BMW GS80

IT IS FITTING TO conclude this book with the most spectacular enduro bike I have ever ridden. Whilst track testing is almost always fun – to a greater or lesser extent – one sometimes gets a distinct sense of *déjà vu*. Perhaps the most surprising thing being, in view of the extreme similarity of the basic two-stroke design, that there is so much difference in the character of each bike.

At the end of the test we did a practice start or two. Selecting third gear and about half throttle on a wet shale road, the GS80 would spin the rear wheel for 40 yards and then take off like a ground-to-air missile. After two runs the 5.00 × 17in Trelleborg burst into smoke and I would bet there are few bikes of any type which can manage that trick!

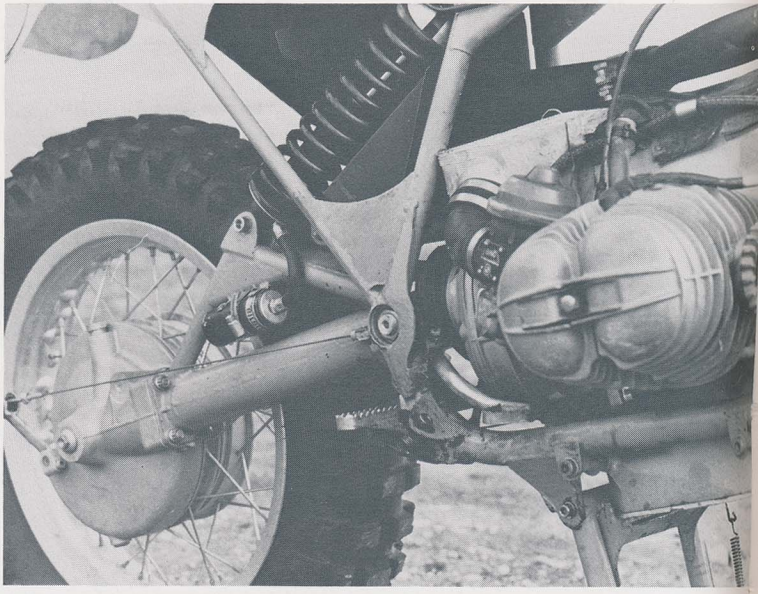
The GS80 is a remarkable bike and one which is a credit to BMW's engineering skills. Our thanks to the factory for this opportunity to ride a unique motorcycle.

The engine is a special, loosely based on the 800cc flat twin but with the bore stretched to a very healthy 95mm and the stroke reduced to 65.1mm. This gives a narrow motor by BMW standards, and a very free-revving one too.

Despite their bigger bore, their pistons are lighter than the R80 items and employ only one compression and one scraper ring. Running in the one-off Nicasil-coated alloy cylinders, the pistons gave no trouble in the six days of continuous racing which comprises the ISDT.

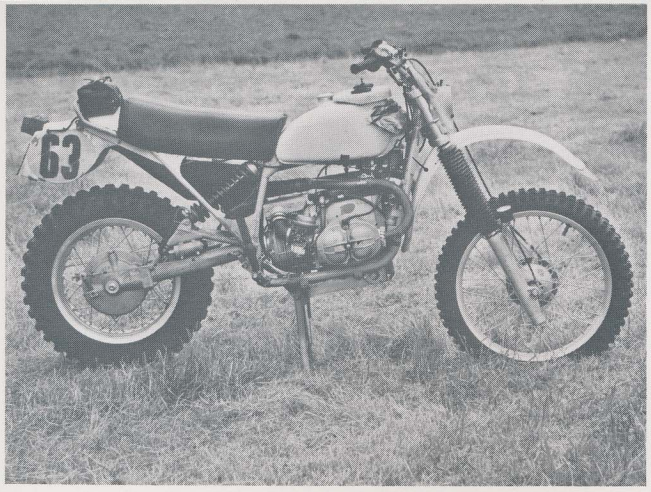
The cylinder heads are R80 parts with the ports cleaned up. Feeding each cylinder is a 32mm constant-velocity Bing, which is identical to the carburettors fitted to road-going BMWs.

The crankshaft is a special item, with meticulous care being given to the balancing. This attention, together with light flywheels, gives an incredibly smooth-revving motor for such a big twin. Certainly no BMW road riders would recognize the engine as the product of the Bavarian factory.



The unique BMW swinging arm arrangement. On the road bikes, this massive right-hand side arm housing the shaft drive permitted the left-hand arm to be discarded. However, although the ISDT bikes began in this style, they had to revert to a twin-arm construction because of the thin-gauge tubing employed in their construction and the stress that the long wheel travel put on the system.

Because of the large capacity – 870cc is a lot of swept volume with which to play by anyone's standards – the race shop could opt for a soft



The last works ISDT BMW, as tested by the author.

By any standards, the BMW appeared to be massive, but was far less ungainly when once on the move.

cam profile. The soft cams, together with a sensible c.r. of only 9.5:1, made for an extremely tractable motor with a virtually flat torque curve. From 1500rpm to 6700rpm there is a smooth, usable power available in almost limitless quantities – a great credit to the sensible engine development.

The gear ratios are pirated from the R80, but the rear wheel internals come from bastard combinations of whatever could be mated together from BMW's whole range. Competition manager Dietmar Beinhauer was reluctant to say just how the trick was done, but he was confident that, despite the shaft drive, he had just as wide a range of gearing available to him as any chain-driven opposition.

Clever touches abound on the bike, but perhaps the neatest of all was the use of the front half of the fuel tank as the first part of the air filter. BMW riders will cheerfully tackle saddle-deep water, confident that their bikes will run happily under these conditions as long as required.

When fellow enduro competitors knew I was going to ride the 870 BMW they heaped warnings on my head, as if I were about to go dragon-hunting.

Too heavy and too fast said the pundits – all of whom were speculating, since I was the first journalist ever to ride one of these beasts. Even so, with 57bhp at the rear wheel, the bike was certainly going to be rather nippy, since this is about 4bhp more than André Malherbe's world championship-winning Honda motocross machine produced!

The first problem was purely psychological. The BMW appears immense by any current off-road standards. Just looking at it was a terrifying experience. Riding it was unthinkable!

The starting procedure was to put the bike on its stand and prod the tiny side-mounted kick-start. The kickstart is only a few inches long and the problem of turning over those massive 95mm pistons was just too much for me. The BMW official who accompanied us couldn't manage it either, so we towed the GS80 into life using the R80GS trail bike. Apparently the ISDT men have

no problems, but they are big, strong German lads with legs like hydraulic rams.

Once fired up the GS80 sang the most melodious tune I have heard for many years. None of the rasping cadence which exemplifies a racing two-stroke was apparent, but, instead, a sweet, muted throb which promised much whilst saying little.

First gear engaged effortlessly and the take-up was smooth and light in a way which would bring tears of envy from the BMW Owners' Club. And what power! Not the savage lurch of a big-bore two-stroke, but rather an effortless, electric, smooth acceleration which gently lifted the front wheel higher and higher.

A quick flick into second and the front wheel lofted skywards again, whilst the trees either side disappeared into a green blur. With third gear engaged it was not unlike being on board the Starship *Enterprise* – and there were still two gears to go!

After burning off the initial silliness, I got down to riding the BMW seriously. It is not a monster, nor is it unrideable in the hands of someone less than ISDT standard.

There is no denying the fact that it is dangerously fast, but the way the GS80 could flatten the steepest hill and find traction on the slipperiest cambers made it a delight to ride. I soon learnt that the way to get the best out of the bike was to let it work hard in high gears. On many occasions I used third gear to trickle through the tightest sections and then was delighted by the instant and effortless acceleration.

On paper, the BMW's 308lb weight is daunting, but in practice it is so well balanced that the bike feels much lighter. At high speeds the GS80 is as good as anything in the enduro world, with the BMW-modified Maico front forks giving a superb ride and the rear end, controlled by the single Bilstein damper, tracking perfectly true over the roughest going.

The biggest problem came if one looked down.

The very successful BMW enduro team in full flight – hard men, every one of them. Left to right – Werner Schütz, Rolf Witthöft, Fritz Witzel.

The huge ungainly cylinders stuck out in the breeze and looked so very wrong that it appeared that the bike could not possibly handle as well as it did. Ignore the looks – and the myths which surround the bike – and the fact is that it is a delight to ride.

Forgetting the starting, the only real problems came when the going was very slow. Much below 10mph and one became conscious of the bike's weight. Certainly I could not imagine pulling the GS80 out of a bog in the Crychan Forest without incurring at least a double hernia.

Even this horrific thought could not dull the sheer delight of riding the GS80. Its nimble handling and all-embracing power were a racer's delight and I can honestly say that there are few bikes which I have enjoyed riding more.

There was certainly nothing in my experience like the BMW – it was truly unique in every respect.

The article in itself was a challenge for two reasons. Firstly, because it took literally years of carefully phrased requests to actually get a ride on one of these fabulous beasts. Then, when the opportunity did arise to ride one, through the sterling efforts of BMW's UK Sales Manager, Ian Catford, I managed to damage my left knee just before going to Germany.

After so much work I decided to forgo the dubious pleasures of a hospital visit and climbed aboard a plane to Munich. The BMW staff were very sympathetic and helped me strap the wounded knee almost solid with crêpe bandages, and with the aid of a mouthful of painkillers I not only rode the bike but enjoyed it too.

When I got back to England it was obvious that my knee was deteriorating fairly rapidly, and the following week I was in hospital, where a very clever surgeon removed the cartilage, which had been torn into two separate pieces. BMW or not, had I known the extent of the injury then I don't think I could have plucked up the courage to go testing.

The bike itself was just a dream to ride, even if I couldn't start it! The term 'effortless power' is often used by testers, but this is really what the BMW offered – electric, smooth, abundant power which made the bike just so much fun to ride that I could have spent all week on it.

Although I always try to be objective and serious in my reports, I suppose my true character was revealed in the childish delight I derived from setting the rear tyre alight and pulling 70mph wheelies.

I hope you have as much fun reading about this unique bike as I did riding it.

The story of the BMW begins much earlier than its recent ISDT successes. Its roots lie in the efforts of an enthusiastic Bavarian BMW dealer called Herbert Schek.

In 1960, Schek began racing a 500cc BMW in ISDT-type events – despite the handicap of Earles forks and a daunting overall weight. Like many projects launched by privateers, the parent factory stayed well clear of any official involvement, but the BMW development department often lent a hand and supplied a modest quantity of spares.

Schek was a talented rider and a good mechanic, and because he had a large and prosperous dealership, the BMW bikes gradually became more competitive over the years. At no time were they a match for the best ISDT bikes in terms of overall performance, but they were always in the hunt for the 750cc class – largely because two-strokes of this size are of themselves less than ideal tools for ISDT racing.

This situation could have continued indefinitely had it not been for the arrival of the new R80GS from BMW. This bike was the factory's first attempt at building a super sports trail bike and the idea of launching it on the back of an ISDT success became very attractive.

Fortunately the 1979 ISDT was to be held in Germany and one of its chief architects was another BMW dealer and ex-ISDT star, Kurt Tweesman. One can only speculate as to what discussions went on between Tweesman and the factory, but the result was a course which, whilst not being designed exclusively for the big BMWs, did at least give them a sporting chance to show what they could do.

BMW's race effort was very modest even with

factory support. The German Silver Vase Team was BMW mounted, as was the German manufacturer's team, and German clubs provided the support. Their efforts were well rewarded, with Fritz Witzel winning the 750cc class outright.

In 1980, Rolf Witthöft won the 500cc–750cc class in the European enduro championships, whilst his team mate, Herbert Schek, took the 1000cc class. On the very tight going of the 1980 French-based ISDT, the BMW struggled, and only Witthöft managed a Gold.

1980 was the last season for the BMWs, since the factory withdrew from the ISDT. They felt that the event was losing its attraction as a promotional tool as the rules became increasingly complex and the bikes more esoteric in design. In the autumn of 1980 the remaining GS80s were scrapped, with the exception of one bike, which went into the BMW museum.

The ancestry of these ISDT bikes dates back to 1975, when the first monoshock swinging arms were built. The factory was becoming increasingly aware that because of the huge proportions of the right-hand swinging arm, which carried the drive shaft inside it, the left-hand fork might be superfluous. With a single arm all the benefits of a single damper system could be employed.

Ironically, after launching the idea, the ISDT bikes had to resort to a dual-fork swinging arm because of the very light-gauge metal used. The whole frame is constructed from 1mm chrome-moly tubing, and at this thickness it was found that a single arm was flexing, particularly when long travel rear suspension was used.

The present arrangement is constructed from a triangulated pyramid of small-diameter tubes on to which the nitrogen-charged Bilstein damper bears. The mounting point is approximately halfway along the swinging arm and thus gives a mechanical advantage of about 2:1, resulting in 9.6in of travel at the rear wheel.

Because of BMW's very modest budget the whole bike is something of a co-operative effort between the dealers and the factory. For example, only one factory mechanic is allocated to all BMW's off-road racing effort! Wherever possible, parts are utilized from BMW road bikes or are bought in. Both front fork and wheel are Maico parts which are modified to BMW's requirements.

BMW GS80

Engine: Twin cylinder. Horizontally opposed four-stroke
Capacity: 870cc (95 × 61.5mm)
Barrels: Light alloy with nicasil coating
Pistons: Lightweight two-ring pistons giving 9.8:1 c.r.
Carburettors: Twin 32mm constant-depression Bing
Exhaust: Siamesed system with integral silencer
Air filter: Two-stage using front half of petrol tank
Ignition: Flywheel generator with pointless electronic ignition
Clutch: Lightweight Fitchel and Sachs single-plate clutch
Five-speed gearbox and final drive variable according to the event
Frame: Duplex constructed from 1mm chrome-moly tubing. Single damper rear suspension
Front fork: Maico/BMW with air assistance giving 10.2in of travel
Rear: BMW swinging arm with single rear Bilstein nitrogen-charged damper giving 9.6in of travel
Front brake: 6in sls Maico/BMW drum
Rear: 8in BMW sls
Wheels: WM2 × 21in front; WM4 × 17in rear
Tyres: 3.00 × 21in front; 5.00 × 17in rear. Both Metzeler. Rear tyre using valve exiting through tyre wall
Fuel tank: Aluminium; 2.2-gallon capacity
Wheelbase: 58.9in
Racing weight: Complete with fuel and tools 308lb
Claimed maximum power: 57bhp
Claimed maximum torque: 47ft.lb
Bikes not for sale. All except one bike retained for the BMW museum were broken for spares in December 1980. Usable spares will be employed on BMW's Baja 1000 bikes