A bevy of Bunters

Robert Garbutt rode two Centurys on his Bunter

ONE fundamental dimension of cycle construction stands out at the end of the first full century of cycling as being fixed in stone. There is another that is as malleable to designers as the bicycle frame itself, but which nonetheless is fixed almost as firmly, writes Richard Hallett. The first is found in the roller chain, while the second, of greater consequence in terms of the overall feel of a bike, is tyre size, and on the road there is only one that counts. It is colloquially known as 700C, and it is a versatile format suitable for everything from track sprinting to rough-stuffing.

Traditional cycle part dimensions were the result of empirical research by the early bike-builders, who quickly found out the hard way if some tube or lever wasn't strong enough for its purpose. Many parts, such as the one-inch steerer tube, are being superseded at the top end of the market by oversized items as improved manufacturing methods allow. One constant is the standard half-inch pitch cycle chain, which evolved after much experimentation with one-inch block chains, lever chains and anything else that wasn't as good as a roller chain. Cycle transmissions would surely be superior to those of today had Shimano's 10mm pitch chain got any further than track racing. But even back in 1976 the commercial difficulty of persuading bike manufacturers to swap from one universal standard to another was too daunting.

No such problems afflicted tyre manufacturers when they finally decided to do something about the weight and resistance of the rubber available to tourists and leisure cyclists. There was a dazzling variety of 'proper' tyre formats already in existence when, in the mid-Seventies, someone at Michelin identified a need for fast, lightweight clinchers.

At the time, Continental cyclos preferred variations on the 26in wheel, whereas British cyclists mainly rode on 27in tyres of various widths unless racing, when they used tubulars. Oddly enough, tubs are designated 27in even now, although they are about a half-inch smaller in outside diameter, but they sit on rims some 8mm smaller in diameter than those of 27in clinchers. The first 'performance'

Dave Yates' own bike now lies idle

Load carrying is the Bunter format's forte

clincher was Michelin's Elan, which was a nominal 27x1in fitment, comparable in cross-section to a 25mm tub.

The speed difference between this and, say, a Michelin 50, which was only about 3mm wider in section, was astonishing, although most of the improvement could be attributed to the Elan's superlight carcass. Once tried, however, there was no going back. Here was the speed of a tub without the repair problems. The intrepid types who used to tour with a bundle of old tubs behind the saddle and a needle, thread and blade in a back pocket were particularly impressed. Racers on a budget also found the tyre fitted the bill.

650C v 700C

Light or not, the Elan was still fatter than a tub. More importantly, it was designed for the larger rim, and could not be used for training in a race bike unless the range of brake adjustment could cope. A thinner Elan-type tyre on a tub-sized rim was the answer. Had road tubs been a different size, then surely lightweight clinchers would be something other than 700C, such as 650A, B or C, or even 700B for that matter.

While some of these alternative tyre formats have withered away, two have prospered sufficiently to offer credible alternatives to the clincher standard. The less popular is the 650C format, which is supposed to be 26x1in but which comes out at just over 24 inches outside diameter. This enjoyed a brief summer of popularity with top professional cyclists such as Tony Rominger and Richard Virenque a couple of seasons back, on account of the light weight and small frontal area of the tyres, but is otherwise ignored. The other began as the size favoured by mountain bike designers, who found the 26x2in format with bead seat diameter of 559mm ideal. All those mountain bikes that stayed on the hardtop just cried out for smooth tyres, which appeared in cross-sections from 20mm to 50mm. The narrowest and fattest proved next to useless for fast road cycling, the former being too harsh and the latter too heavy.

The best dimension for 559 format road clinchers is about 1.3in or 35mm, precisely because it avoids those problems. As suggested in CW July 11, 1998, such a tyre size may offer genuine advantages over 700C rubber in certain areas; indeed, there are a number of bike builders around who offer road frames built to take such wheels as standard.

We commissioned Dave Yates to build a test frame, which built up into a bike we called the 'Bunter'. Since then we have tried a selection of these beasts, including the Roughstuffer from Chas Roberts and a couple of fixed-wheel irons. Editor Robert Garbutt rode the Roughstuffer in two Century rides, while I used the Bunter for my Paris-Brest-Paris 400-kilometre qualifier. Dave Yates built his own 26in wheel Audax bike to try the idea out, and between us we have formed a fair idea of its merits.

In fact, there are two: bullet-proof reliability and excellent load-carrying capacity. In every other respect, 700C wheels win hands down. Well, almost. For rough-stuff riding, the smaller wheels would win if fitted with a knobbly such as Continental's 26x1.5 Cross Country tyre. Unfortunately, slick fat tyres provide poorer directional control on loose surfaces than do 700Cs, as proven on a ride over downland bridleways on the Isle of Wight. The strength of the wheels and tyres evens things up, but there is no clear winner.

Commuters' favourite

Those fat tyres are comfortable, especially over that granite-chip surface that makes cycling such hard work. On the other hand, the stiffness of the wheels, together with the high pressures needed if the tyres are to roll well, mean that bigger hits of lower frequency are more noticeable. Again, honours are even.

The moment performance is brought into the picture, 700C tyres start to look very good. The problem with mtb slicks is twofold: they are heavy, and they are wide. A bunter weighs about 450g more than a similarly set up 700C bike, and the weight is almost all where it isn't wanted — at the outside of the wheels. Excessive rotating weight hampers acceleration, which is why track tubs need to be as light as possible. Bunters are a poor choice for climbing and for bunch training, where every small acceleration by the others is that bit harder to match. As for racing, forget it.

The same applies with wind resistance. A 1.3in mtb slick offers about 40 per cent greater frontal area to the wind than a 700x23C tyre. That's a lot of extra drag at speeds of over 25kph, and it gets worse as speed increases. Acceleration is hard work, and then when you get up to speed you can't go as fast anyway.

Perhaps most surprising is the way these bikes handle. You might expect improved grip and cornering from fatter tyres, but the reality is different. On dry tarmac there is no real problem if the bike is well proportioned, like the original Bunter. However, ripple bumps make the tyres bounce like a beach ball, where a resilient 700C wheel conforms better to the surface. On a damp or slippery surface this disparity is worsened, while that all-important 'feel' for the grip between tyre and road diminishes thanks to the mushiness of the tyres. It is surely no coincidence that Garbutt, Yates and I all slacked our bunters on wet roads, in conditions where conventionally-mounted riders stayed upright.

The news isn't all bad. For expedition riders and serious commuters, a bunter is the clear winner. In both cases, the sheer durability of these bikes is enough. Add a couple of well-filled panniers, and the equation changes further in favour of fatter tyres. With a good carcass inflated to a high pressure — about 80psi with 35mm tyres — rolling resistance is noticeably lower than for narrow 700C tyres. Proportional to the load on the tyres, it is relatively unimportant at speed on a lightweight racing bike. Laden touring bikes travel slowly, and are ridden at a steady speed, so rolling resistance pays off.

The roughstuff comparison is also a bit misleading, for 700x23C tyres need careful handling off-road. Something like 700x28C is better, but the weight of these is nearer that of an mtb slick. No, the final verdict comes from a comparison of fixed wheel road bikes. Speed-restricted by the low gear needed in winter, they should be the ideal home for fat tyres. Indeed, a fixed bunter rides well. The only trouble is, a conventional machine is just, well, nicer.

AVC's Caribou is a modified mtb