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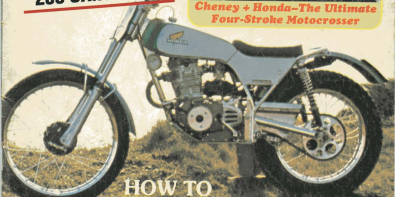
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TRACK TEST OF THE CHENEY- HONDA 250

By Frank Melling,
English Editor

■ One of the greatest pleasures is life in meeting the motorcycling enigmas, those wonderful creatures who have enough courage and intelligence to stand up against the whole weight of accepted opinion and say quite firmly, "No! I want to do it MY way." Fortunately for me, such people seem to proliferate in the world of motocross, for in this intensely competitive and yet rather esoteric form of motorcycle sport, it seems that there will always be room for the individualist with a flair. In all of motocross, there is no designer as individualistic as Eric Cheney—and as his enviable record of successes shows, there are few who equal his talent.

Cheney's latest creation is yet another example of the subtle blend of old-world craftsmanship and creative thinking which has been the hallmark of his bikes since their inception in the days of the BSA Gold Star.

When the race to modernize suspension first began, with Maico's early attempts at moving the rear dampers forward on the swinging arm to gain more movement, Cheney was skeptical as to the advantages. Whether this skepticism was born of genuine disregard for the innovator's ideas, or as is more likely, simply a wily veteran campaigner letting the opposition do the basic (and expensive) development work, will never be known, but for whatever reason, Cheney was not prepared to switch from the tried and tested JBR chassis until he definitely had something better to replace it. The JBR steered and handled exceptionally well, as John Banks proved on many occasions through the 1973 season, and the bikes were selling well. Cheney had time to think.

The idea of Yamaha's cantilever system appealed to him but its sophistication—and consequent manufacturing cost—did not. Also, reports of maintenance difficulties and problems in setting up the system for different tracks were not encouraging. What was needed was the sensitivity and length of movement that the cantilever offered, but with a low-cost suspension medium that would be easy to maintain and adjust. Cheney's answer was shatteringly simple.

From the swinging arm, a loop of 7/8-inch x 17 gauge tubing bears on a pair of Girling dampers that lie parallel with each other, and almost in line with the main spine of the frame. Because the loop is placed forward of the rear wheel spindle, there is a marked mechanical advantage and this means that although the dampers have only



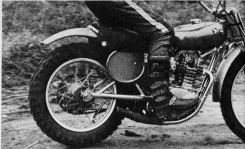
four inches of movement, the rear wheel can traverse $7\frac{1}{2}$ inches.

The dampers are cheap to replace and easy to adjust since any standard Girling spring can be fitted, or if the rider prefers, either Koni or Bilstein units can be fitted. Gírlings have been chosen because Eric feels that the bulk of the problems that have plagued them recently have been eliminated by allowing the damper to operate with pressure travelling along the line of the damper rod only. When a damper is mounted vertically, lateral forces (incurred because a wheel describes an arc during its movement and not purely a vertical movement) as well as vertical act on the damper causing heat to build up through friction. The Girling unit, with its small reservoir of oil, suffered more than most from the stresses of heat, although its damping characteristics were as good as any. With this problem removed, and the addition of a gas/oil emulsification for the damping medium, the future looks good.

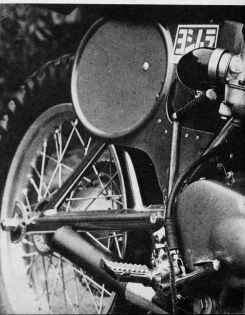
Not only are unnecessary stresses removed from the damper but suspension loads are transmitted directly to the steering head through the frame's spine instead of via a sub-frame. Thus, the bulk of the shock loading from both the front and rear suspension (which can be very great in motocross) is contained within the rigid spine and the rest of the frame can be made commensurately lighter without any loss of strength or durability.

The frame is constructed from 16-gauge Reynolds 531 tubing—probably the best CDS tubing in the world—and is bronze welded, with immaculate skill. The swinging arm also uses 531 but this time of a slightly thinner wall thickness—17 gauge—and a larger o.d. to maintain durability. It is interesting to note that Cheney still builds his frames with a working life of four or five seasons in mind despite what must be a severe temptation to save weight by going to 20- or 22-gauge tubing, as some specialist manufacturers have done. Thin wall frames are very nice for a Grand Prix star who has a bottomless source of supply, but they leave much to be desired for the private owner.

Strangely, the most impressive trait the new suspension offers is not in ease of riding or comfort but in drive. The Cheney—even when powered by the high revving Honda engine—put down an incredible amount of drive. On numerous occasions, I was surprised by just how much grip was available from



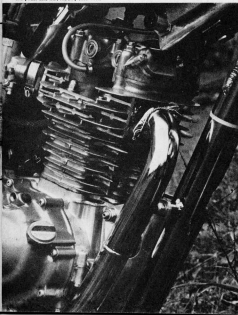
In braking, note how the rear wheel stays in contact with the track despite the radical weight transfer on to the front end. The fully floating rear brake operating through a 7" Rickman magnesium hub permits good braking while retaining full suspension movement AND sensitivity.





Under acceleration note deflection of the rear tire (pumped to 12 lbs. p.s.i.) as indication of just how much drive is being obtained.

The carb is a 32 mm. dual concentric and it is very effective. Note the rear brake lever, beautifully made and difficult to use. Cheney suggests that riders who have difficulty using the pedal (i.e. me) modify their feet.



the hard test track, well dampened from heavy autumn rain. Over ripples in particular, the Cheney just kept on gripping where most other bikes—including my own Cheney BSA—would have caused wheelspin as the rear wheel hopped from one humpback to the next.

With Cheney's system, not only is there a lot of suspension movement available at the rear wheel but every part of the movement is effective. In practical terms, the wheel follows the contour of seemingly every bump in the track, following their shape as faithfully as any Bloodhound on to a hot scent. Because the wheel tends to stay in the track, there is limited opportunity for the engine revs to soar, causing traction to be broken, as happens with many bikes.

An equally interesting corollary manifests itself in braking terms, for if the rear wheel is in contact with the ground for acceleration, its presence is equally valid for de-acceleration. Braking hard with the wheel clear of the ground has its problems: braking hard with retardation being transmitted firmly to the ground is much more satisfactory.

The braking is helped by Cheney's own fully floating rear brake system that allows a constant pressure to be maintained on the brake pedal without regard for the rear wheel movement. It also means that the suspension remains unaffected by braking instead of stiffening, as happens with a conventional system.

Of course, being a Cheney, it has to be special and both fastidious engineering and attention to detail are shown in his choice of needle roller bearings for the torque arm pivots, in lieu of the more conventional bronze bushes. The torque arm also carries a singularly effective chain guide which is likely to prove essential with chain lash generated from such a long rear wheel movement.

Eric has paid much attention to weight in this bike and although the machine we tested was a genuine production prototype, using heavy gauge tubing and steel nuts and bolts, it still tipped the scales at only 212 pounds—absolutely ready to race. This is not some figure dreamed up by an advertising agency but an absolutely accurate one, as witnessed by me, since the bike was weighed only a few minutes before I rode it, complete with oil and fuel. In these terms, it is highly competitive since very few 250's on general sale are within ten pounds of this figure. Equally interesting is the

The bike—a full-production prototype, not a G.P. special—weighs a genuine 212 lbs. complete with oil and gas. The scales prove it!



The riding position is superb and this feature alone is worth 50 yards a lap.

The only view that the public is permitted to see of the new damping system.



thought that a Grand Prix version of the bike using thin wall tubing, lightened bolts and all the other clever bits which go to make a works bike, could be brought down to around 198 pounds—a weight that would make it competitive at any level.

The Honda engine, with its magnesium side cases, obviously helps in reaching this surprisingly low figure but Cheney's superb engineering must take most of the credit. For example, the swinging arm pivots on a pair of Triumph (car) synthetic bushes, wrapping around them is a fork at each end of the parallel tubes, thus saving the weight of a pivot bolt traversing the whole width of the swinging arm. Similarly, Cheney uses aluminium wherever possible because while this metal is more expensive to work with than fiberglass, it is also stronger for a lighter weight than any plastic. The fuel tank, side panels and air-filter box are all manufactured from alloy, and like the chassis, seem to have a working life far in excess of most mass produced components.

In selecting odd items from the bike for scrutiny one runs the risk of destroying the soul of the machine, for the thing about which every rider comments when he first rides a Cheney is the total feeling of security which the bike offers. It is difficult to convey what is at best an intangible feeling but one is conscious of the overwhelming "rightness" of the bike. The controls fall to hand immediately, the handlebars are in correct relation to the footrests and the saddle offers just the necessary degree of support. Immediately, the rider feels confident and secure and he can get on with the job of racing.

My own Cheney BSA is phenomenally well behaved on the track. To fall off it, you have to do something really silly and then ignore all the clear warnings it gives before disaster strikes. Cheney's new cantilever is so good that it makes the old one feel positively dangerous by comparison. Although the test track we used was not very demanding, the effortless ease with which the bike would glide over the rough became apparent.

Strangely, the front forks—Cheney's own design which are machined from billets of solid dural to a tolerance of $\pm .0001$ -inch—were the weakest part of the design since they seemed to transmit a good deal of the track bumps. However, it was not the forks which were at fault—they still give $7\frac{1}{2}$ inches of silky movement which is on par with

(Continued on page 62)



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TRACK TEST OF THE CHENEY - HONDA 250

(Continued from page 37)

anything in the world—it was just that they could not match the effortless performance of the rear suspension. The factor affecting performance is the same spectre that always haunts any development engineer: as one part is improved, the next weak link in the chain is exposed. I was hitting bigger bumps faster than I would normally on my own Cheney-BSA, so the front forks, which are superior to the rear suspension on the old frame, suddenly have to work harder and become suspect. However, in fairness to Cheney, the words "suspect" and "weak" have to be put into perspective. When you are debating whether your front forks are perfect, you will be travelling so quickly that the opposition will be wishing that THEY had "defective" front forks just like yours!

Unfortunately, the Honda power unit does not match the frame's brilliant performance. The XL 250 engine used in the prototype was the first one that Cheney had prepared for racing and even with his years of experience to help him, it would be too optimistic to expect perfection at the first try. Eric promises that the second engine will be much better.

At present, operating the throttle is like using a cut-out switch. Throttle open and the power flows in; throttle closed and the engine dies—instantly. The trouble is simply the lack of feedback effect to soften the power

impulses, Eric skimmed the flywheels in order to let the motor rev. freely and also removed the alternator and stator to save weight. Unfortunately, too much weight has been removed and the power characteristics are now unsuitable for motoring.

What is left is an absolute beastie of a power plant producing some 30hp and revving in excess of 11,000 rpm. Before I rode the bike, I questioned Eric as to whether a four-stroke could ever be competitive in the 250 class. In answer, he smiled and prodded the bike. After ten minutes, I was willing to concede that the bike was competitive with anything I have ridden, for once the motor was spinning and Chaney took off in true Grand Prix fashion.

In view of its power, the engine is surprisingly close to its original specification. Fog Yoshimura provided a cam and gas-flowed head and Eric removed the original alternator system and substituted an Inter Span electronic ignition unit. This is a clever little box of tricks which provides four hours of sparks from its own nickel cadmium power cells, which are re-chargable from a 12 volt car battery. Other than a wire from the bike's contact breaker points and an H.T. lead to the spark plug, the six-inch long box just hangs under the frame suspended on two rubber bands and is totally impervious to the onslaught of mud, rocks or dust. Were that all electrical systems on competition motorcycles as foolproof!

Other than the addition of an extremely noisy open pipe—the Chesey

Even in the parking lot, the Cherry was spectacular—on the track it was incredible.



sounds like a close relative of a heavy machine and should destroy any noise meter at present in use—and the chopping of a few fims to decrease (it is claimed) the chances of clogging with mud, the engine is just as it left the Honda factory.

The obvious question is, how does it compare with BSA's (Triumph, Norton, etc.) much loved and highly successful B.50 engine? The answer, at the time of writing, is that it doesn't. But it does have the POTENTIAL to be a good racing engine. The B.50 has been under constant race development for eight years and has had the undivided attention of some of the best engineers



Cheney's own not-too-successful version of the Honda XL 250 engine. The alloy blanking plate covers space left after removal of the alternator, in motocross. The Honda is in its infancy. In its favor is its weight, a good five speed gear box, a sound bottom half which is capable of taking far more power than the engine delivers as standard, and a design that is easy to work on. That it can be competitive is beyond doubt.

Better still is the XL 350 motor (only four pounds heavier than the 250), which should give 38bhp and with a nice flat torque curve. A four-stroke engine producing this kind of power, housed in a chassis as good as this latest Cheney, would be a definite challenge to any two-stroke. It is not surprising to hear that certain Japanese gentlemen have been taking more than a passing interest in the bike.

Eric Cheney's one burning ambition is to win a Grand Prix outright with one of his bikes. Once again, there is the distinct possibility of this dream becoming a reality.

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