Tapering and bending

Wouldn't cycling be a very dull pastime if all roads were dead straight and of constant width? And a bicycle would be an ungainly contraption if all the tubes were straight and parallel, and oh! how uncomfortable! The authorities can take a stretch of road and straighten out a bend or make a narrowing bit parallel, but with tubing the process is reversed—bends and tapers all start as straight, parallel tubing.

Tapering a tube for a fork blade, chain-stay, or seat-stay, is a highly skilled tas Two steel rollers, one above the other, rotate so that the faces in contact with each other are moving towards the operator. In those faces are semi-circular grooves, matched to present a round hole, which progressively diminishes as the rollers rotate, then suddenly opens out to full diameter again. The full diameter is that of the tube to be tapered, and the length of the tapered groove in the rollers coincides with the required length of tapered tube.

As the full diameter faces the operator, he quickly pushes in the tube as far as he can. The rollers push it out again, but squeeze a little into the tapered groove. As the full diameter comes round, so the tube is pushed in again, going in a little further on account of the small length already reduced in diameter. This is further reduced as the tube is pushed out again. The operation is repeated at the rate of about sixty strokes a minute until the tube reaches a pre-set stop behind the rollers. All the time, while the tube is being pushed in and out, the operator is rotating it, to ensure that its roundness is maintained. A stay takes between a quarter and half a minute, according to length, and is afterwards trued up for straightness.

Fork blades are made this way, from round tubing, which is afterwards shaped to oval or D at the larger end if required. They are then bent round a former in a simple hand-operated bender. The tool looks almost primitive, but is very effective and accurate.

Handlebar bends are also usually bent by hand, but the bender is more complicated. Lighter gauge tubes have to be filled with resin to keep their section truly round in the bend, and while one end is clamped between shaped blocks, the bend is put in by forcing the tube round a former, by means of a "slipper" with a semi-circular groove, pivoted on a long arm.

Larger and heavier tubes than those used for bicycle components have to be bent on a power bender between three shaped rolls, adjustable to vary the radius. Watching the craftsmen of Reynolds at work, it all looks deceptively simple, but to produce bends to exact dimensions, so that each component is accurate to drawing and interchangeable with all others to the same part number, demands a skill only achieved by long practice, and a pride in one's workmanship. In fact, it demands true craftsmanship. We at Reynolds are proud of our craftsmen, and hope that some of the pride will "rub off" on to you as you ride your bicycle with its green, gold and black decal.