helped hold down the retail cost of the machine. It has helped date the design as well.

The 650 engine had adequate power for solo touring and passing power is sufficient at any altitude below about 5000 feet. The engine develops power in a linear, predictable way, with no power surges. Carburetion was spot-on at all altitudes and we had no problems with starting or warm-up. The CV-type carbs did not exhibit the jerky response that is common with this carb.

Compared to the Kawasaki, the Yamaha suffered from a dragging clutch and stiff shifting. It vibrated more than the others but one of the riders found it tolerable (there were six). Vibration was felt in the footpegs, seat and handlebars. Vibration was present in all rpm ranges. As rpm went up, so did vibration intensity. The Yamaha's vibration would have been more acceptable if the bike were outstanding in other areas. It isn't.

Brisk riding on the mountain passes was compromised by the suspension, but the vast majority of riders will find the suspension more than satisfactory. It has ride qualities that our experienced testers rated as average for current motorcycles. The fork is compliant, adjustable for preload and behaves itself on rough roads; not quite state-of-the-art, but very good just the same. Rear suspension was also rated as average by Japanese standards; this isn't as strong a statement as rating the front fork average. Street shocks from Japan fall far below what is being offered by aftermarket companies. Two up, the XS650 would bottom the rear suspension too often. If the XS were fitted with longer travel shocks such as the excellent Fox Street Shox, most of our reservations about its suspension would disappear.

Controls were very good and all testers agreed on this point. Throttle spring tension was the lightest of the group and clutch action was light and positive. Yamaha introduced self-canceling turn signals and they are still the best; the turn signal switch is easy to operate and the rider can simply make a stab at it with his thumb and be confident of the desired results. The choke is located on the left-hand carb and lacks the convenience of the more recent handlebar-mounted levers introduced by Yamaha. However, the knob is large and easy to locate without looking.

Front braking is *via* hydraulic disc and our testers rated it last among the test bikes. This is not to say that the XS's front stopper was unsatisfactory; for most situations it was fine. But when zipping down a long mountain pass, we experienced some fade and sponginess as the pads heated up. The front brake was not as linear as that of either the Kawasaki or the Triumph. If we had not been able to compare the brakes of these three bikes under the stress of hard downhill riding on demanding mountain roads, we probably wouldn't have any complaints about the XS's brake. The rear drum brake was linear and gave the rider good feel.

Lighting was satisfactory and suffered only when compared to H4 lighting that is rapidly becoming standard on middleweight and larger bikes. Yamaha introduced a dual bulb taillight to the XS650 in 1980; the extra candlepower and redundancy are welcome.

KAWASAKI

The 1982 KZ750M1 has a new head casting incorporating Kawasaki's exhaust air induction system for emission control. As exhaust gasses speed out of the cylinder, a partial vacuum is formed in the vicinity of the exhaust valve. Drilled passageways then deliver filtered air *via* reed valves located in the head to the exhaust port. Fresh oxygen combines with most of the unburned fuel still in the exhaust gasses and cleans up emissions. This system allows Kawasaki to burn richer fuel/air mixtures than would otherwise be possible. How well this system works was demonstrated by the fact that the KZ was, hands down, the best carbureted bike of the three. At any altitude its carburetion was spot-on and the KZ engine was the most responsive and most predictable. One would think that richer mixtures might lead to reduced fuel mileage; in fact, the KZ was second to the Yamaha by a measly one mile per gallon. The Yamaha averaged 48 mpg while the Kawasaki got 47.

By a small margin, the KZ was the most powerful of the trio. None of them are rockets by today's standards. In a drag race, they would be more or less equal. But the Kawasaki was superior in mid-range power. When we compared the bikes by the time-honored ritual of the "roll-on," the KZ would always win, no matter who was riding it.

Excellent power characteristics were offset by unacceptable vibration between 5000 and 5500 rpm. This vibration range coincided with 61-65 mph on the speedometer. The KZ is equipped with a balance shaft and any engine rpm other than those just mentioned, the Kaw is the smoothest of the three test bikes. At the double-nickel, it was so smooth that we could not really say it was vibrating. The footpegs and seat never did vibrate, at any rpm. The handlebars, however, shook so badly at 5000 rpm that they would numb the rider's hands in just a few minutes. Above 5500 the bars resumed their otherwise good behavior and the bike again was pleasant to sit on. We tried a couple of devices to help alleviate some of the vibration but without substantial results.

If the rider were touring solo or could dictate the speed at which to ride, the KZ750 would actually be the most pleasant of the three vertical twins. When the engine is kept away from the rpm range noted above, it is very smooth. One of the problems with tour testing any group of motorcycles is the fact that all riders are obligated to maintain a common, steady pace. Invariably one bike has a bad habit at the group's chosen cruising speed. The KZ was often ridden at 65 mph, punishing the rider, when it could have been providing a fine ride at almost any other speed. We feel that the owner of the KZ would have little to complain about; he would just naturally avoid 5000 to 5500 rpm cruising.

The KZ750 is one of the *very best* shifters we have ever ridden. It is as good as the RD350 Yamaha or the early five-speed Triumphs. Some of us would sit at lights and just shift the KZ in and out of gear for the sheer pleasure—especially if we had recently ridden the Yamaha.

Starting and warm-up were effortless; like the Yamaha and Triumph, the KZ would start easily hot or cold and required only minimal choking before it was ready to go. Clutch action was light and positive and engagement was smooth. We never experienced any difficulty with the clutch. Throttle action was smooth and predictable. Some of us did feel that the throttle return spring was a little stiff but none really complained; it was only in comparison