# Growth sector

**With organic materials causing a buzz in custom circles, *Cyclist* discovers that bicycles really can grow on trees**

Words **JAMES SPENDER** Photography **DANNY BIRD**

Carbon is cutting edge and steel is real, but there was a material used in two-wheeled construction that preceded both by some years: wood.

When German Karl von Drais patented the *Laufmaschine* in 1818, his original creation was made from timber, as were the velocipedes that followed in France in the 1860s. Wood was soon superseded by steel, of course, but not before a few companies began dabbling in frames made from another 'alternative' material towards the end of the 19th century: bamboo.

For many in the bike industry the use of such materials marked either a developmental epoch or a gimmicky fad, but recently both wood and bamboo have been beginning to resurface, making a few waves as they do.

**Knock on wood**

Liam Murray, founder of Irish-based Woodelo, has been experimenting with wooden frames for several years. In 2013 Woodelo took Best New Builder at Bespoked (see page 63), and this year its Leaf Speed road bike scooped the prize for Best Alternative (not steel) Material. While the aesthetic is certainly one of wood's appeals, Murray believes the material has got a lot more going for it than looks alone.

'We use Irish ash, which is also used for hurling sticks and cricket bats because it's got that dampening property. But that's all well and good – you still need the strength.'

Murray explains that one of the first things to impress him when trialling wood was its innate stiffness. However, like other materials such as carbon, that quality needs to be harnessed.

'The rear stays are laminated timbers. It's not cross-grained like plywood, but rather the grain runs in one direction [the length of the stay] like unidirectional carbon fibres. The stays are machined first, then hand-carved to a certain thinness to tune the ride quality depending on the rider. But it's a trade-off between strength [each frame conforms to EU safety standards] and weight, so the main triangle is hollow.'

Depending on size, Murray estimates a Leaf Speed frame weighs between 1.8kg and 2.3kg. With careful component choices a sub-7.5kg build would be easily obtainable, yet Murray says weight is still one of the limiting factors.

'If people want the lightest frame in the world it's not going to be a timber


**Wood:** A thing of beauty is a joy forever, and none more so than the show-winning Leaf Speed. Although the frame weighs around 2kg, it originates from two 25kg planks, such is the importance of being selective when choosing individual frame sections

frame. For example the tube wall thickness has to be around 3-4mm [compared to carbon or metals, which can be less than 1mm]. But it's about what the timber does – it feels like it deadens the road, yet when you stamp on the pedals it's very responsive.

'Probably the biggest hurdle is the general perception of wood. People are always saying to me, "What happens if someone comes along with a saw, or if you leave the bike by the fire, or it gets wet?" And I say what would happen to your carbon bike if you took a saw to it! And try leaving your carbon bike by a fire or your components in the rain.'

The last point is an interesting one – untreated wood has a propensity to swell and deform when wet. But Murray says his bicycles are fully sealed with marine-grade varnish, so there's no risk.

'We coat the internals with epoxy resin and on the outside we use the same polyurethane varnish they use on carbon frames, so once the frames are sealed they're 100% waterproof. But right now the acceptance of wood is a cultural thing. It's the same with bamboo.'

**Grassed up**

While to the untrained eye bamboo might look wood-like, it is in fact a grass.

'In many respects bamboo is the cheapest hardwood you can get,' says James Marr, co-founder of the Bamboo Bicycle Club, an outfit in London offering build-your-own bamboo bike courses. 'Most of our bamboo is imported from places like China by a guy who sells it for all kinds of uses: architectural, film sets, Thai restaurants. You can even use bamboo for making clothing.'

At this point you could be forgiven for thinking Marr might be trading on the 'eco-card' but, like Murray, he is at pains to point out that if he didn't see bamboo as a genuine contender he would have hung up his culms (the technical term for bamboo poles) long ago.

'I've had aluminium and carbon frames, but when I started building bamboo bikes I soon realised how smooth they were to ride. You get less road noise when you ride and it's got a nicer flex to it that other frames.'

That might sound like a biased opinion, but there are studies to back it up. Pointing to research carried out by the Swiss Federal Institute of Technology, CEO of US-based Boo Bicycles, Nick Frey, says, 'Bamboo has twice the bending stiffness of steel. Yet while it's stiff, like carbon fibre reinforced plastic it dampens high-frequency vibrations significantly better than standard "hi-mod" carbon monocoque.' Still not convinced? This year's Red Hook Crit race in New York was won by a rider on a Boo bike.

Are wooden or bamboo bikes right for you? Watch this space for full reviews in future issues of *Cyclist*. *Woodelo (woodelo.ie) frames start at £2,010; courses at the Bamboo Bicycle Club in London cost £495, while homebuild kits cost £320 (bamboobicycleclub.org); Boo bikes start from £1,670 (boobicycles.com)*

**Bamboo:** This particular bicycle was built and is owned by Dylan Jenkins at the Bamboo Bicycle Club, and he recently completed the total 296km distance of the Milan-San Remo Gran Fondo aboard it. *Chapeau!*