but for starting on a greasy slope the clutch is no use, you have simply got to have a *low* bottom gear.

Enough of bottom gear, all the others are spaced fairly well, possibly with the idea of enduro use and moto cross, but conditions round Christmas in mid Wales were not such as to allow anything other than bottom or second on the rough. Not with a wrenched knee, anyway.

Now let us squash another illusion – the XT500 says ENDURO in letters an inch high along both sides, but it is not an enduro machine. It is too heavy, too low, too civilized entirely for events like the Welsh Two-Day (which for the uninitiated is an event held at the beginning of the tourist season for illegal machines ridden at illegal speeds over footpaths and bridleways); although I have no doubt at all that the bike would stand the pace, the rider would be worn out after the first timed section trying to keep up with the back-markers. After all, if they seriously meant anyone to believe the enduro tag, they wouldn't have put trials tyres on it, would they? Trials tyres by Bridgestone, which are marked 4-ply rating but nonetheless are extremely supple, giving excellent grip on wet surfaces (but not much on frozen grass) and having a remarkable proneness to punctures caused by thorns. I was the only one in the party of six to suffer in this way, once in late afternoon when we managed to keep enough pressure in the front wheel to get home and do our maintenance in the warm, but the rear-wheel



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puncture occurred when about six miles out of Brecon on the way home. Fortunately we were carrying tyre levers and a pump as well as the Yamaha tool kit. Both wheels come out easily, once you have located a milk crate or similar centre-stand substitute. It would be possible to change either tube alone in a bog in a thunderstorm, given a modicum of patience and the luck to drop nothing – but I'll bet that you wouldn't put the split-pin back in either wheel nut; I didn't. It seems that the hole is about a thou smaller than the pin. . . .

Other maintenance on the machine seems fairly easy – the points and tappets couldn't be more conventional, and the air filter is an absolute gem. Off with the side panel, using a twopenny piece, out with the screwdriver, three little metric 2 BA screws (you know what I mean) and there before you is the air filter, sandwiched between two bits of tin. Now here's the clever bit, the bit that BSA would never have got right in a 100 years: you just grasp the two bits of tin by the slots provided (yes, the edges are rounded off) and pull, and out they slide with the element between them. A quick rinse in petrol, a quick squirt with engine oil, and back it slides. That's the thoroughly exasperating thing about Japanese motorcycles – when they get something right it is just right . . . but then of

course they get some of the most important things completely wrong. With the British bikes, they got the most important bits completely right, but the details, well. . . .

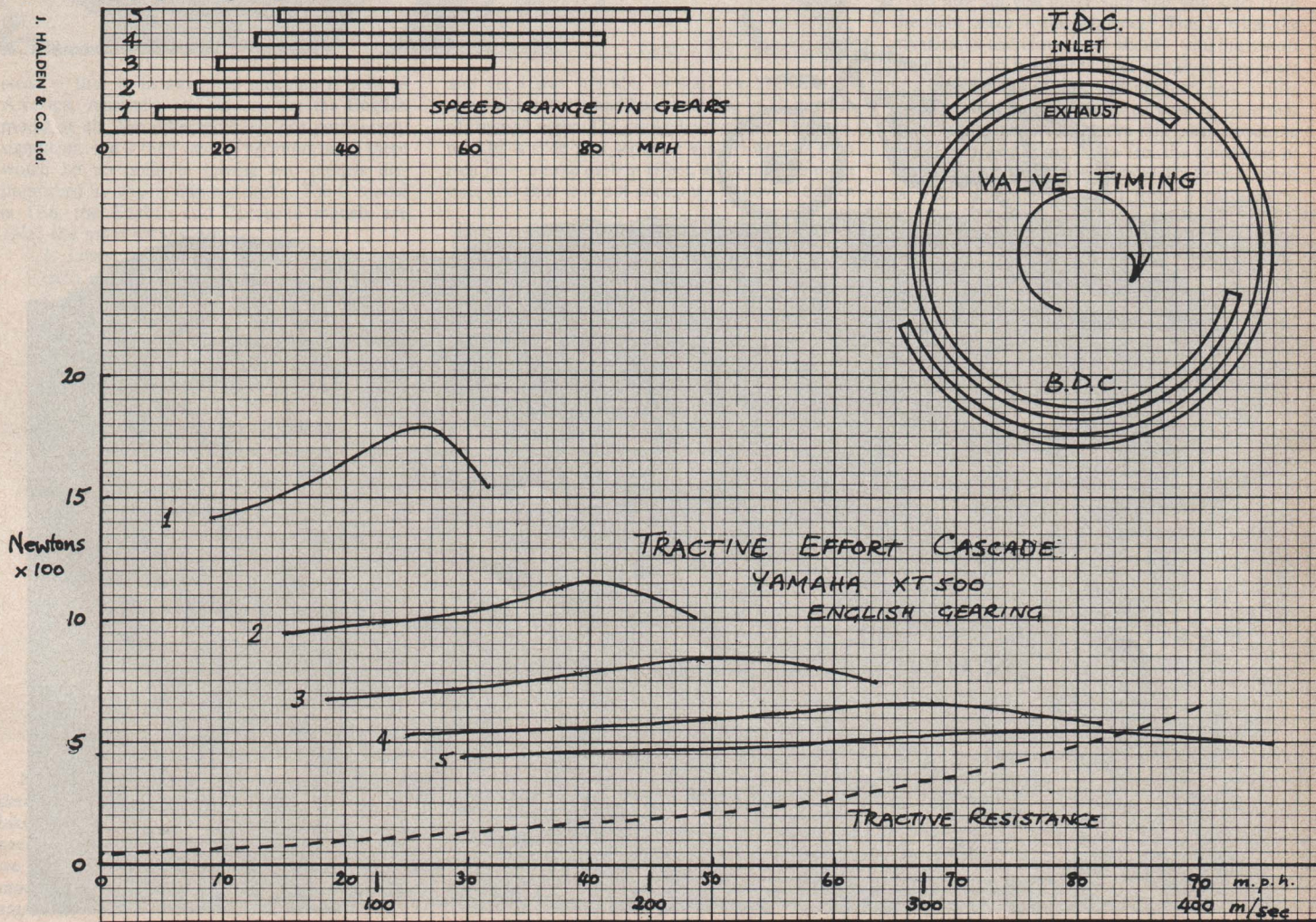
Major work on the machine was not needed during the test, but looking at the bike, the spares list, and the workshop manual, it all seems fairly simple. The engine to frame attachments are well thought out – when you make as many motorcycles a minute as the Japanese do, everything *has* to fall together. The engine comes out to the right side, which will encourage anyone who, like me, has thoughts of green lanes sidecars. Once you get inside the motor, you will be astonished how simple it is. First surprise for the champions of British industry is the vertically split crankcase. I well remember Hap Spoons insisting that the Commando leaks oil because of the vertical crankcase joint – well Yamaha have proved him wrong, and in a big four-stroke, too. Not a drop of oil leaked from the motor during the test, not even when the wheels were the highest bit (oops). The other thing about big four-strokes, singles anyway, is vibration. No one could pretend the Yamaha doesn't vibrate but by accident or design, and I suspect the latter, there is no point in the operating range where the vibration is particularly noticeable. It simply doesn't intrude on the rider's enjoyment of the machine. You could poodle along at 2,500 in fourth watching the herons fishing in the Wye and the tawny owls hunting in the hedgerows, or you could dash over the Severn Bridge and through the vastness of Salisbury Plain with rather more fastness than is legal, and the vibration didn't seem anything to worry about. Certainly nothing fell off or even came

loose, which is more than you could say for the big singles we have known in the past, and the little ones too for that matter.

All in all, then, a pretty good motorcycle, equally at home in the Brecon Beacons and the Brompton Road, with a few important vices, but many important virtues. The most old-fashioned modern bike on the market, and the most modern big single yet. Keep at it Yamaha, you're nearly there.

SPECIFICATION YAMAHA XT500

Engine Unit. Single-cylinder air-cooled four-stroke, with aluminium alloy crankcases, head and barrel. Oversquare dimensions (87 bore x 84 stroke = 499 c.c.) and high compression ratio (9:1). Hemispherical head with single poppet valves operated by rockers from central chain-driven overhead camshaft carried in roller bearings. Lightly domed, very short semi-slipper piston, with two compression and one oil ring, working in an iron liner. Roller bearing big-end with pressed in crankpin, crankshaft mounted in two ball bearings. Primary drive by plain spur gears with shock absorber in multiplate clutch driving all indirect crossover constant mesh five-speed gearbox. Gear changing by positive stop and selector drum, and output by single row roller chain, to rear sprocket with second shock absorber. Lubrication on the dry sump system with double trochoidal oil pump feeding oil under pressure to big-end and valve gear and returning it from the sump to the frame via paper element oil filter. Kickstarter operating on primary drive with disengagement at both ends of travel.



Electrical. Ignition and lighting by flywheel generator. Ignition on energy transfer system with auto-advance unit separately driven by half-time gear operating tungsten contacts. Current for rear lamp, horn, flashers and brake lamp from six-volt lead acid battery, with headlamp fed directly from generator coils. Half-wave rectifier and voltage regulator ensure that the battery is charged. Warning lights fitted for neutral, flashers, and headlamp main beam.

Cycle Parts. Cradle frame used as oil reservoir, with cup and cone steering head bearings, hydraulically damped telescopic forks, and swinging arm mounted on needle roller bearings sprung by pressurized gas-oil units. Front (21in) and rear (18in) wheels with ball bearing aluminium alloy hubs and integral single-leading-shoe brakes; operated by single cable and rod operated cams. Wire spokes laced to aluminium alloy rims bearing Bridgestone trials tyres with security bolts. Small steel saddle tank holding almost two gallons, feeding 34mm. slide-type Mikuni carburettor. Prop stand on left-hand side. Side panels cover air filter, tool roll, battery, and spares pouch. Top yoke of the forks carries rubber mounted wide-braced bars with light alloy switchgear and levers, including valve lifter; speedometer with trip driven by front wheel, and engine tachometer driven from cambox.

Dimensions

Length: 2170mm (85in). Width 875mm (34in).

Wheelbase: 1425mm (56in). Ground clearance: 215mm (8.5in).

Weight (dry): 139 kg (306 lb).

Bore & stroke: 87 x 84mm. Displacement: 499 c.c.

Mean piston speed: 109 m/sec (357.5ft/sec) at 6,500 r.p.m.

Compression: 9.0:1. Valve timing 44°, 68°, 76°, 36°.

Output power: 24.25 kw (32.5 h.p.) at 6,500 r.p.m.

Output torque: 41.2 Nm (29.7 lb/ft) at 5,250 r.p.m.

Gearing: primary 2.566:1; secondary 2.625:1; Internal 2.357, 1.556, 1.190, 0.917, 0.778:1; Overall 16, 10.5, 8, 6.2, 5.25:1.

Fuel capacity: 8.8 litres (1.9 Imp. galls).

Consumption, overall 4.7 litres/100 km (60 miles/gall).

Oil capacity: 2.2 litres (3.8 Imp pints).

Consumption, overall: 0.35 litres/1,000 km (1,000 miles/pint).

Rake: 30.5°. Trail 135mm (5.3in) (mean).

Front wheel: 21 x 1.60 (WM1). Tyre: 3.00 x 21 Trials.

Rear wheel: 18 x 1.85 (WM2). Tyre 4.00 x 18 Trials.

Battery: 6 volt, 6 amp hours.

Generator: 6 volt, 56 watt with separate ignition coil.

Spark plug: 14mm long reach extended nose.

TEST SUMMARY

We liked:

- The concept, the economy, the handling, the attention to detail, the styling, the easy starting, the comfortable ride, the brakes which worked, wet or dry, the oil tightness.

We didn't like:

- The lack of power below 2,000 r.p.m., the high bottom gear, the nightmare cleaning of nooks and crannies, the front mudguard, the spares prices.

Optional parts and oversizes available:

Piston assemblies to four oversizes.

Valve guides one oversize.

Drive sprockets - 14, 15, and 16t.

Rear-wheel sprockets - 40, 42, 44, 46, 48t.

Main jets nos. 200, 210, 220.

Special tools - 21 in all (!).

YAMAHA SPARES

THERE has been a consistent rumour that Yamaha spares are very difficult to get, and as part of this month's XT500 Test we have carried out a minor investigation. Our findings were these:

1. Yamaha spares are very expensive.

2. Very few dealers carry any real stock of Yamaha spares—one very large dealer claimed only to carry what he called "Service Items", and this we were unable to interpret because the spares department would not answer the phone.

3. The few dealers who do reckon to carry spares—Brockliss and Roy Smith, for example, complained that Yamaha do seem to import the machines some time before the spares are available. With the model in question, oil filter elements were not available for three months after the first bikes were sold. Now, they said, the spares problem had eased. Now, they can't get the machines. Allan Robinson tells us that changes in the spares situation are in hand. Not before time.

4. The XT500 does seem a most reliable machine. Many dealers who have sold numbers of the model said "We don't know if Yamaha have got the spares because we haven't needed any—the owners all seem very happy with the bike." One dealer added that the sort of people who buy this model "all seem to know what it's all about, so we don't get any silly problems at all."

5. With the situation outlined, of a reliable machine in short supply, discounts are not usually high. Anything approaching £100 off is rare, but could be found. We discovered three secondhand machines at around 1,000 miles, at £620, £650, and £699—this last at a dealers well-known for discount selling!

6. Next year's model should be available in March, at a recommended retail including VAT of £770. If you do want one, though, get it now because Yamaha prices are pegged only until March 31st and supplies of this model are strictly limited, and not all dealers will get them in time.

