

Benelli's baby



Although Honda produced a series of technically brilliant 125 and 250cc multis when they dominated GP racing in the sixties, they were not the only factory to make small four-strokes of that type during the period. Indeed, when the original Honda four was raced in 1960, it did so 20 years after similar machines had first been campaigned in the class. The originators of lightweight multis were the Benelli and Gilera firms, each of which designed 250cc fours in 1940. But these bikes appeared too late to race before the outbreak of hostilities, and were rendered obsolete after the war by the FIM's ban on supercharging in 1946. Though Gilera managed to make their blown 500 four reasonably competitive bereft of its supercharger, their 250 was too heavy to make a similar exercise worthwhile, while the water-cooled Benelli was bulkier still. But new ground had been broken, and though Gilera's retirement from racing at the end of 1957 meant they never again trod the path of small-capacity multis, the 1960s

saw the little Benelli factory at Pesaro field a range of 250, 350 and 500cc four-cylinder machines which seriously threatened Honda and Yamaha in the smaller classes, and MV Agusta in the larger.

I'm not alone in believing that Benelli have never really had the recognition they deserve for their racing efforts in the 1960s: they've always been regarded as the makers of the 'other' Italian four, much as Alfa Romeo have played second fiddle to Ferrari in the car world during the past 20 years. Yet given that their GP involvement was financed by the failing profits from their road machines, the fact that they produced a series of technical *tours de force* culminating in a 250cc V8 and won a world championship in 1969, thanks to Aussie Kel Carruthers, merits considerable applause.

MV's racing efforts, on the other hand, were backed by the resources of one of Europe's leading aeronautical concerns. And to carry the MV analogy further, the reason that Benelli's

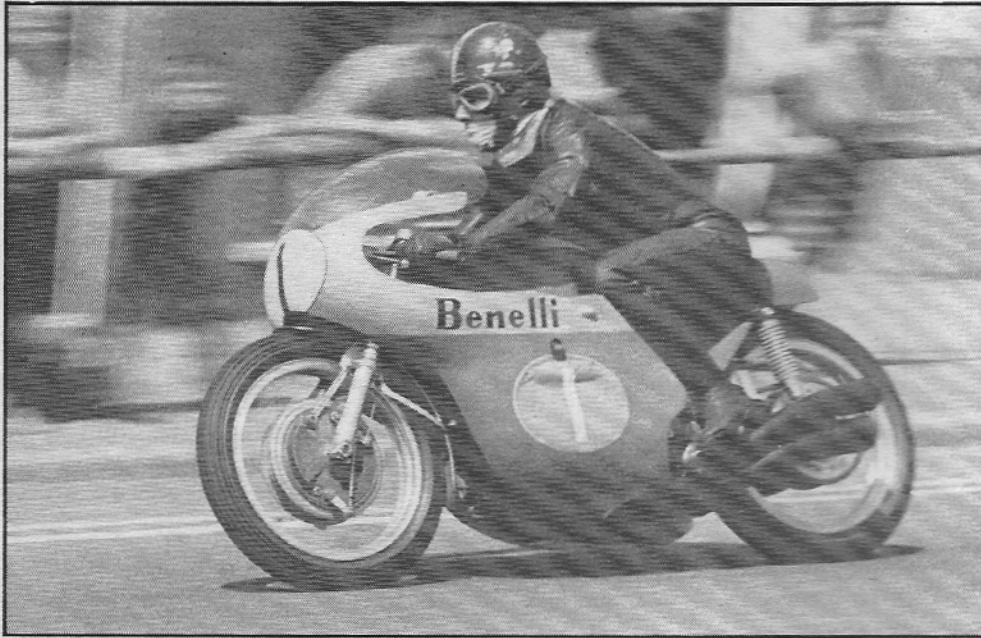
Tarquinio Provini, the rider who played a crucial role in the development of the Benelli four, takes the 250 round the Isle of Man in 1964.

feats have gone largely unrecognised is due mainly to the low-key, unostentatious atmosphere which pervaded their racing team. Instead of a bombastic, larger than life personality like Count Domenico Agusta, the retiring Benelli family ran a close-knit squad of designers, mechanics and usually just one or two riders at a time. Headed by a Benelli cousin, Count Nardi Dei, the team attracted riders of the calibre of Tarquinio Provini, Renzo Pasolini, Phil Read, Mike Hailwood and Jarno Saarinen, who were happy to ride for smaller fees than MV and Honda could pay.

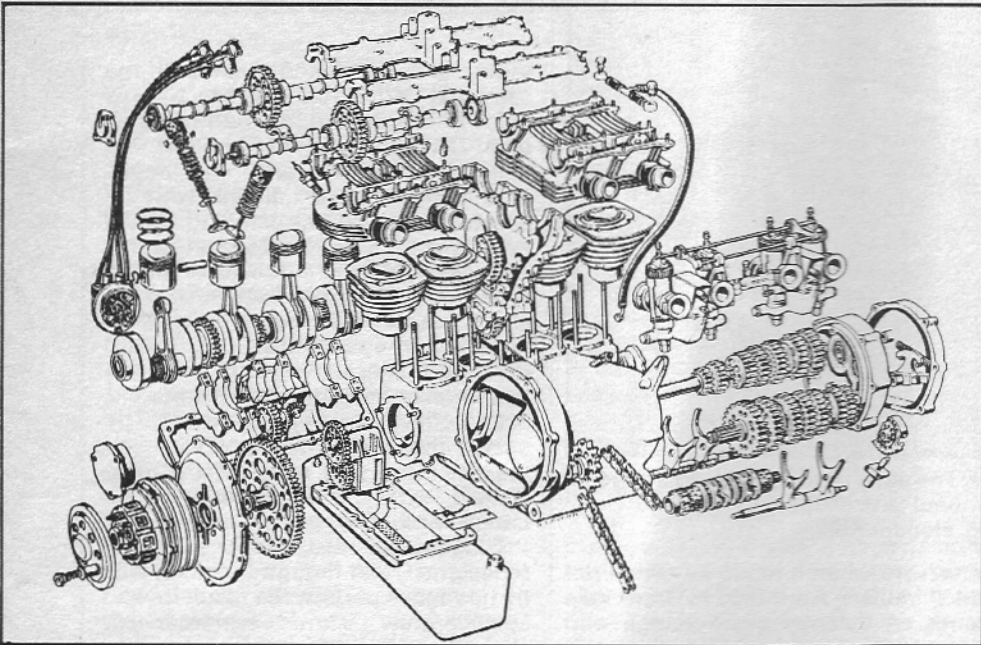
When the racing department was closed in the wake of the company's takeover by Alessandro de Tomaso in 1971, Benelli's legacy to the racing world was already manifest. Ex-mechanic Eugenio Lazzarini was a future world champion, and staff from

four

Alan Cathcart traces the development history of the 250cc version of Italy's 'other' four-cylinder racers and, on page 20, track-tests a 1966 model.



Kel Carruthers, the man who gave the Pesaro fours their only world title, compresses the 250's suspension at the bottom of Bray Hill in the 1969 TT.



A two-valves-per-cylinder version of the 250cc Benelli engine. The camshafts are driven by a train of gears carried between the centre cylinders.

the old team were behind the successes gained by Morbidelli, MBA, Sanvenero, Bimota, Ringhini, Piovaticci and all the other Pesaro-based companies whose existence in this hotbed of European road racing derived directly or indirectly from Benelli's efforts.

Benelli are one of the oldest surviv-

ing motorcycle manufacturers, dating from 1911 when the six Benelli brothers were set up in business to repair mechanical objects of any nature by their despairing but wealthy mother. In 1921 they made their first complete motorcycle and later expanded into competition, spurred on by the youngest brother Tonino, a

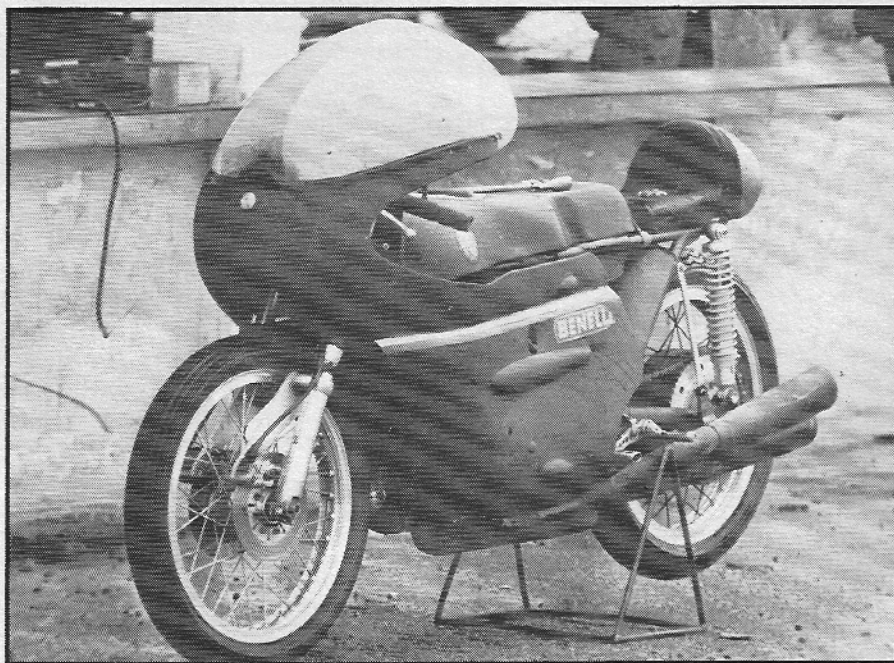
useful rider. In the 1930s Benelli began their bitter struggles against Moto Guzzi in the 250cc class which led to a world championship for the Pesaro firm in 1950, thanks to rider Dario Ambrosini. The machine employed was a development of their pre-war dohc single, but after Ambrosini was killed the following year in France it was a mark of the close relationship between the Benelli family and their riders that they lost interest in racing for many years. They returned at the end of the decade with a modernised version of the single which scored some successes, notably in the hands of Geoff Duke at the Locarno GP in 1959.

That same year the first 250cc four to appear in competition had made a dramatic appearance in the Asami Volcano races in Japan, clinching five out of the first six places on its debut: this was the bevel-driven dohc Honda. But that machine, essentially a doubled-up version of the 125cc twins Honda had entered in the 1959 TT, was scrapped in favour of a new design, with gear-driven dohc valve-gear, with which the Japanese firm contested their first full GP season in 1960. Though they ended the season only as runners-up to the MV twins, Honda did enough to scare MV out of trying to defend their title the following year, leaving the field clear for the Japanese firm to win the first of a hat-trick of 250cc titles in 1960.

Thus it was left not to MV, who concentrated henceforth on the 350 and 500cc classes, to produce the European answer to the Honda four, but to an unexpected source: Benelli. In the summer of 1960 they astonished the racing world by unveiling the prototype of the magnificent range of in-line 250cc four-cylinder machines which would be an integral part of the GP scene for the next decade. The machine had been designed jointly by the number two brother, Giovanni Benelli, and the firm's racing technician, Ing Savelli, and owed nothing to the pre-war blown engine, being a small-scale version of what had come to be a typically Italian multi-cylinder unit.

Bore and stroke measured 44 x 40.6mm for a capacity of 246.8cc, dimensions which were to be retained up to Carruthers' world title-winner. The cylinders were positioned vertically, and twin overhead camshafts actuated the two valves per cylinder. The engine was a dry-sump design with a rather bulky oil tank under the seat, but the chassis sat ill at ease with this thoroughly modern power unit, being rather heavy-looking and over-engineered in true fifties' style. Wheel rims, on the other hand, were skinny, a 2.50 x 18 front tyre matching a 2.75 section rear. A dry weight of only 122kg (268lb) was claimed, though in

Benelli's baby four



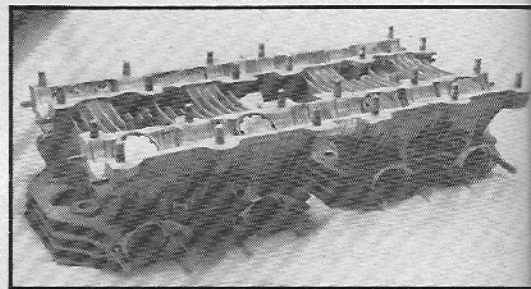
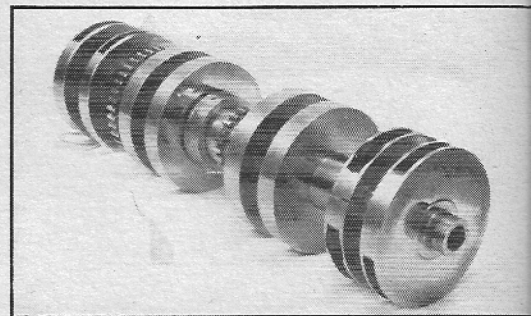
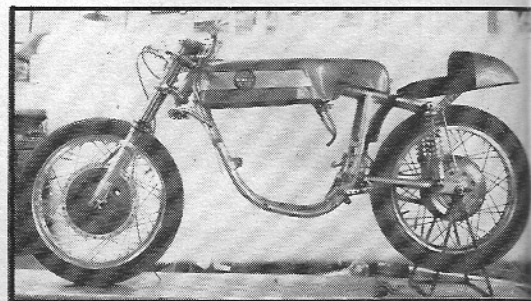
Compare these two versions of the 250 four. The early model, pictured at Imola in 1962, has a drum front brake and conventional tank shape, but the 1965 machine uses twin discs and has a very long, slender tank.

retrospect it seems certain that it was considerably more, in spite of much expensive use of electron in the engine castings. Forty bhp was claimed at 13,000rpm, which compared well with the 42-43bhp quoted for the contemporary Honda. But work had started on the machine only at the end of the previous year, so it was almost completely untried; works rider Silvio Grassetti had to rely on an updated version of the dohc single until the opening of the 1962 season.

Two years of development had evidently been well spent, for the speed of the Benelli four startled

observers when it made its racing debut at Imola in April 1962 in Grassetti's hands. A missed gear change and pinged valves robbed him of victory first time out, leaving Provini on the remarkable Morini single to romp home in the lead. But at the next race at Cesenatico it was Grassetti all the way, and Benelli's 250 four won at only its second attempt.

Many changes had been implemented in the machine since its first appearance, the most critical being the removal of the oil tank under the seat in favour of a large-capacity bolt-on sump with two-way oil pump



mounted above it, and running off the camshaft drive pinion which was placed between the middle two cylinders. On the prototype, ignition had been by battery and four coils mounted under the fuel tank, with the points driven off the left end of the inlet camshaft. But for Cesenatico this was replaced by a Lucas magneto mounted on the right front side of the crankcase, bevel-driven off the camshaft pinion again. It had been found that the points of the four-lobe contact-breaker floated open at high revs, acting effectively as a rev-limiter. The use of the British magneto also had the desirable side effect of reducing weight, with the elimination of the battery and coils.

The chassis also had been partly redesigned, and though handling was by no means perfect, the result looked considerably more workmanlike: slightly wider section tyres were now fitted. But Grassetti, for all his bravery and aggression, was no development rider, and for the rest of that season and throughout 1963 the Benelli four's progress was stymied because of this, in spite of successful testbed work on the engine, which was now giving 45bhp at 14,000rpm.

By 1963 Honda had advanced to the top of the GP tree, so that yesterday's neophytes had become today's team to beat. And beaten they almost were

