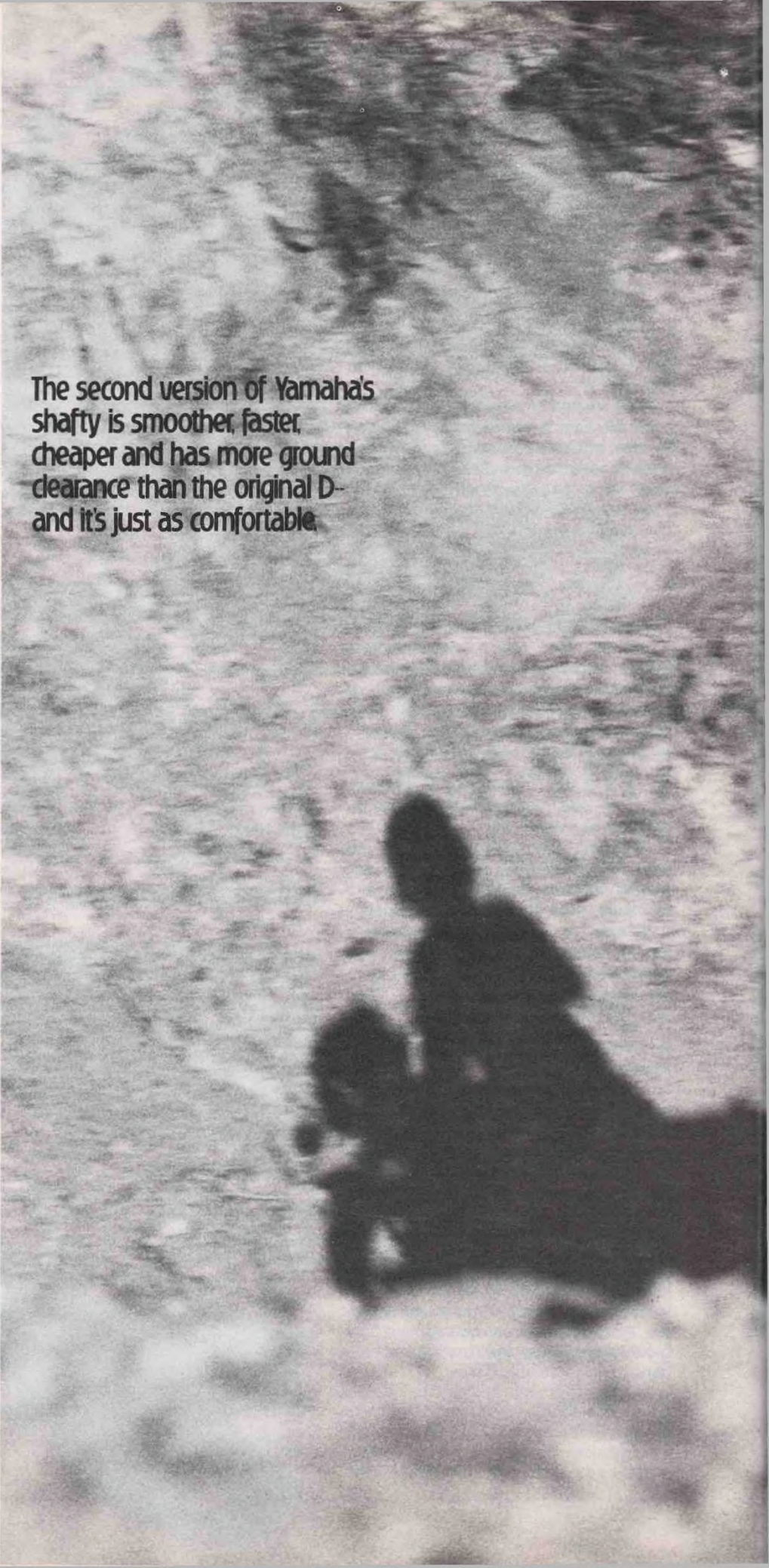


YAMAHA XS750-2D

● FOR A TIME THREE YEARS AGO IT LOOKED like those interested in large-displacement street bikes were faced with a stagnating pool of possible selections. Honda offered essentially one bike—the CB 750—which had been evolving slowly for more than a half-decade. There were three picks from Harley-Davidson (Sportster, Super Glide and FLH), one from Suzuki (GT-750 Triple), one from Kawasaki (Z-1), one from BMW (R-75), two from Norton/Triumph (an 850 Norton and a 750 Trident), and an additional smattering from such manufacturers as Moto Guzzi, Laverda and Ducati. The interest of the major Japanese manufacturers was riveted on the dirt bike market, and during the time that motocross racing was exploding with new buyers and new technology, big street bikes marched in place. The off-roaders revelled in their Golden Age. Because various strengths and deficiencies were unmasked every weekend on motocross tracks all over the world, we saw—and celebrated—more technical advances and more evidence of fresh thinking than ever before in motorcycling's history.

Such development speed is very expensive, as manufacturers like Yamaha, Honda and Suzuki found out. Motorcycles which become obsolete in six months or less are not exactly what you'd call your high-profit items, since production runs are by necessity short. Too, the buyers of motocross and high-perf. enduro bikes were never the year-in, year-out motorcycling stalwarts that manufacturers, distributors and dealers like to have on their warranty registration lists. They were, and still are, potent consumers; but their interest is unpredictable and their brand loyalty is non-existent, and when the majors were presented with documentation of these facts in the form of unit sales figures, the Japanese recognized that the time had come for them to get back to

The second version of Yamaha's shafty is smoother, faster, cheaper and has more ground clearance than the original D—and it's just as comfortable.





YAMAHA XS750-2D

basics: large-displacement street bikes of both touring and sporting persuasions.

What happened? Instantaneous upgrading of existing street models and rapid-fire introduction of completely new bikes—and new technology. In the past three years we have been introduced to a 750 four-stroke twin and a 900 Ltd. Z-1 from Kawasaki, a shaft-drive and an Automatic from Honda, a 750 four-stroke four from Suzuki (to be followed by a 550 Four), and last year possibly the most innovative of all current Japanese big-bore street bikes: the Yamaha XS750D three-cylinder. It was, and is (the 750D was not offered until July of '76, so it has been brought forward for the '77 model year), a marvel: one-piece wheels, triple disc brakes, DOHC, a shaft drive arrangement made unconventional by the fact that it attaches to a transverse engine, a wondrously supple suspension system and the best paint scheme anybody's ever seen on a Japanese motorcycle.

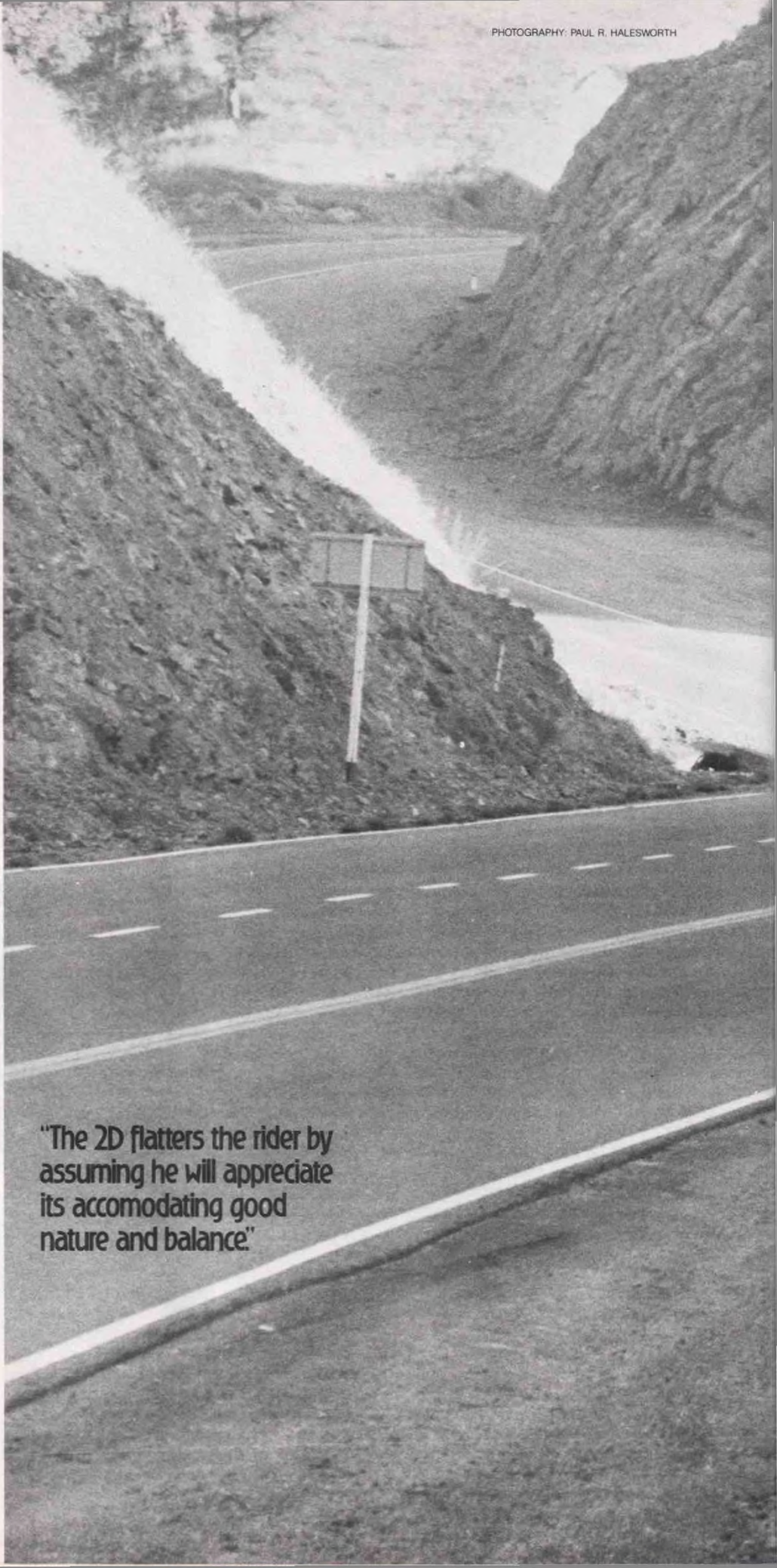
It was all-new eight months ago—and it has already been updated. The XS7502D, introduced to the Yamaha dealers in mid-January, is a motorcycle of subtle hard-part refinements and styling alterations, some of which were incorporated to nullify rider complaints, others representing the kind of ongoing improvements manufacturers make as a matter of course.

But before we get into all that, you should understand that the Yamaha Triple (in either its '76 or '77 incarnation) is a bike we like. Why? Because it works, because it's a capable, unintrusive, versatile and complete package, and because it doesn't have to make up for inadequacies in one area with over-abundances in another. As such it flatters the consumer by assuming he will appreciate the 750's accommodating good nature and all-around balance.

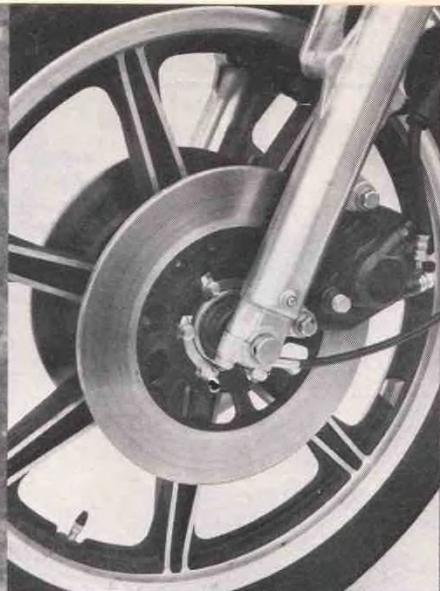
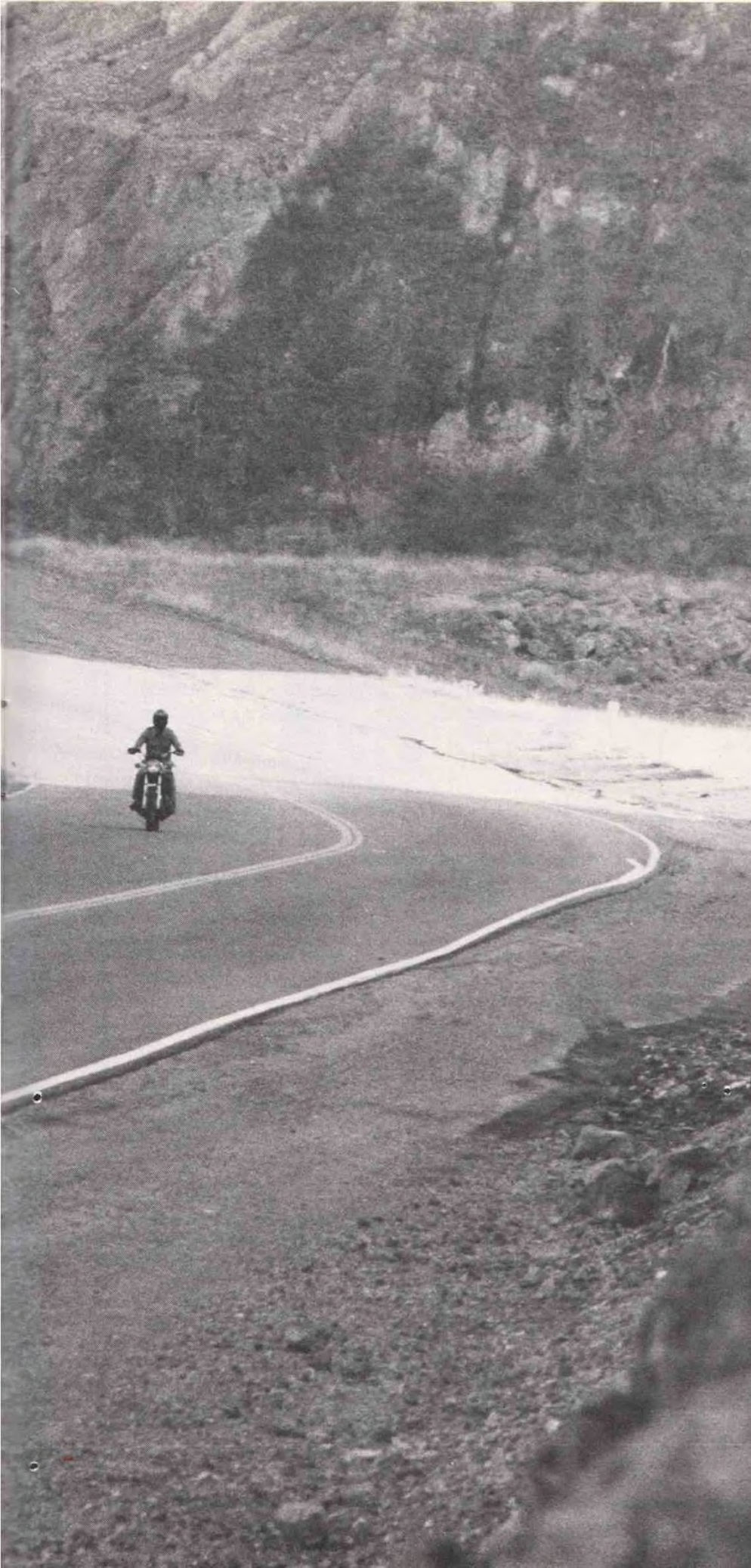
Although there is a touch of Laverda 1000 and Kawasaki KZ-1000 in the big Yamaha, the XS-2D is very much its own motorcycle. With the Laverda it shares its basic 3-cylinder, DOHC configuration; it's similar to the KZ with regard to its system of valve adjustment (it is alleged by some of our readers that Yamaha adjusters fit Kawasaki tappets). The rest of its powerplant specifications are, well, normal. The valve sizes are 36mm inlet (same as KZ and Suzuki GS) and 31mm exhaust (one mm. larger); compression is 8.5:1 (KZ: 8.7:1, Suzuki 8.7:1). While the KZ and Suzuki have roller cranks and as a result can get away with a gear primary drive, the Yam has an automotive-style plain-bearing crank and delivers its power with a Morse Hy-Vo chain—just like the Honda and Kawasaki 550 and 650 in-line multis.

From that point rearward the Yamaha is completely unique. A gear on the end of

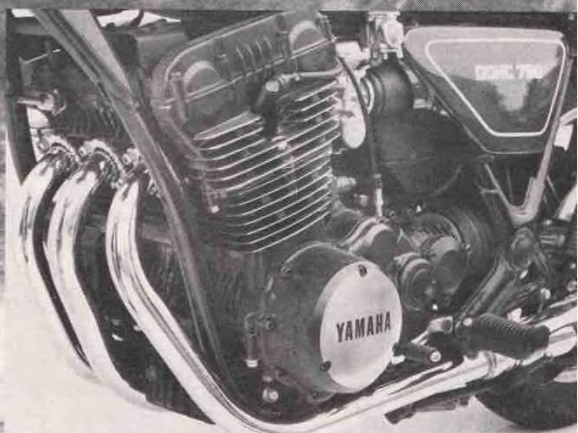
(Specifications page 94,
story continued on page 98)



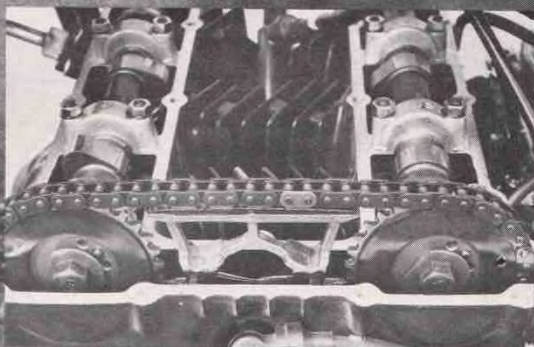
"The 2D flatters the rider by assuming he will appreciate its accomodating good nature and balance."



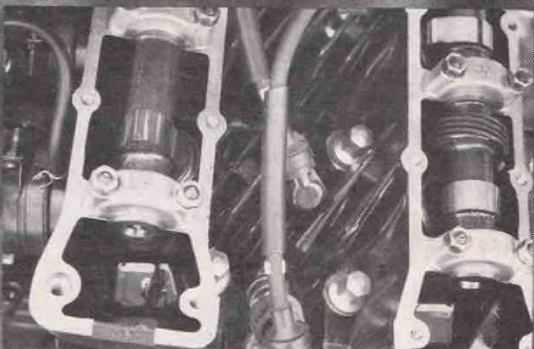
The 2D's double disc brakes are nothing special. They squeak and they demand firm lever pressure.



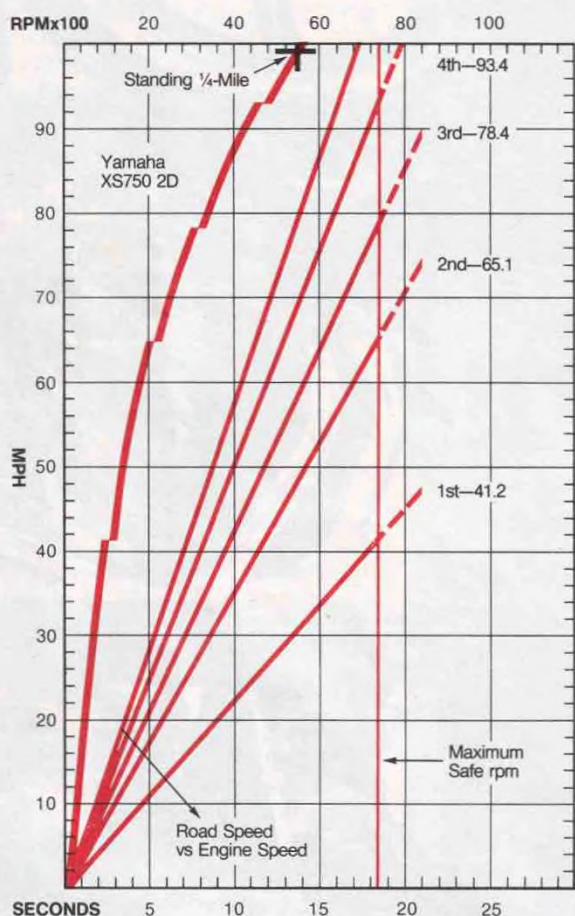
All the 750's mysteries are contained in an engine notable for its narrowness, shortness and compactness.



Outboard drive for overhead cams is accessible, easy to adjust and quiet. Sprocket sizes are Laverda-esque.

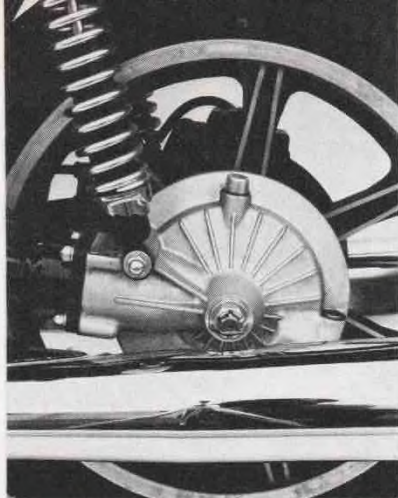


Cams and cam timing figures are close to KZ and GS items. Valves use shims to control clearance.



YAMAHA XS750-2D

Price, suggested retail	\$2198.00
Tire, front	3.35 H 19 4PR Bridgestone
rear	4.00 H 18 4PR Bridgestone
Brake, front	10.51 x 1.45 in.
rear	10.51 x 1.45 in.
Brake swept area	133.4 sq. in. (860.4 sq. cm.)
Specific brake loading	5.43 lbs./sq. in.
at test weight	
Engine type	Four-stroke, DOHC triple
Bore and stroke	2.68 x 2.70 in. (68 x 68.6mm)
Piston displacement	45.58 cu. in. (747cc)
Compression ratio	8.5:1
Carburetion	3, 34mm Mikuni BS34
Air filtration	Dry foam rubber
Ignition	Mechanical breakers, triple coils
Rake/Trail	27°/4.49 in. (114mm)
Mph/1000 rpm, top gear	14.5
Fuel capacity	4.36 gal. (16.6 Liters)
Cruising Range	170 mi.
Oil capacity	3.7 qt. (3.5 Liters)
Electrical power	Alternator, 14.5V—18Amp
Battery	12V, 14AH
Primary transmission	Hy-Vo silent chain
Secondary transmission	Shaft, spiral bevel gears
Gear ratios, overall	(1) 13.29 (2) 8.64 (3) 7.07 (4) 5.96 (5) 5.20
Wheelbase	57.9 in. (1470mm)
Seat height	32 in. (813mm)
Ground clearance	5.7 in. (145mm)
Curb weight	560 lbs. (254 kg.)
Test weight	725 lbs. (329 kg.)
Instruments	Tachometer, speedometer, odometer,
oil, neutral, high-beam, turn signal indicators	
Standing start 1/4-mile	13.62 sec.; 99.44 mph
Average fuel consumption	39 mpg
Speedometer error	30 mph, actual 30.03
	60 mph, actual 56.17



Whatever handling problems come with third-member weight have been solved nicely on 750-2D.



Front-end stability is provided by this massive box-section beam which locates the steering head.



YAMAHA XS750-2D

the transmission's output shaft mates with a gear in the rearmost reaches of the crankcase assembly. This gear spins a shaft which carries the drive from the right side of the engine across to the left, where it splines into a heavily-supported spiral bevel gear. This is effectively the "front" of the Yamaha's drive shaft, which rotates

the rear wheel with a very automotive-looking ring and pinion gearset. Counting the massive and silent primary chain and its sprockets, there are no fewer than six points of mesh in the Yamaha's fifth-gear power delivery (a normal primary-gear, chain-drive engine/transmission has four, counting the two final drive sprockets).

As sturdy and over-engineered as all this appears, the only price you pay is

weight. But compared to bikes like the Suzuki GT-750 and the new Honda 750 F2, the Yamaha is not out of line at 560 lbs. Rewards? Many. No hassle with a final drive chain; no oil on your back or rear wheel; and surprisingly, a nice, short engine. Rough measurements reveal that the Yam engine is 16½-in. long, compared to 17½-in. for the Z-1, 21-in. for a BMW R100S and 16¾-in. for the GS-750 Suzuki.

Not only is the XS engine short, it's narrow—which was probably the point of the whole exercise. A GS Suzuki engine is 23-in. across the beam, a Z-1 22¼-in., and a Honda CB-550 19½-in. The Yamaha is 20½-in. wide. The narrower an engine is, the lower it can be mounted without giving away cornering clearance. The Yamaha motor is low—the center of its crank is roughly 15-in. off the ground, compared to 16¼-in. for the GS and 16½-in. for the Z.

Both "low" and "narrow" have obvious benefits. The lower the engine, especially a DOHC engine, the lower the seat height can be without cheating on the thickness of the padding. A narrow engine, since it can be located close to the ground without giving away cornering clearance, means that the fork pipes can be nice and short above the sliders, which adds precision to steering inputs and braking forces.

Our first test of the 750D revealed the bike to be a good handler, limited by its tendency to bang the exhaust system into the ground while negotiating right-handers. This year's 2D model runs the center

(Continued on page 101)

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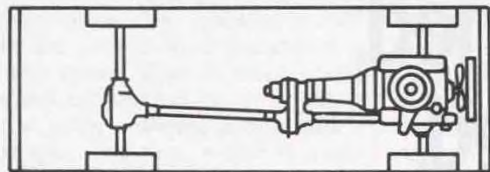
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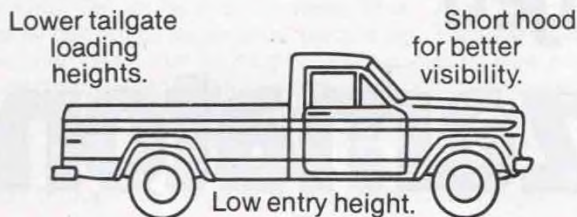
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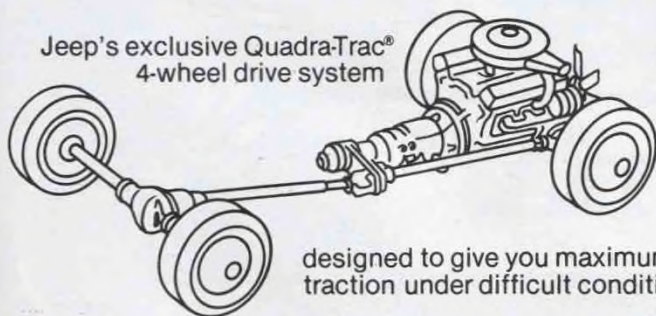


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YAMAHA XS750 2D *Continued from page 98*
and right-hand cylinders' exhaust gases through a collector and into a common right-hand muffler; the left cylinder breathes through its own muffler on the bike's left side. The two communicate through a 38mm balance tube just forward of the bike's rear tire. As a result the 2D has a pleasing symmetry that was missing on last year's bike. More importantly, the cornering clearance problem is gone. The 2D ranks with the KZ Kawasaki and the GS Suzuki as having the most generous—and safe—quantities of cornering clearance. Our tester never felt the need to even tighten up on the shock springs; after 900 miles of bashing and thrashing the only points of contact between the bike and the ground were the outer edges of the center-stand feet and one footpeg.

Other changes have been made which affect cornering and cornering clearance. The fork pipe diameter has been changed from 35mm to 36mm, and new single-rate fork springs replace last year's dual-rate boingers. In back, shock travel has been stretched 5mm, to 80mm total. Slightly different triple clamps add 4mm to the 750's trail specification; rake remains as it was, at 27°.

It is obvious that Yamaha has cared deeply about this bike's stability at high speeds. For evidence, look under the fuel tank. You won't find the average big bike's collection of curved tubing and steel plate gussets. The main member supporting the top of the steering head is fabricated of tapered box section steel sheet that's 3-in. deep and 1½-in. wide at the front, slimming to 1-in. deep and 1¼-in. wide at the rear, 10½-in. aft of the steering head. There it joins a stiff pressed-steel cross-member, which ties it into the chassis' side rails. The side rails themselves are lashed to the down-tubes just below and behind the steering head with a pair of enormous triangular gusset plates, and the down-tubes stay in touch with each other through another cross-brace running horizontally between them just below the head. The whole assembly is a structural *tour de force*, designed never to flex under cornering or braking loads, and you can tell by looking that it has been a difficult part of the chassis to produce.

Does it work? Yes—and almost yes. Given the stiffness of its cast wheels, its cornering clearance and the persistent rigidity of at least the front part of its chassis, the XS2D rates as a high-average brisk-speed handler, way ahead of the KZ1000 and almost up to the level of the GS Suzuki. The weight of its third member doesn't seem to upset the rear dampers, the dual-disc front brakes can be clamped on while entering a corner without the tires getting levered out of alignment, and we could never induce that famed big-bike cornering wallow. Still, at an almost sub-conscious level, the XS isn't quite

(Continued on page 107)

YAMAHA XS750 2D *Continued from page 101*

there out on Racer Road. It may be the soft front fork damping, it may be the unsprung weight of the front wheel assembly, it may be those vibration-absorbing handlebar bushes complying slightly as the bike is pitched into a fast turn.

Whatever it is, or was, we couldn't pin it down, and have some doubts if it was really there at all. This aside we felt that the XS was an exceptional handler. Its almost-4½-in. of trail means that you have to do more than *think about* turning to introduce the XS to a moderate- to high-speed bend, but once in it the bike has a neutral feel and does not deviate easily from the line you've picked for it. At more sedate speeds the 2D is light to the touch and accommodating without seeming twitchy or top-heavy.

But low speeds, or at least low engine speeds, are where the XS's bank of 34mm constant-vacuum carburetors couple up with the lash in the bike's drive line to demand delicacy at the controls if smoothness is what you're after. The CV carburetors used on Japanese bikes have never matched those used on BMWs for lurch-free low-speeding. Unless the first taste of throttle opening is fed in with caution, engine speed increases all out of proportion to how much you've twisted; and this off-idle snappiness joins with the lash in the gearbox, the torsional wind-up in the drive-shaft and the multitude of drive-line shock absorbers to remove precision from all but the most studied right hands. You can learn to accommodate it in a short period; it's not that big a deal. It's the only complaint we have about the bike's power-producing and -transmitting mechanisms.

The XS's engine hits its best open-road lick at 70 mph indicated, or just past 4000 on the tach. Fifty-five mph speed limit or no, here's where most touring riders cruise, and here's where the 2D functions at its absolute best. Up to that engine speed the three-cylinder, 120°-crank 750 passes through a multitude of tiny resonances which tingle various components: a handlebar end at this speed, a footpeg at that speed, one mirror here, the other mirror there, the passenger pegs, the seat. But at 70 it all just . . . stops, and the 2D assumes a balance and a texture that ranks it with the best touring bikes in the world. What little engine and exhaust noise there is trails away to a pleasant, silky background presence, you settle into the 750's long, comfortable seat (which still forces your thighs and knees apart a bit) and think that you too just might, someday, be able to understand the magic that the serious long-distance touring riders are hooked on.

If you like to juice it up once and a while, the 2D does that too—better than last year's model. All we were able to wring out of Yamaha was information that the engine had been re-cammed. The specs

(Continued on page 108)



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supplied show that the inlet valve opens 4° earlier (at 40° BTDC) and closes 4° later (at 64° ABDC) than the D-model, and the exhaust valve opens 4° earlier (at 64° BBDC) and closes 4° later (at 40° ATDC). Duration is up to 284°, or 4° longer than the KZ/Z-1 or GS cams. The improvement, on paper, doesn't seem like much—it is once the 2D hits the road or dragstrip. There's a noticeable lift in the powerband once the engine attains 4500 rpm, a lift which was verified at Irwindale Dragstrip. In D form its numbers read 13.98 sec. @ 95.33 mph; the 2D howls through the quarter in 13.62 sec. @ 99.44 mph, a more than four mph increase with a three-tenth reduction in elapsed time. The new cam profiles account for much of it; the two-into-one/one-into-one exhaust system delivers the rest in the form of improved midrange power.

OK, it's no KZ1000; nothing else is either. But its engine performance has been improved at no cost to smoothness and but a tiny one to fuel consumption (one mpg less than the D, at 39), and even the most conservative rider would admit that all else being equal, a faster bike is more fun to own than a slower one.

Beyond the way it sifts through the mountain corners and bores peacefully down the Interstate, there is much we found charming about the 2D: the progressive, predictable feel of its disc rear brake; the ongoing suppleness of its suspension components; the adjustability of its front brake lever, which makes life easy for those who have smaller hands; its self-cancelling turn signals, which are still so intriguing that we watch like a hawk for the exact moment the flashing stops and never forget for a second that they're on, which ironically is the precise human weakness they were designed to cover for; the little clear plastic hose which covers the exposed threads of a seat cover attaching screw and keeps you from nicking your fingers on it when you use the grab-handle to rock the 2D up on its center-stand; the ingenious compacting of all its forward shaft components.

If the bike has felt resistance in the marketplace it is probably because its shaft-drive defines it in the minds of the wacka-wacka riders as a pure touring mount, while in the minds of the tourers it is "only" a 750 and consequently short on he-man displacement when compared to 850 and 1000 Guzzis, 1000 Hondas, 1000 BMWs, 860 Ducatis, 903 and 1000 Kawasakis, 1000 Sportsters and 1200 FLHs and FXs. It's the kind of thinking that puts the 2D between a rock and a hard place, and the bike doesn't deserve it. The 2D above all else is capable: smooth, fast, quiet, comfortable and good-looking. It is also a technical masterpiece, but you shouldn't consider it on that basis alone. You should consider it because it works, plain and simple, and because it can do so many things so well, and because it remains unflustered doing all of them. ●