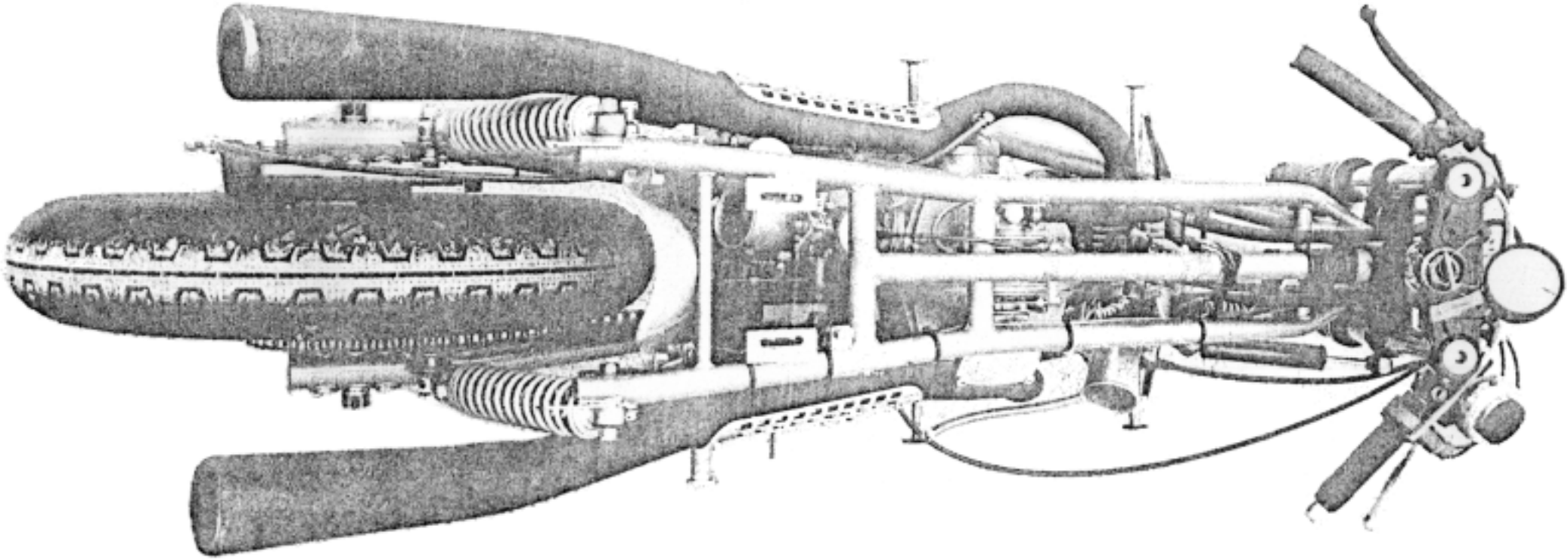
NEW TRICKS FROM ITALY

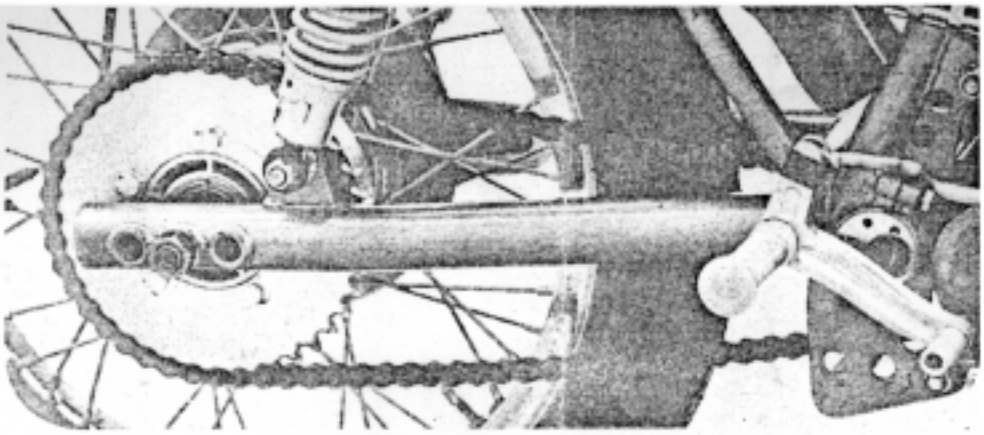
DUCATI'S 1973 DESMO RACER

BY BRUNO DE PRATO

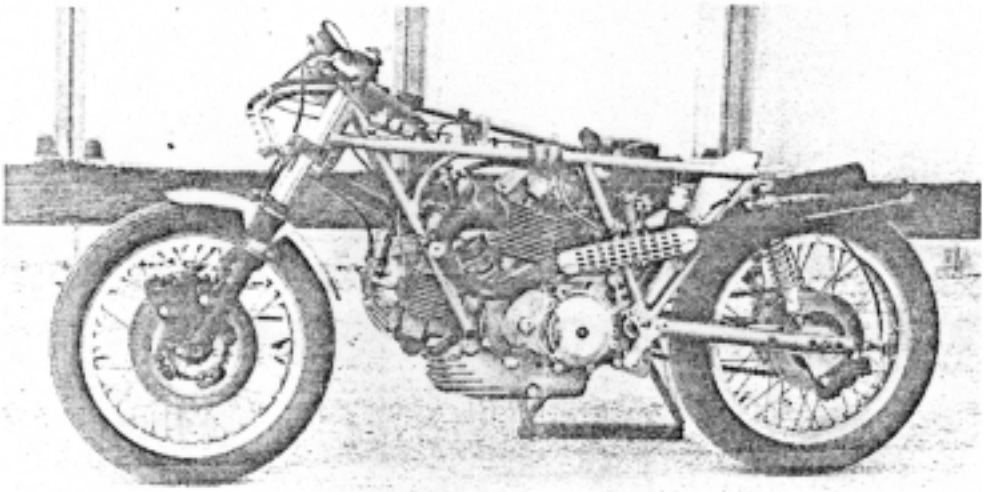
• On April 23, 1972, Ducati smoked off the field at the first Imola 200 with a strong one-two. It was a tremendous show. The bikes went beautifully, strong and flawless, although they had been put together from stock components only a week before. Morale at Ducati was sky high. They felt they could conquer the world and win any race.

Only one man did not join the bandwagon. The man, as one might expect, was Dr. Fabio Taglioni, who had been responsible for the Imola hit. He knew it was no time for resting on laurels. Ducati had met only the European share of the opposition; the strongest 750 racers were in the hands of the American teams. Taglioni had seen this American equipment at Daytona. The bikes were so fast around the





The racing frame's swingarm allows rider to dial in three different wheelbases.



The new frame is lower and lighter, and the engine is more compact than the 1972 bike.

The new racer weighs in at about 32[illegible] Wheelbase is eleven cm shorter than '72r[illegible]

The racing department (minus Dr. Taglioni) one of the three new Imola bikes.

oval that he could not read the numbers on the fairings. Imola is not Daytona; the Italian circuit is extremely demanding on the frames and suspensions. Maybe the superior handling of the Ducatis would have given them an edge even on the super-fast Japanese threes at Imola or similar tracks in 1972, but at Daytona the Ducatis would have been outgunned.

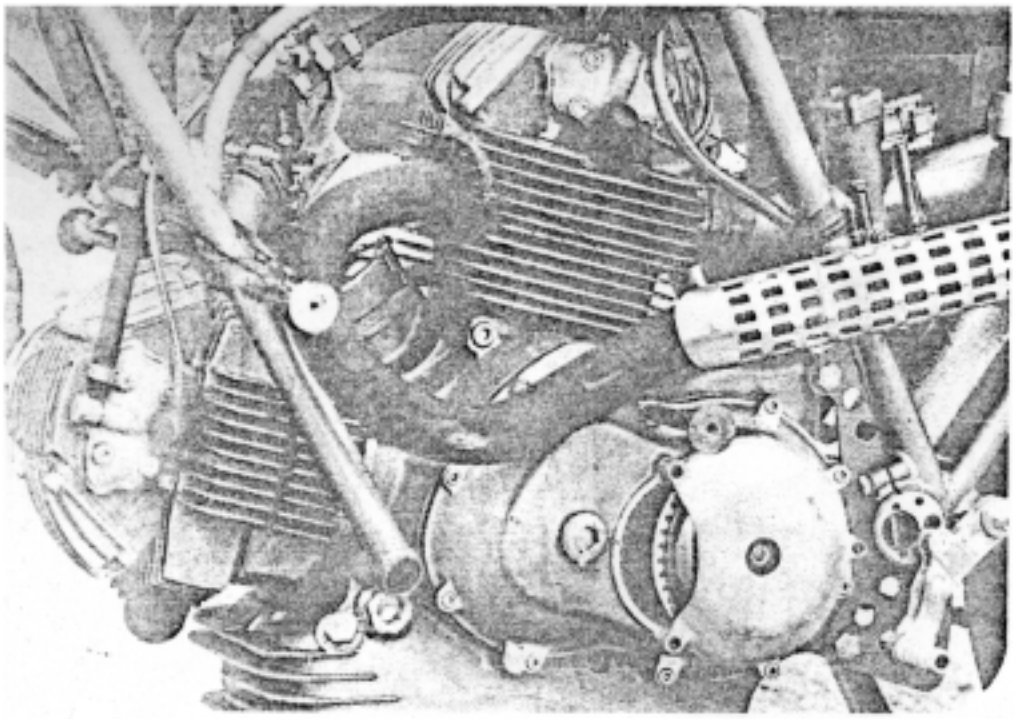
The Ducati 750 that won Imola '72 had so much room left for improvement that it would have been a shame stopping the development of a promising design, which was still far from its ultimate potential. It was not just a matter of getting a lighter and shorter frame in place of the stock unit Ducati had used. Actually the whole bike was simply too stock to be competitive in 1973 against the top teams in the world. Imola '73 had just proved that the basic Ducati 750 was a brilliant motorcycle, but 1973 required a real racer. Taglioni already had everything on his drawing board and in his mind. He wanted to show that the quest for multi-cylinders was just about nonsense, that his twin—the ultimate twin—could match the two-stroke missiles' flat-out speed, and outhandle and out-accelerate them through corners. Taglioni was stalking for Daytona '73. This exciting challenge, sadly, did not turn into reality because it was decided that the 1972 Imola machines should be taken around the world in '72 and raced wherever a Ducati distributor morale needed some boosting. So the limited manpower of Ducati's race department was strung out in this promotional campaign, which failed to produce anything matching the Imola thunderclap.

Meanwhile, back in Bologna, Dr. Taglioni was refining the project for his ultimate 90-degree V-twin. Bore/stroke ratio had to be more radically oversquare: from 80mm x 74.4mm to 86mm x 64.5mm, a real ultra-short stroke in order to exploit all the revving ability guaranteed by the excellent balance of the alternating masses in the Ducati's engine. With the 64.5mm stroke, the rev limit would presumably go from 9,200/9,500 rpm of the '72 machine to 10,200/10,500 rpm. The clean jump of 1,000 rpm forecast a power increase. The shorter stroke and shorter connecting rods also meant that the engine would be about one inch shorter and lower. Consequently, the L-shaped engine could have a much more compact frame built around it.

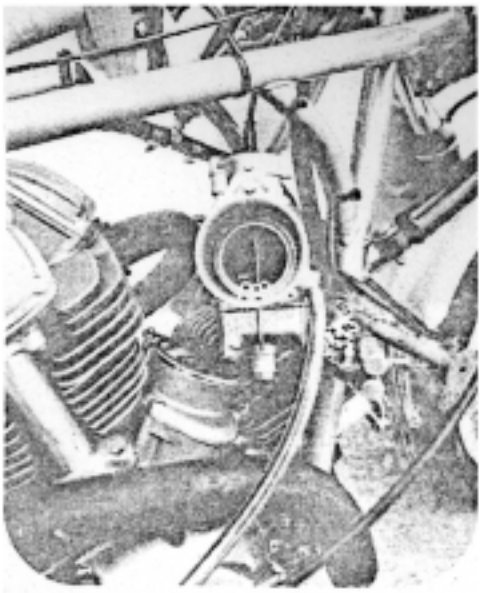
The new, radical oversquare bore/stroke ratio required a new head design. The stock heads feature valves with an included angle of 80 degrees which was too wide. To get an adequate compression ratio from those heads, in combination with the new bore/stroke dimensions, would have required pointed-top pistons with a consequent poor combus[illegible] chamber shape. Taglioni had been t[illegible] ing of a new head design, more in[illegible] with contemporary practice for some [illegible] but until 1972 his old heads had still [illegible] en effective. This would have bee[illegible] occasion to retire them after about s[illegible] years of service—a design which s[illegible] with the now long-gone 175 model[illegible] 1973 heads had to have the valv[illegible] about 60 degrees apart so that ver[illegible] compression ratios could be attaine[illegible] almost flat-top pistons.

The drawings concerning these[illegible] modifications were completed by T[illegible] about mid-May 1972; by July th[illegible] castings were ready. Yet until t[illegible] season was over, practically No[illegible] 1972, no one in the race departm[illegible] the time even to dust them.

By November it was already to[illegible] Daytona '73, but at least Ducati c[illegible] the bikes properly honed for Im[illegible] that seemed questionable. 1972 [illegible] year to renew the metal workers



'7[illegible]gine:dryclutch,86-x-64.5mm,60°valve angles, desmo valve gear and 5-figure revs.



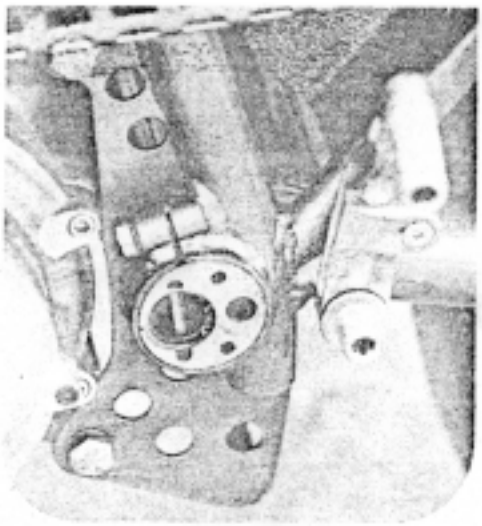
Carburetion remains the same as last year: two 40mm Dell 'Orto pumper carburetors.

in Italy, and a contract renewal in Italy is an affair which drags on for months, crippling all activities with an endless sequence of short, on-and-off strikes. By March 1973 the contract had still not been signed, and Taglioni's new heads remained raw castings. Then, with about one month left to Imola, the situation cleared up. The contract was signed and strikes were over, and Taglioni had full command of the race department again.

One month to set up, tune and test a practically all-new racer is ridiculous, but Wizard Taglioni is used to playing hurry-up catch-up. While special frames were being fabricated from chrome-moly tubing by a specialized shop, the engine was taking shape quickly. Luckily the bore of the new 750 was the same as the 450 that Ducati also raced in 1970, so race pistons were readily available. On the other hand, there was the extremely time-consuming preparation of the new heads, desmo heads of course, which required new camshafts and rockers. Everything had to be carved out of solid billets because there were no dies. Slowly the top of the new engine took shape.

For the bottom end, things were much more straightforward. A stock crank assembly was retained, but with con rods which were shorter than the standard 750. A dry clutch went in to replace the oil-bath unit. It saved some weight with its aluminum housing and the new clutch gave lighter action at the clutch lever.

With less than two weeks left, the first engine went on the bench. Everybody expected that the new engine, compared with the old one, would gain something at the top and lose something at the bottom



The new frame provides for chain adjustment via eccentrics in swingarm bosses.

and at mid-range. Instead, first readings showed that torque curve was extremely flat and that power was very strong right from 4,000 to 5,000 rpm, but then dropped (against all expectations) past 9,200 rpm. Immediately ports were enlarged and, in that process, slightly reshaped to allow better breathing. Low and mid-range power did not seem to suffer at all, while a couple hundred revs were gained at the top. The power increase over the 1972 engine was modest though the power spread was much improved. Everyone was disappointed. Despite very efficient port shapes, it looked like the engine was not able to breathe beyond 9,500 rpm. Taglioni decided to concentrate on the preparation of the whole machine and forget the dyno, for the moment at least. The short-stroke engine did fit into the new frame beautifully. The frame structure was basically the same as the production item, but eleven centimeters had been cut off the wheelbase.

The bike looked incredibly compact and mean the day it was brought to Modena to be tested by "old man" Spaggiari. After a few warm-up laps Spaggiari came in reporting some front end wag. It was decided to put on a new Marzocchi center-axle fork in place of the offset axle unit, but retaining the almost flat tri-clamps of the old unit. That would have meant an enormous trail increase, but at that moment there was no time for other attempts. Despite all speculations, the bike remained easy to handle and the wag had completely gone. When the engine got loose, Spaggiari began to push. It did not take much time until he knocked a clean two seconds off its previous 750 lap record. The new time, 59 seconds flat, was also the absolute record, .3 seconds faster than Agostini's previous best lap on the MV 500 three.

Spaggiari reported that the engine pulled strongly beyond 10,400, which did not sound right until an explanation was found about the engine's inability to rev beyond a certain limit while it was on the bench. Ducati's dyno is placed in a sort of cabin with brick walls which have no sound deadening capacity. A 750 engine revving at 9,500 created such a resonance on the test stand that the carburetor floats were completely upset and consequently the engine was either starving or was flooded. Until Ducati's new dyno room is ready, nobody will ever know how many horses the new engine pumps out.

The new machine was greatly improved in all departments over the old one. Acceleration was reported as blinding, road holding was extremely sure-footed and handling was showing the positive effects of the much shorter wheelbase and of the considerably reduced weight, which was down from 390 pounds to 325. The week

before Imola, all efforts were concentrated in putting together the other two bikes for Mick Grant and Swiss revelation Bruno Kneuhbueler. Further sharpening of the new machine was impossible and everyone had to be content with what they had in the first instance. The last engine was ready Thursday, April 12; the race was Sunday, April 15, so the engine had to be run-in during qualifications. It was Spaggiari's bike engine, and he finished in second place.

Kneuhbueler had the bike that had gone through all the tests, with more than 300 miles on the engine; he was a little concerned about the engine stamina, since he lapped Imola at 1.49.1, three seconds faster than last year Spaggiari's and Smart's record and only .2 seconds short of Saarinen's new lap record. The young Swiss has not been particularly lucky, while lying second and closing on Saarinen, he was knocked by a slower rider and broke his left-hand thumb. Mick Grant burned out the clutch of the third team bike at the start of the first heat, made the second with a practically fresh bike, but he did not feel like sticking his neck out for nothing, so he motored along lapping steadily at 1.54.0, an almost winning pace last year.

The engines ran incredibly steady and even. Though the Ducatis are not yet a match for the Suzukis as pure speed, they are a hell-for-strong 750s. This year Ducati will race 750s at the Bol d'Or only. Strikes are not expected, so for once Taglioni and his men should have enough time to get the best out of the present machine. And so, once again, Ducati may just have another winner.