

YAMS WITH POMEGRANATES



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EX AFRICA semper aliquid novi—but not even the studious curiosity of Pliny the Elder could have encompassed the idea of the novelty being specially imported for the occasion, least of all from Japan. Yet it was in the dark continent—albeit in one of its brightest corners—that Yamaha chose to introduce four or five dozen European journalists to their 1977 novelties: three road 'bikes, the 250 and 360 twins and the 750 triple, and three off-highway singles, the DT250 and 400 and the scarcely new XT500.

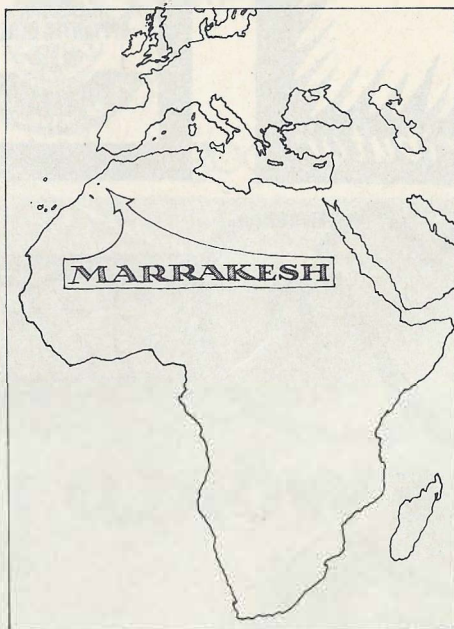
Why Morocco? It was fairly neutral ground, even for the French contingent; it offered some excellent roads, beautiful country, a kindly climate, and freedom from speed limits outside the towns. It also had its drawbacks, but we were to discover these later. It was not clear as we flew down (in fact it was obscured by talk of unexpected headwinds) that the reason for our time-consuming refuelling stops in France and Spain was that the chartered Martinair crew were reluctant to refuel in Morocco. Had we known, we might have recognized this as an omen. . . .

The auguries looked promising when we arrived at Marrakesh, parading in to a noisy and colourful welcome at the Club Méditerranée, where all the 'bikes were lit by flare and floodlight around the pool. They all looked very clean and handsome (which was more than we did after 12 hours of travelling) and the prospect of being first to ride them on the morrow was quite inviting, even though we should have to start from somewhere else.

The Club, as it calls itself, is a sort of superior French Butlins. At Marrakesh it occupies two sites, a domestic one within the old walled city, and a playground equipped to cultivate the glad animal activity and grateful intellectual apathy so dear to the holidaymaker, a few miles without. It was the latter that would be our riding centre; and it was probably just as well that we should spend an instructive quarter hour in a 'bus being driven from one site to the other before imposing ourselves upon the roads of Morocco. It was a valuable quarter of an hour in which to grow accustomed to the traffic.

Turmoil might be a better word—or anarchy, or sublime carelessness. Consistent donkeys, constant pedal cycles, and cantankerous mopeds and ultra-lightweight motorcycles, all in teeming multitudes went teetering

around the town, any fortuitous gaps in their ranks being plugged by beaten-up old French cars and the occasional superannuated American supertaxi, with all the nooks and crannies occupied by pedestrians either crossing the road, going for a walk, or wondering what to do next. Nobody hesitates for a moment before changing course, nobody signals, nobody ever gets out of anybody's way, and nobody ever seems to get hurt: and this is not as you might suppose due to any particular prowess at the wheel or in the saddle, but rather to the fact that nobody goes very quickly, nobody expects anybody's brakes to work, and everybody is fatalistically convinced by the Koran's teaching that all things are ordained from the beginning. If we needed any further display of the indigenes' level of road-going accomplishment, there was the fact that our 'bus driver never changed gear if he could help it, and never once in six days of commuting undertook to engage anything higher than second gear. It was



an instructive prelude to our riding.

I am not sure why the British group was the first to be sent off on the road 'bikes around the 60 miles route that had been mapped and stuck to the tank tops. Maybe it was because of the importance of the big 750: after the USA, Great Britain is the biggest market for Japanese motorcycles of more than 450 c.c. displacement, taking 55 per cent more than Australia, 198 per cent more than Germany, 263 per cent more than Holland, and 368 per cent more than France. Maybe it was because some of the English riders' pupils had noticeably contracted soon after their arrival, presumably giving them needle-sharp vision as an aid to navigation—but, if so, the idea misfired, for it transpired that most of the group were so busy racing each other that they got themselves thoroughly lost and arrived back very late, having in

several cases run out of petrol as well as of excuses. Some of the excuses were valid, however, as I found in my first foray on the XS360: preferring always to ride alone, I gave the others the slip at the very beginning and was thereafter free to acquaint myself with the Yamaha, and with the troubles it developed, in reasonable privacy.

The most interesting feature of this machine, as of its two new stablemates, is that it is a four-stroke, despite Yamaha's known predilection for two-strokes. It is generally accepted that the Japanese have read the writing on the wall in the form of the stringent regulations to be imposed in 1980 by the American Environmental Protection Agency. These American graffiti, despite the evidence that many other countries are following the US lead so that emission and noise controls will create a challenge that manufacturers must meet world-wide, need not be interpreted as sounding the death-knell of the two-stroke engine. This much was made clear by the president of the Yamaha Motor Co., Mr. Koike, in Amsterdam just a few days earlier: he insisted that the two-stroke engine was very much alive. The new four-strokes, and the current two and four-stroke Yamahas, have already qualified under the controls imposed for 1978, and will have no trouble, said Mr. Koike, meeting later requirements: but he could see possible difficulties in the long-term future, which is why the four-stroke range has been expanded.

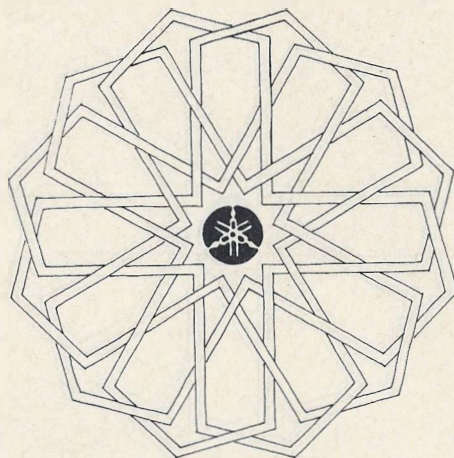
The two lightweight twins which are to be Yamaha's harbingers of this new four-stroke era are pleasant enough machines, prettily finished and properly proportioned although, with a wheelbase of only 52½ in, they are rather small in absolute terms. This has the welcome corollary of making them light in weight, the maker's figure being 351 lb. In the case of the 360, which develops 34 b.h.p. at 8,500 r.p.m. and feeds it through a delicious six-speed gearbox, this should result in a reasonably lively performance; and since this output has been achieved on a modest 8.7:1 compression ratio, and with gentle cams of only 264 degrees duration and 50 degrees overlap, together with some tolerably effective silencing, it should also be reasonably tractable. In fact as a general-purpose potterer and not too ambitious tourer, I would judge it superior to the Kawasaki 400 twin, being livelier, better balanced, and almost devoid of snags apart from a tendency for the gearchange to grow stiffer once the transmission was thoroughly hot.

This much was not at first apparent, for the 360 was plagued by misfiring that prevented it from achieving anything like the performance to be expected of it. When the others all finally turned up with similar symptoms, it quickly became evident that the trouble was in the fuel: Moroccan premium grade is of 94 octane rating, but it is not all unlikely that some of the more unscrupulous vendors mix it with cheaper 84 octane regular grade, and are not too fussy about what else goes into the mixture. There was dirt in the carburettors, in the taps and of course in the tanks, and all the

fuel systems had to be cleaned out, in a flurry of activity by some of the keen and hard-working Yamaha mechanics from the HQ in Amsterdam, while fresh supplies of more reliable petrol were picked up from one of the filling stations on the main road, at the far end of a mile-long dirt track.

That track was to make its own contribution to the week's problems. Compounded of rock, sand, sharp stones and potholes in roughly equal proportions, it not only provided a handy suspension test but also played havoc with the tyres—as a result of which I can tell you that if removing the rear wheel from one of the twins is difficult, getting it back again is a jolly sight worse.

All this had a fairly chaotic effect upon the schedule that had been planned to allow each national group its turn with the 'bikes. The variety of national characteristics among the guests did not make it any easier, but it did provide interesting matter for incidental study. Most of the British were dirty and dishevelled roughnecks, but at least they were keen to ride and race hard whenever they could, whereas at least one of the almost equally disreputable-looking Scandinavians was believed never to have dragged himself far enough from the bar at the domestic site ever to ride any of the motorcycles. The Italians contrived to find girls to take as passengers; the French always turned up late; the Germans on the other hand were thrown into consternation if they were due to ride at eleven and the 'bikes were not all ready by one minute past. Fashions in riding gear were equally fascinating, the Germans in particular being beautifully turned out in cleverly built and



When a road
crosses a river
in Morocco,
suddenly the
road is
not so good ...

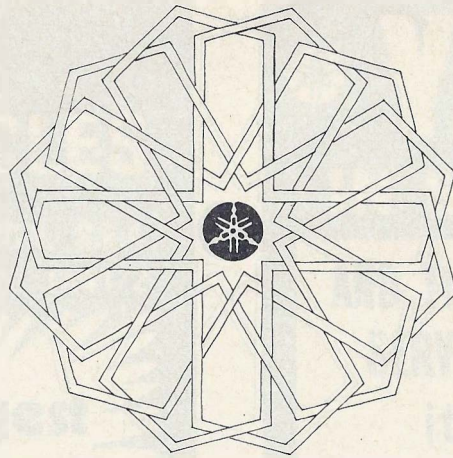
nicely styled leathers of evident quality—but they spoiled the image because, as soon as they were astride their machines, they became as juvenile as all the others. It was a pitiful sight, every time a posse gathered to move away : here was the assembled expertise of Europe trying to start engines on open throttles, or blipping engines furiously as though they had never encountered one capable of maintaining a steady tick-over, carrying cameras loosely around their necks, slipping clutches absurdly and unnecessarily, and generally behaving like a lot of grey-haired (or, in the case of the British, grey-faced) teenagers.

It was, and could again become, an interesting subject; but it was not the object of the exercise, which was to ride the new Yamahas. This had to be arranged by turning up at all sorts of odd hours, such as seven in the morning, or half an hour before sunset, to take out whatever might be found available in properly working extracurricular order. Thus in due course I managed to ride them all, and the 360 when chiming clearly on both its over-square cylinders (bore and stroke are 66 and 52.4mm) emerged as a reasonably crisp device that would pull strongly, evenly and without complaint from 3,000 r.p.m. up to its red line at 9,500. By holding it up to this point in fifth gear, crouching low, tucking in elbows, knees and toes, a quick clutchless snick into sixth brought the revs down to the peak of the power curve, and on a long dead-straight road it was possible to see an indicated 96 m.p.h.

In almost all respects the XS250 was identical to the 360. It looks the same, it sounds the



same, it stops as well (the front disc is pleasantly progressive in its response), and it has the same surprisingly good ride over anything but the worst of what we would know as country lane bumps taken at high speed, when it tended to bounce somewhat. Having rather less tractive effort, the 250 did not suffer the occasional front-end lightness of the 360; on the other hand it had a more peaky power delivery, making it essential to keep the revs very high if anything approaching maximum performance was to be achieved. The peak-power b.m.e.p. of the 360 is 136 lb sq in compared with 157 at peak torque, and the latter is developed at 87 per cent of the crankshaft speed of the former. The 250 engine differs dimensionally in its bore and in having a lower compression ratio, only 7.6 : 1 : the effect of these geometrical changes on its breathing is such as to make the b.m.e.p. higher (149 at peak power, 166 at peak torque) and to bring the corresponding crankshaft speeds closer together : peak torque is at 8,550 r.p.m., 90 per cent of the 9,500 at which peak power is developed, b.m.e.p. and power then dropping sharply towards the red line at 10,000. There is no doubt that the six-speed gearbox is absolutely necessary if these power characteristics are to be translated into useful performance : the ratio steps from the top to the bottom of the



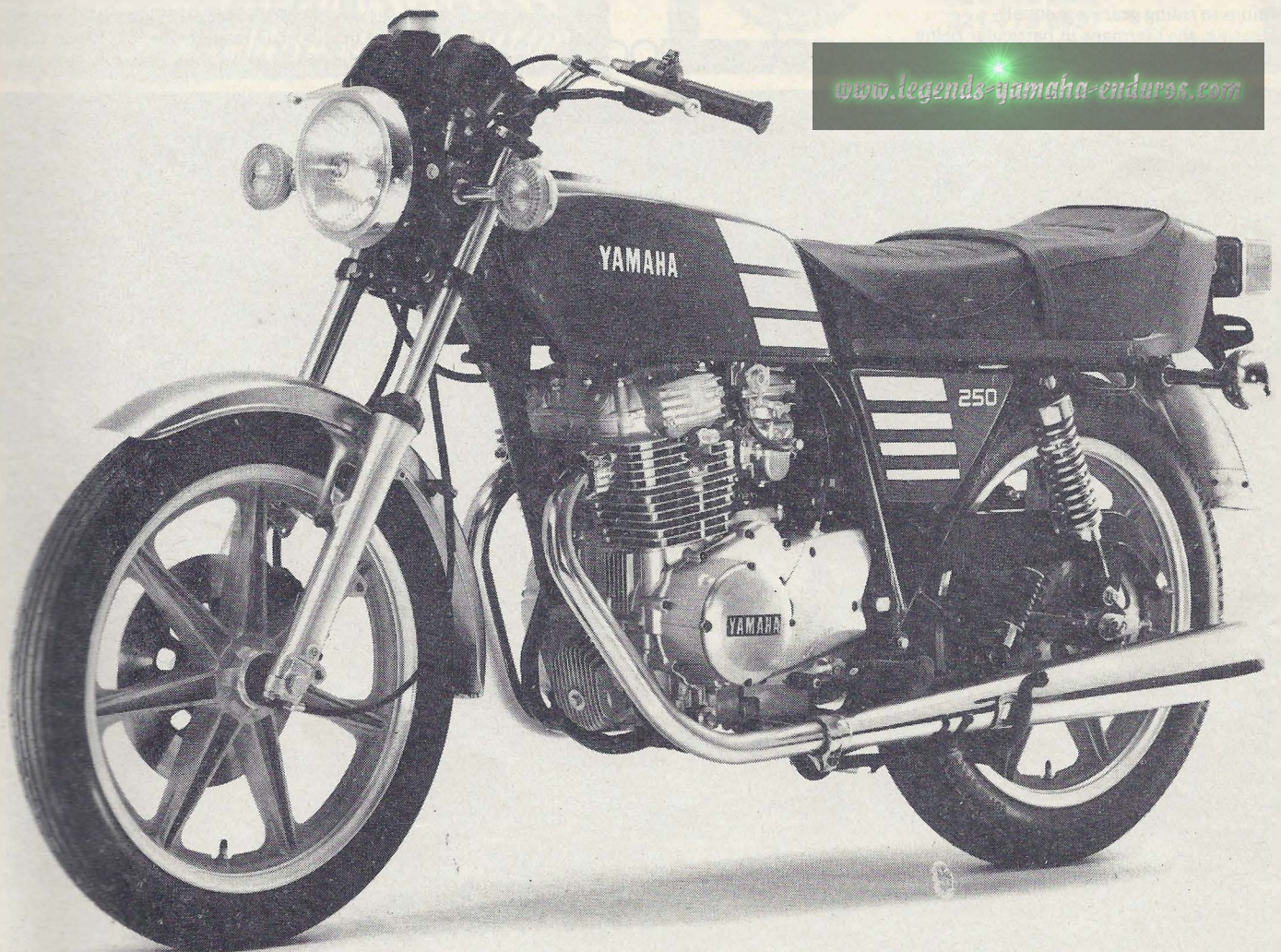
gearbox are 1.11, 1.169, 1.228, 1.287 and 1.406 : 1, so one has to be very punctilious indeed about the precise timing of gear changes, as well as about the care with which one minimises frontal area, if there is to be any hope of seeing 90 m.p.h. on the clock.

No such pettifoggling details impair the pleasure of riding the XS750. This engine is a real steamer, conservatively red-lined at 7,500 which corresponds with the peak of the power curve at rather more than 64 b.h.p. and 147 lb/sq. in. b.m.e.p. At only 80 per cent of

those revs, the b.m.e.p. reaches its maximum of 153, but the engine will pull from 2,000 r.p.m. if required. It is a lovely engine, with three 68 x 68mm cylinders, an 8.5 : 1 compression ratio, and twin overhead camshafts. It has rather a lot of bicycle to propel, for the weight is 505 lb, and it needs to develop plenty of power because it loses a good 10 per cent through the five successive meshings of an uncommonly complex, not to say sophisticated, transmission system.

Consumptive of power it may be, but this transmission is more boon than bane. A Morse Hy-Vo chain runs the first stage from the right-hand end of the crankshaft to the clutch with its integral damper. The driven plates supply the coaxial input shaft of the five-speed gearbox, the output shaft of which is geared to a layshaft, on the left end of which is a bevel that translates the motion through 90 degrees to the crown wheel at the nose of the shaft drive assembly. The articulation of this assembly, coaxial with the pivots of the fork legs, features an homokinetic universal joint of the Rzeppa ball type, which first became familiar in Britain in the transmission of the BMC Mini although it was invented donkeys' years earlier. At the tail of the shaft is another pair of bevels, and what is left after the long and tortuous journey is fed into the rear hub.

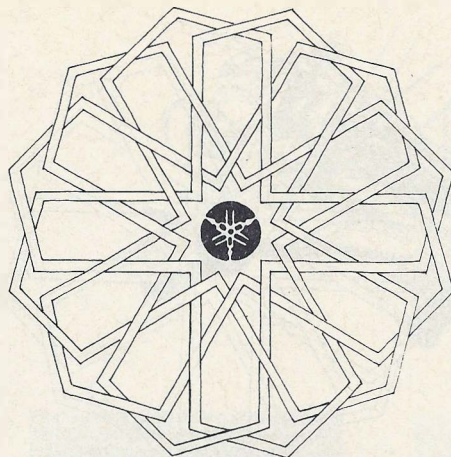
The 10 per cent that disappears on the way



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is all presumably shed as heat, about 5 kw of it. It sounds a lot in terms of electric toasters, but it is not excessive by the standards of powerful motorcycles. The BMW and the Guzzi are presumably more efficient, since their in-line transmissions comprise fewer transfers and right angles; but a representative chain-driven heavyweight, even though its drive-line negotiates no right angles, will be just as consumptive, the transmission efficiency of the 750 Honda for example being no higher than 90 per cent. At any rate, the power fed into the Yamaha's rear wheel is enough to meet its avowed purpose. All the 750s in Morocco had been checked out in Holland after their preparatory running-in, and had been driven up to an indicated 200 km/h., which can be rounded off to 124 m.p.h.

This involves running the rev-counter needle into the red sector, something which is against my religion even when the 'bike is a test machine, repairable at the manufacturer's expense. In fact it transpired from subsequent discussion, confirmed by examination of the factory dynamometer curves, that the engine is safe for another 1,000 r.p.m. beyond that, although the volumetric efficiency and consequently the b.m.e.p. fall so rapidly between 7,500 and 8,500 that the torque curve droops to the level from which it began to climb at 3,000. What is



perhaps more to the point is that the engine is mechanically perfectly safe up to this speed, even though there may be little to be gained from using it. Nevertheless the nagging thought remained that, had I run my specimens up to 8,500 in fourth, the 1 : 1.145 reduction accompanying a change into fifth would have left the engine at 7,500 with perhaps enough urge to carry it a little further. I doubt it, however, and surely the idea is academic since no owner having paid for his own 750 would run it into the red except under extreme

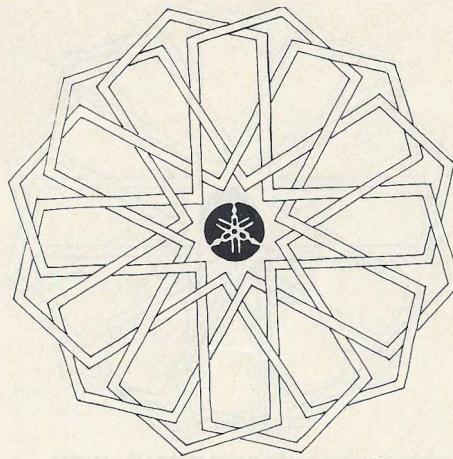
provocation. It is sufficient that it will readily reach it : the two examples of the 750 that I tried, after they had been properly sluiced and decontaminated and fuelled with something approximating to our 2-star petrol, both reached the red; one indicating 116 and the other 119 m.p.h.

No great reliance should be placed on these figures, nor on the others adduced in favour of the 250 and 350 twins : the instruments of the Yamahas (rev counters as well as speedometers) are not expected to satisfy particularly close tolerances, and indeed in some parts of the range are sometimes as much as 10 per cent in error. Even had the clocks of my test machines been perfectly accurate, there remain other possible explanations for the disparities in performance. The 750s were not all identical internally, although broadly they comply with the manufacturer's European specification, which implies a considerably crisper state of tune than is enjoyed by American customers. In the face of the present disparities in regulations governing noise, fuel quality, speed, insurance and the Lord knows what else besides, alterations are made for the different countries of Europe. Minor changes in the overall transmission ratio are achieved by changing the transfer pinions between the gearbox output shaft and the countershaft; minor



changes in engine tune are achieved by adjusting ignition curves, valve timing, and carburation. Nor is the 750 the only machine thus affected. The 360 in particular is being exploited by Yamaha as a means of strengthening its position on the German market, where new insurance rates are based not on engine displacement but on power. The borderline between cheap insurance and expensive has been set by the ever-active authorities at 27 PS; and Yamaha expect that, with attention no longer focussed on engine size, German customers will begin to cultivate motorcycles with relatively large engines rather than small ones giving the same power. Big woolly engines are always rather nice to have, and this change in emphasis will also help to restore the four-stroke to favour.

What Yamaha are doing for Germany is therefore to de-tune the XS360 (mainly by a change of camshaft keeping the same lift but modifying the timing) so that it will give only 27 PS, no more than is available from the sibling 250. So seriously is this marketing ploy being pursued, that the 360 will not be available on the British market until late in 1977. The 250 will arrive much sooner than that, but it will not look as pretty and expensive as the samples I saw in Morocco. The initial batch will have wire-spoked wheels, not the pretty seven-spoked cast aluminium alloy ones that were common to the whole range of new road machines. Again it will be late in the year before British customers can enjoy these Yamahas at their best (although the same indignity will not be suffered by customers for the 750), but although the cast wheels are to be preferred on most counts they may prove to be a mixed blessing. I noticed that Yamaha were using simple balance-weights held on to the central web of these wheels by steel spring clips, and it emerged from my questioning that they had given no thought to the problems of galvanic corrosion that this unsuitable juxtaposition of metals could cause. Properly insulated adhesive weights would be better, but the design of the wheels would make them difficult to fit.



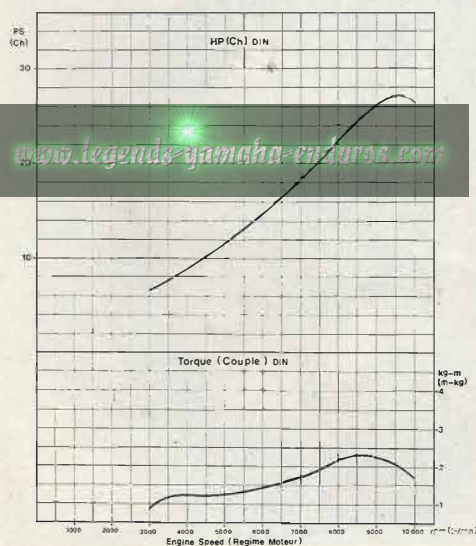
It is only through little details such as this that one realizes that, for all its magnificence, the 750 Yamaha is not an elaborate and expensive extravaganza but a mass-producer's cost-effective commercial proposition. For example Yamaha do not polish the whole of the gear lever before plating it, only the easy bits. Hardly anybody will notice, and the lever did not look as though it would break off at the roots, so this and other items of similar nature are matters for comment rather than for censure. The thing is only going to cost about £1,300 in Britain, just about half the price of a BMW R100RS; and anybody who seldom wants to go faster than 90 or 100 m.p.h. will find it a lot more than half as good. That is to say, it is probably the finest unfaired touring motorcycle available here, and the finest motorcycle of its size.

A tourer it manifestly is, 124 m.p.h. or not. There is not a hint anywhere about it of the rabid pseudo-racer, even though its three disc brakes are as impressive to look at as they are to use. There is nothing mettlesome about its manners or nasty about its noise: early

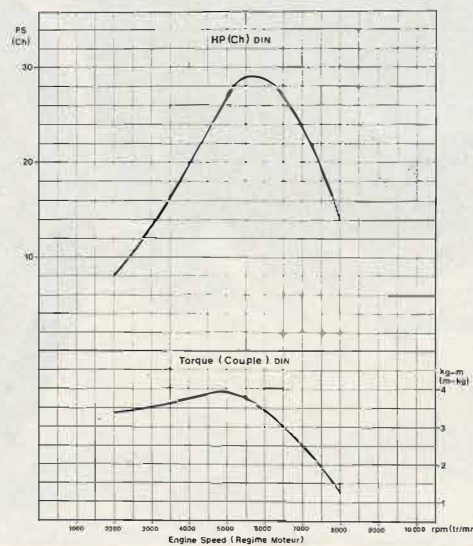
examples were put on show with a three-into-one exhaust system, but now it has grown another silencer. There is nothing sporting about the riding position, but it is perfectly comfortable up to 90 or so, with the footrests not too far forward, the handlebars not too high in relation to the seat, and the seat itself evidently low enough to accept one or two journalists who did not look as though they had grown far enough out of the ground to be healthy. The tallest rider there was myself, and I was happy enough on it, though I would have liked to try narrower and slightly lower handlebars for improved comfort at high speeds; nevertheless those fitted were compact enough for good control.

Not that the 750 is a machine with which one must wrestle. The first one I rode was only assayed on straight, smooth, and very fast roads, and at speeds over 100 m.p.h. I was getting down to it for the sake of my own comfort as much as for determining how fast the thing would go. The second specimen I was able to take on a much more ambitious and informative route—not the one prescribed, which was pleasant but rather time-wasting, but one of my own choice heading south-east from Marrakesh towards the high Atlas mountains, ranging beautiful and snow-topped in the clear but distant air. There is a pass leading over them towards the open Sahara, and it was only after beginning to climb up through the foothills that I could begin to appreciate just how good this cruiserweight could be. The road on this Col de Trichka was really very good, far better than I had expected from a place so thinly populated and so little traversed. It was comfortably wide, carefully graded, consistent in its curvatures and offered not only the gorgeous vistas that might be what makes a motorcycling tour worthwhile, but also generally the reliable surface that can do such a lot to make it pleasant. Just occasionally, however, there were bumpy stretches, sometimes right on the apex of a bend, sometimes at the exit or entry: but they never made the slightest difference. No matter how far the 750 was banked over, no matter how late the braking or early the acceleration, it ironed out the bumps with imperturbable

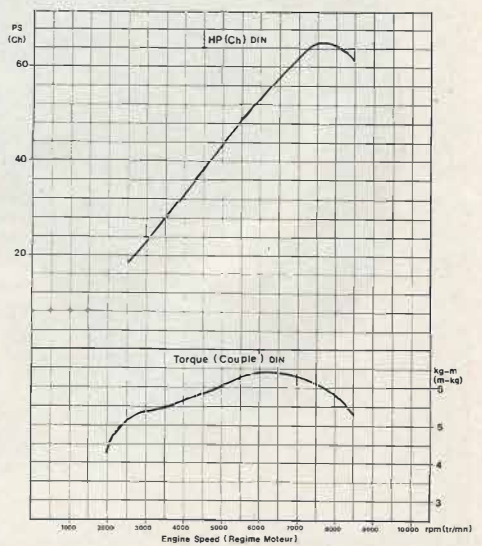
XS250



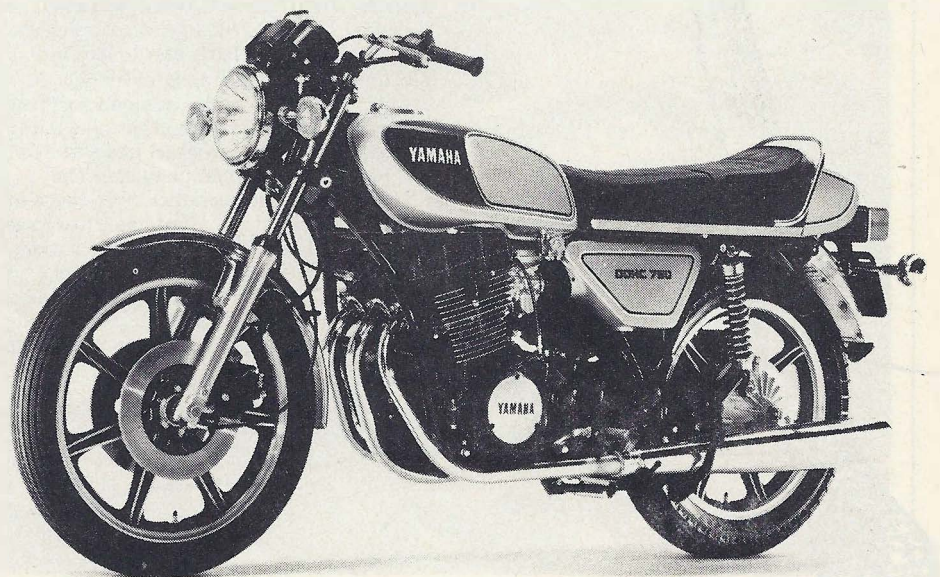
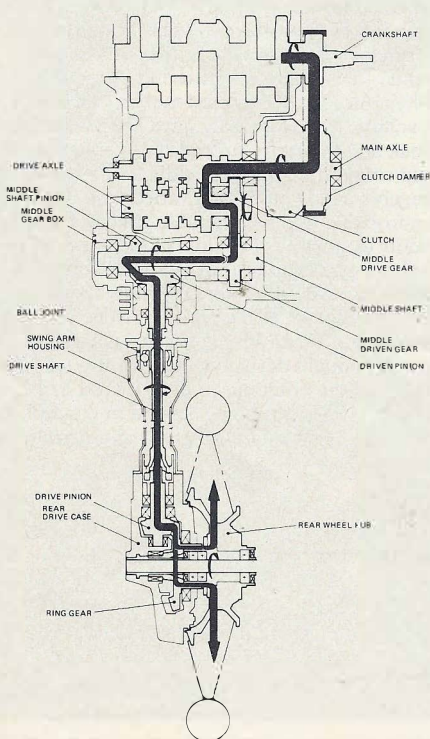
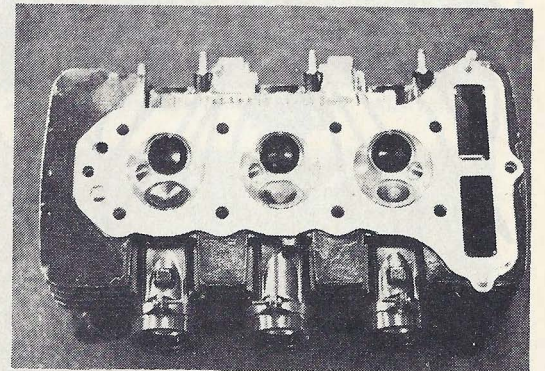
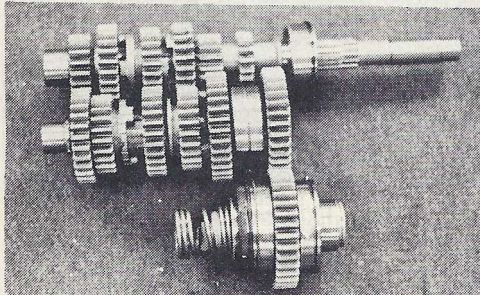
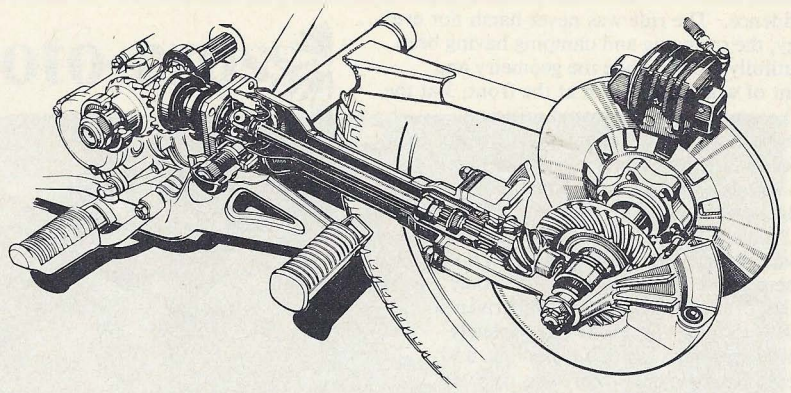
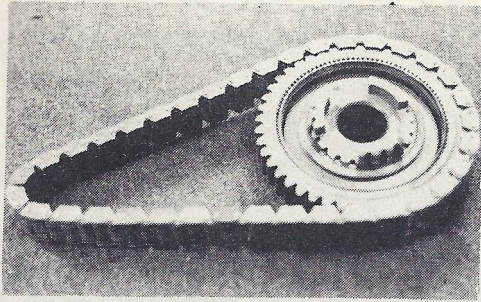
DT400



XS750



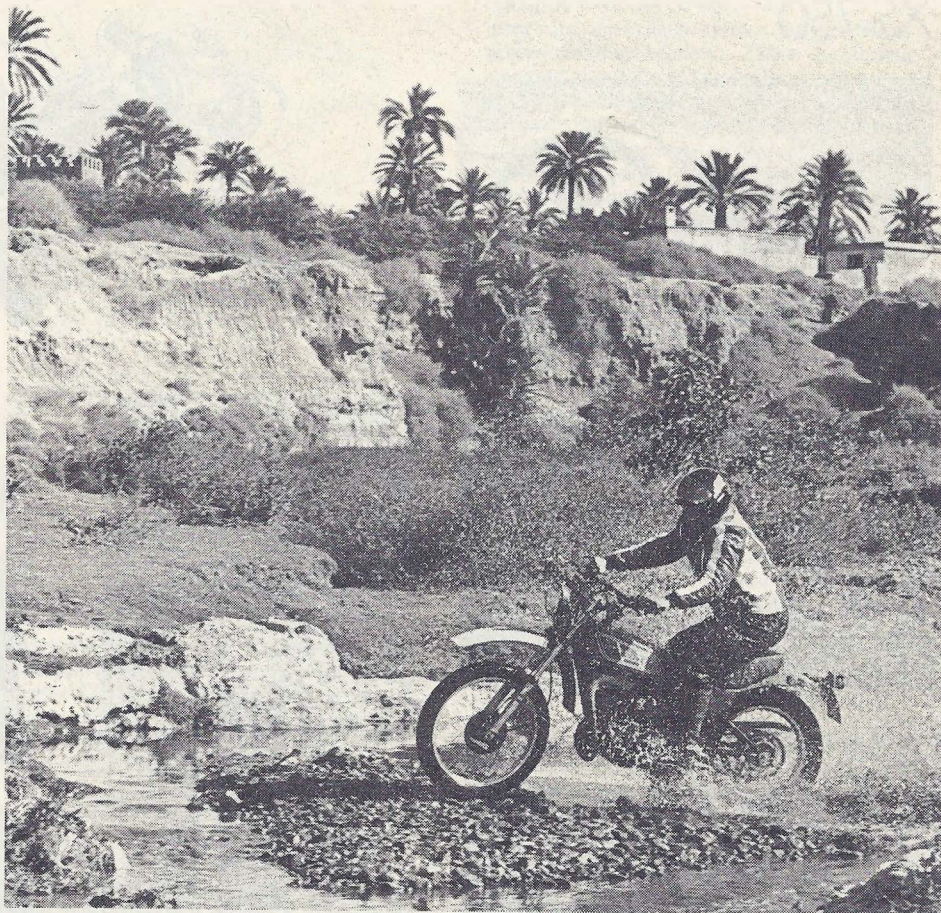
XS 750



confidence. The ride was never harsh nor ever soggy, the springing and damping having been beautifully judged while the geometry and extent of wheel travel (7in at the front, 3 at the rear) seemed likewise beyond criticism.

Perhaps most important of all, the weight felt perfectly distributed between the front and rear wheels, perfectly complemented by Bridgestone tyres (3.25H19 front, 4.00H18 rear) such as I have learned in the last year to respect as very good indeed. Thanks no doubt to them, as well as to Yamaha's welcome display of the mastery they have striven so hard to achieve, the 750 was completely without vice in its handling, steering, and general management. There was never a suspicion of a wobble at any speed up to its maximum, never a thought of a wheel chopping out or running wide, never a doubt about its dirigibility whether in the mountains, on the plain, or even during the initial and terminal miles of that barefaced 'bus-scarred dirt road—at the end of which it seemed proper to muse (both as a motorcyclist and as a tourist) on the undeniable superiority of an all-enclosed transmission.

Not since the days of the great Sebastian Nachtmann has anybody bothered with shaft drive for trails or trials. Yamaha's latest

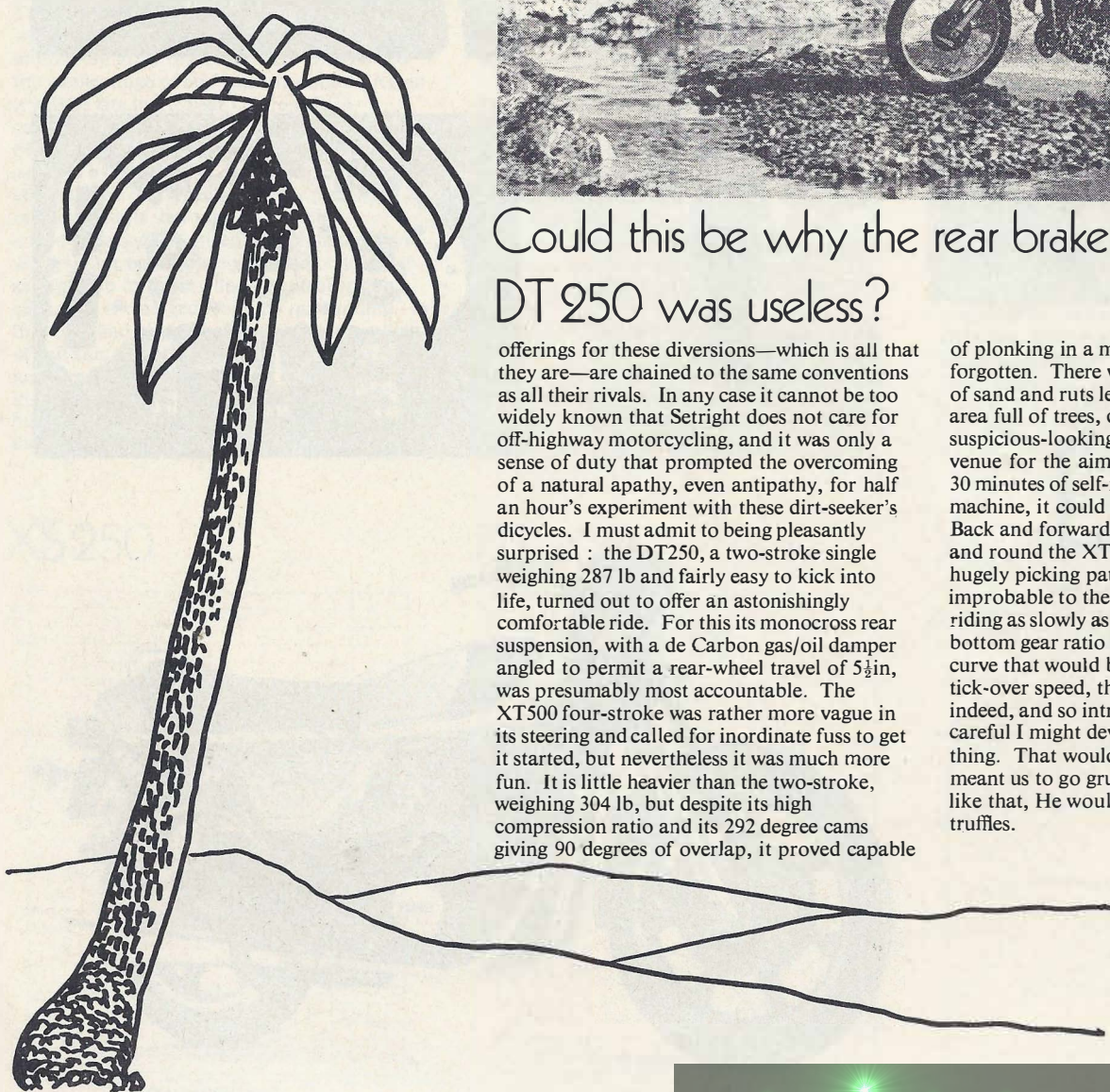


Could this be why the rear brake of the DT250 was useless?

offerings for these diversions—which is all that they are—are chained to the same conventions as all their rivals. In any case it cannot be too widely known that Setright does not care for off-highway motorcycling, and it was only a sense of duty that prompted the overcoming of a natural apathy, even antipathy, for half an hour's experiment with these dirt-seeker's dicycles. I must admit to being pleasantly surprised: the DT250, a two-stroke single weighing 287 lb and fairly easy to kick into life, turned out to offer an astonishingly comfortable ride. For this its monocross rear suspension, with a de Carbon gas/oil damper angled to permit a rear-wheel travel of 5½in, was presumably most accountable. The XT500 four-stroke was rather more vague in its steering and called for inordinate fuss to get it started, but nevertheless it was much more fun. It is little heavier than the two-stroke, weighing 304 lb, but despite its high compression ratio and its 292 degree cams giving 90 degrees of overlap, it proved capable

of plonking in a manner I thought had been, forgotten. There was a narrow winding track of sand and ruts leading away from base to an area full of trees, dunes, rubbish tips and a suspicious-looking pool or two, and as a venue for the aimless frittering away of 30 minutes of self-imposed mobility on such a machine, it could hardly have been bettered. Back and forwards, up and down, and round and round the XT went, while I enjoyed myself hugely picking paths that varied from the improbable to the impossible, and all the time riding as slowly as I could. With an overall bottom gear ratio of 16.6 to 1 and a torque curve that would be worth plotting from tick-over speed, this turned out to be very slow indeed, and so intriguing that if I am not careful I might develop a taste for this sort of thing. That would never do: if God had meant us to go grubbing around in the dirt like that, He would have given us a nose for truffles.

JKS



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