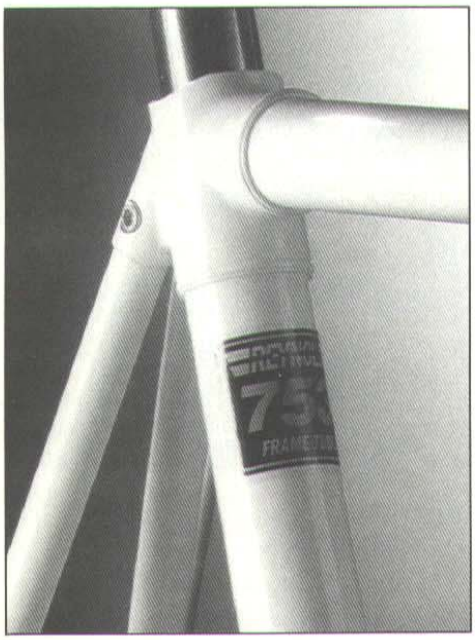
Raleigh

Team 753

New life for a familiar old friend.
By John Derven



New investment-cast aluminum seat lug has extended sleeves that slip inside the main triangle's heat-treated Reynolds 753 tubes.

Five years ago, it seemed that the Raleigh Cycle Company based near Seattle, Washington, couldn't be more removed from its namesake in Nottingham, England. Raleigh USA was then owned by Huffy, and had just unveiled its new Technium line—bicycles manufactured by bonding aluminum main tubes into steel lugs using an aerospace adhesive. It was a far cry from the image of the traditional British lightweight on which Raleigh had built its reputation, with its venerable all-steel frame made by craftsmen wielding torches and files.

But these days, Raleigh USA appears to be a little closer to its roots. In late 1988, the Derby International Corporation bought Raleigh USA from Huffy. The same organization had acquired Raleigh of England a year earlier, so these two Raleigh divisions again have the same ownership, although they continue to operate autonomously (all other Raleigh branches worldwide, including factories in Holland, France, Canada, and West Germany, have also been brought back into the fold). Additionally, Raleigh USA now has two top-end road bikes, the Team 753 and Competition 531, made with steel frame tubes and fork blades from British manufacturer TI Reynolds. Even so, Raleigh USA continues to build bikes in its own distinctive way, using the patented Technium process.

All Technium bikes have steel chainstays and seatstays, but the new Reynolds-tubed racing bikes combine steel main tubes with aluminum lugs, the reverse of the original Technium set-up. Why the switch? "Technium means bonding dissimilar materials," notes Raleigh's marketing manager, Phyllis McCullough. "We've bonded aluminum tubes to steel lugs, carbon and Kevlar tubes to steel lugs, and now we've done steel tubes to aluminum lugs. But we only bond things together that are going to benefit the cyclist. We change the materials in different parts of the bike to improve the function for its intended use."

In the case of the Team 753, the intent was to produce a full-bore racing machine, the flagship of the Raleigh's new Racing Technium line. The use of slightly oversize steel main tubes gives the frame an added infusion of stiffness, and aluminum lugs mitigate any weight gain from the heavier frame tubing. "In the past, we've had comments from racers that our bikes were too mushy," notes Doug Barchek, Raleigh USA Product Development Engineer. "So when we designed our Team 753, the last thing we wanted was another bike that they might say wasn't stiff enough. By going to steel main tubes, we were able increase the rigidity by about 20 percent over our aluminum bikes."

Raleigh's earlier Technium racing bikes shared lugs with the company's sport-touring machines, and the laid-back geometry on the race bikes reflected this

compromise (see BICYCLE GUIDE, March 1987). But this year Raleigh dialed in its racing bike geometry for criteriums—the dominant form of on-road competition in the United States. The new racing geometry is textbook perfect: steep head angles (up to 74.5 degrees in the largest frame size), tight front centers that don't shy away from a little toe-clip overlap, and seat angles and top tube lengths that vary proportionally with all six frame sizes.

The new geometry for Raleigh's racing line represents a huge financial investment. Each frame size requires its own unique set of lugs and bottom bracket shell, and the costs are high for the tooling and manufacture of the close-tolerance parts used for the bonded frames. The head tube and head lugs are cold-forged from aluminum as a single unit, while the aluminum seat lug and bottom bracket shell are investment-cast because of their complex shapes. New vertical rear dropouts of cold-forged steel are also specific to each frame size, and like the Technium lugs, they have a plug-in design that simplifies assembly and increases frame strength, according to Raleigh.

The new lugs and dropouts are used throughout Raleigh's racing Technium line, which includes four models with aluminum main tubes. To allow proper fit of the Technium lugs (which have sleeves that slip into the tubes), the steel main tubes have the same inner diameter as the aluminum tubes. Raleigh engineers selected a 0.6 millimeter wall for these tubes on the Team 753, which results in outer di-

At left: Bottom bracket shell is also cast aluminum; derailleur tab is riveted and bonded.

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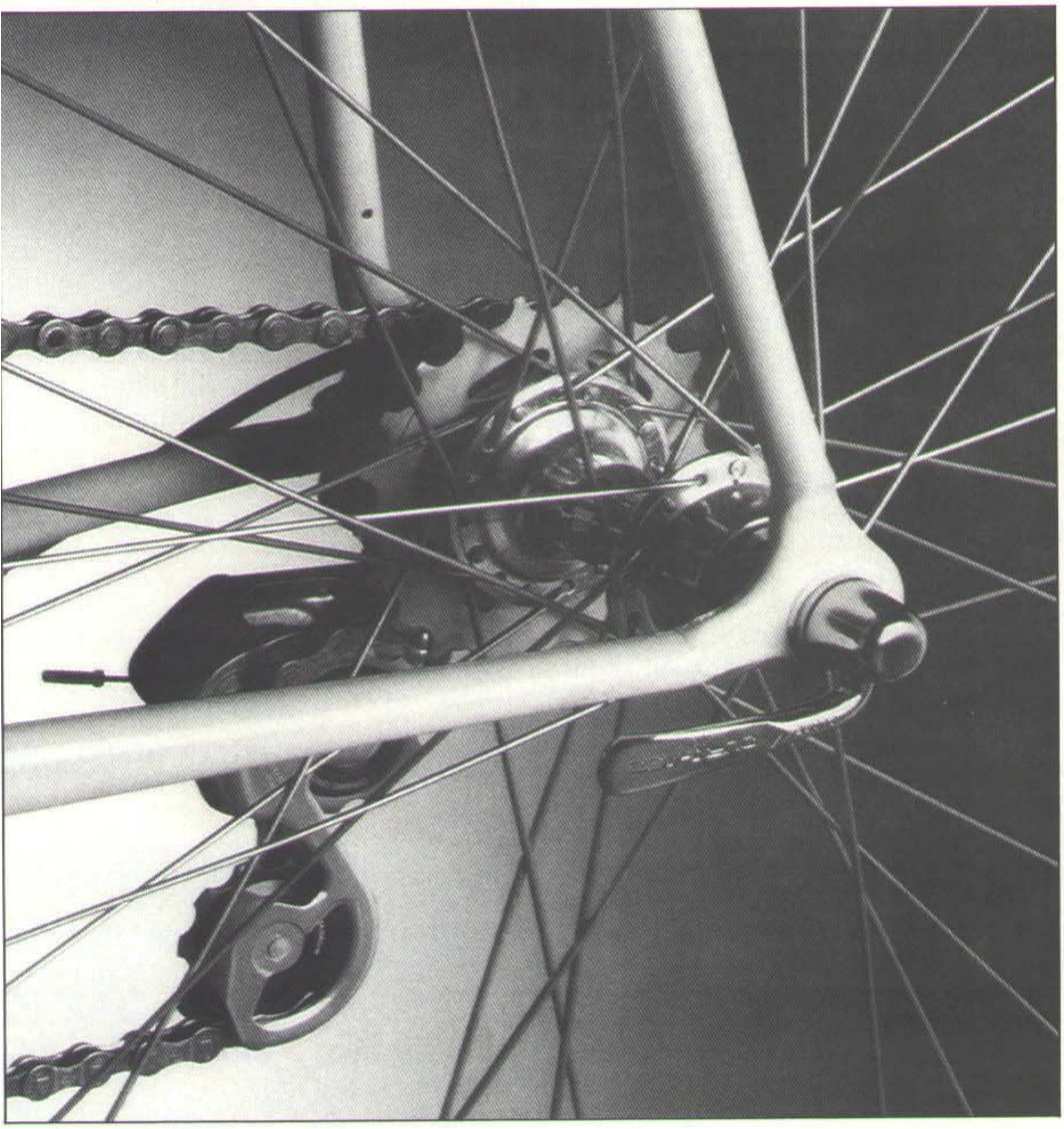
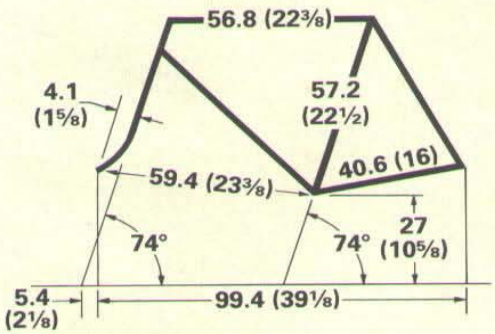


The vertical rear dropouts are brazed to a set of True Temper 4130 chrome-moly steel stays. Spacing is stretched to 130 mm to fit an eight-speed Hyperglide cassette.

RALEIGH TECHNIUM TEAM 753

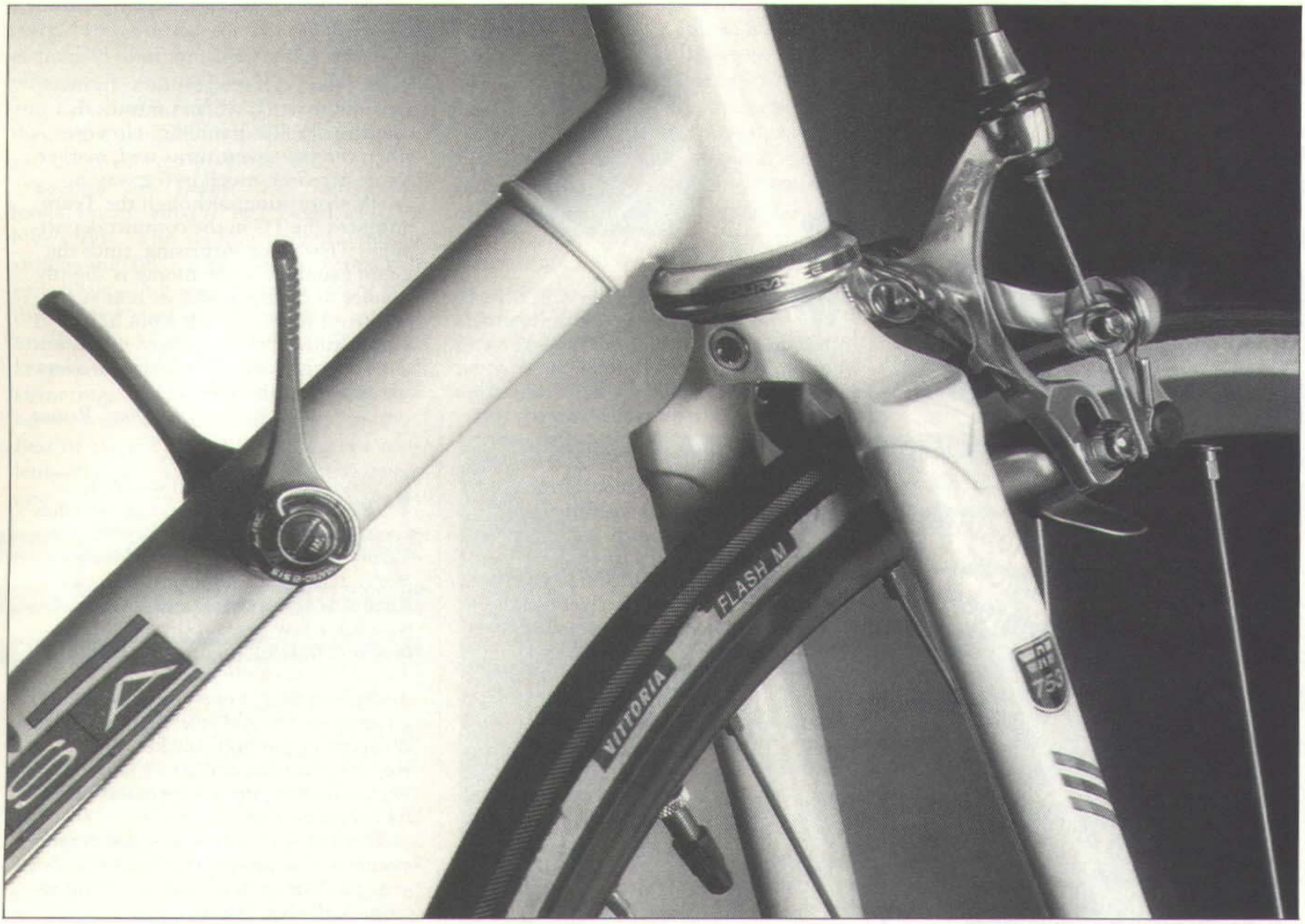
Approximate price: $1700 complete bike, $800 frame and fork (shipping and dealer prep may be extra)
Sizes available: 48, 50, 54, 56, 58, 62 centimeters (measured center to top)
Size tested: 58 cm (22⅞ inches)



Total weight: 22 lbs, 8½ oz
Frame without fork: 4 lbs, 11 oz
Fork only: 1 lb, 7 oz
Front wheel only: 2 lbs, 14½ oz
Rear wheel only: 3 lbs, 14 oz
Frame: Reynolds 753 oversize straight-gauge main tubes and True Temper 4130 chrome-moly stays bonded into cold-forged aluminum head tube and investment-cast aluminum seat lug and bottom bracket shell; cold-forged steel vertical rear dropouts; Reynolds 753 fork with forged crown and dropouts; rear brake cable routed through the top tube, pump peg integral to head tube, bonded-on fittings for shift levers, front derailleur, two water-bottles, chain hanger, brazed-on rear derailleur cable stop. Shimano Dura-Ace cup and cone aluminum headset.
Rims: Mavic Open 4 CD, 700C, 32 hole
Spokes: DT stainless steel, 15 gauge, laced cross three
Hubs: Shimano Dura-Ace, low flange, quick release, cassette rear
Tires: Vittoria Flash M "open tubular" clinchers, 700 x 20C, presta valves
Crank: Shimano Dura-Ace, 170-mm arms, 53/42 round Superglide chainrings, Dura-Ace cup and cone bottom bracket
Derailleurs: Shimano Dura-Ace with downtube-mounted 8-speed shift levers
Freewheel: Shimano Dura Ace 8-speed freehub with 12-21 Hyperglide cogs
Chain: Shimano Dura-Ace Hyperglide narrow
Gearing in inches:

**	42	53
12	95	119
13	87	110
14	81	102
15	76	95
16	71	89
17	67	84
19	60	75
21	54	68

Saddle: Selle Italia Turbo Special, perforated leather
Seatpost: SR/Sakae FX, 25.8-mm diameter, 220 mm long
Brakes: Shimano Dura-Ace SLR with aero levers
Pedals: Shimano Dura-Ace clipless
Handlebars: SR/Sakae FX, criterium bend with anatomic shape, 43-cm wide; SR/Sakae FX stem, 10.5-cm extension, padded vinyl tape
Manufactured by: Raleigh Cycle Company, 22710 72nd Avenue South, Kent, WA 98032; 206-395-1100



Reynolds 753 fork is hand-brazed in England to Raleigh's specifications. It uses Reynolds forged crown and dropouts, weighs practically nothing, and is handsome to boot.

ameters of about one inch (standard) for the top tube and about $1^3/_{16}$ inches (nonstandard) for the down tube and seat tube. The lightweight, straight-gauge tubes are custom drawn and cut to length for Raleigh by Reynolds; butted ends aren't needed because the main tubes aren't subjected to the high temperatures of brazing or welding.

Reynolds 753, first marketed in about 1975, is a heat-treated tubing with composition similar to Reynolds' popular 531 manganese-molydenum steel tubing. Heat-treating increases the strength of the tube, and so allows the use of thinner wall dimensions. But the 0.6-mm wall main tubes on the Team 753 are the same size as Raleigh's Competition 531 bike, so in this case, the use of 753 tubing doesn't produce additional weight savings (though at four pounds, 11 ounces in a 58-cm size, the frame weight is certainly competitive); it simply provides an added margin of safety.

The seatstays and chainstays on the Raleigh Team are True Temper 4130 chrome-moly tubing, with 0.6 and 0.8 mm walls respectively (slightly thinner than Columbus SL stays). Although Technium bikes with steel lugs have their stays brazed into the seat lug and bottom bracket shell, the new racing bikes with aluminum lugs are bonded at these points. Thus the only brazing on the Team frame is to attach the rear dropouts, brake bridge and rear derailleur cable stop. Fittings on the main triangle, including the shift lever bosses and the front derailleur hanger, are riveted and epoxied into place.

The Team's front fork, on the other hand, is utterly traditional—it is handbrazed in England to Raleigh's specifications, using 753 tubing and Reynolds' own forged fork crown and dropouts. It seems unusual that Raleigh selected a brazed fork for the bonded Technium frame, especially considering the variety of bonded aluminum forks on the market. But the 753 steel fork is light (about one pound, seven ounces), and the Team's conservative design is intended to

COUNTERPOINT

My first good bike, ten zillion years ago, was a Raleigh with Reynolds tubing, so this was something of a reunion. But my old Raleigh never rode like this one. This bike has a smooth, even ride—it feels well-damped, sort of like a German car. Yet it is not flexible at all through the bottom bracket. Up hills, it moves forward precisely, but never sideways. And through corners, it stays rigid and true, tracking your chosen line accurately.

Despite its smooth competence, though, it is not a very lively frame. It doesn't have the springy resilience of, say, a bike built from standard Reynolds 531 or Columbus SL. It doesn't feel dead, exactly—it's just not very excitable.

But the steering is as good as any bike I've ridden lately. At low speeds, you can thread this bike through hazards with nary a quaver, and yet it stays light, sure and very accurate through fast, sweeping bends.

I like the component mix, too. Putting clinchers on a $1700 bike would have been out of the question five years ago, but tubulars are a tough sell these days, so the Raleigh's mix of Open 4 CDs, DT spokes, and Vittoria Flash Ms is well chosen. Raleigh has even added polyurethane rim strips to prevent pinch-cut flats, a thoughtful touch that sort of sums up the company's approach to this bike: Understated, even unobtrusive, but very, very competent.

—Ted Costantino

I'm on record for not caring too much for Raleigh's aluminum Technium bikes; their frame geometry is conservative and the tubing somehow filters out too much feedback from the road. The resulting ride is certainly pleasant, but for me it's just plain dull.

But the steel Technium Team 753 is another story altogether. The Team's taut, twangy tubing and aggressive geometry is the perfect wake-up call for the somnambulant shufflings of its aluminum counterpart. Makes me wonder why Raleigh messes with aluminum at all.

Compared to the Diamond Back Master TG, the Raleigh has more similarities than differences. Both frames are notably stiff, which on smooth roads really aids handling. However, when the pavement turns bad, neither frame provides much in the way of shock absorption, although the Team outpaces the TG in the comfort department. That's not surprising, since the Team's main triangle tubing is slightly smaller in diameter and its rear stays and front fork are built from lighter-gauge stuff. Both bikes need work, but the Team is closer to solving the oversize equation than the TG.

—Doug Roosa

I have always wanted to ride a Reynolds 753 frame, but there has been one small problem: You can hardly find one in the United States. We're talking about a serious lack of Reynolds action here, and it's been this way for a few years. So even though the Reynolds tubing on the Raleigh Team 753 is vastly overhauled for Technium duty, I must say first that it's good to see the old steel again. We like diversity in the bike market, and a few Reynolds frames can go a long way toward breaking up the formulas mined by everyone else.

The Team 753 also gets diversity points for its unique construction. But you can't sit around and reflect on its origins all day; the bike has to go out and perform. On the road, the Team is not superior in any respect, yet it comes through on balance, the way all good steel bikes do. The bike is light, maneuverable, fairly stiff, and reasonably compliant over the bumps. Interestingly, the ride is quite different from that of Raleigh's Technium aluminum bikes. If you're willing to sacrifice a little comfort for a lot more feedback from the road, you will find the steel Technium frame a significant improvement over its unexcitable (and unexciting) aluminum predecessor.

I can't compare the Team to the classic brazed 753 bike you have always heard about. If you want your 753 the old-fashioned way, maybe you could ring up some blacksmith in Wolverhampton and have him braze one up for you. Or maybe Raleigh, having renewed its connections with Britain, can revive its all-753 Team frame as a quiet side project next year. There's nothing wrong with holding on to tradition, even with new framebuilding processes around. Fortunately, the Team seems to heed this notion to its very core, with very good results.

—Keith Mills

appeal to serious racers. "When we first started the project, [the Team] was going to have aluminum tubes and a wishbone rear end," recalls Barchek. "But when you talk to the real racers you find that they want a conventional-looking bike—our graphics even play that up."

Beyond the Team 753's neo-classic looks, racers will also be pleased with the bike's ride. The slightly oversize tubing stiffens the Team a bit, but the frame still feels lively—it has the familiar twang of a top-quality steel bike. The extra rigidity in the main triangle allows the Team to keep its composure during sprints or hard cornering, and it flies down steep descents without a trace of speed wobble. Best of all, the Team's handling is excellent—the steering is light and balanced, and you feel in control instantly, right from the first few pedal strokes.

Overall, the Team 753 makes a persuasive case for Raleigh's Technium method of bonded frame construction.

Despite its solid feel, the Raleigh Team delivers a reasonably smooth ride on rough pavement—at least within the limits of its 20-mm wide clincher tires. The Team's lightweight stays and fork blades help soak up some of the shock, and if you want a softer ride there's plenty of clearance for wider rubber. The stock tires are Vittoria's Flash M "open tubulars," which are cotton clinchers made from the same casing as Vittoria's Mondiale tubular. The rest of the wheel components are equally raceworthy: a Dura-Ace eight-speed freehub, DT 15-gauge stainless spokes, and Mavic's light, reliable Open 4 CD rims.

It's also hard to find fault with the latest generation of Dura-Ace components on the Team—new Dura-Ace has earned unanimous raves since the first generation debuted on these pages over five years ago, and subsequently ushered in the Era of Indexed Shifting. I must admit, though, that I have little use for an eighth cog, and putting Hyperglide teeth on the Team's 12-21 gear cluster seems like overkill—as you might imagine, this system shifts effortlessly across those one-tooth jumps.

The rest of the Team's component roster is filled out by SR/Sakae's FX stem, bar and seatpost, topped by a comfortable Selle Italia Turbo saddle in perforated leather. Sakae's stem is nicely finished but the 10.5-centimeter extension seems little short for the average rider of our 58 centimeter road test bike; likewise the 43 centimeter bars are a bit wide. But bars and stems are easy to change.

Overall, the Raleigh Team 753 makes a persuasive case for the company's Technium method of frame construction. The Team is noticeably stiffer (and theoretically stronger) than a standard steel production bike of similar weight. Additionally, bonding the frame together is less traumatic for the tubes, and doesn't subject them to the same variables as brazing—specifically how well the person, or machine, operates the torch (Raleigh workers were permitted to skip the customary 753 brazing test). Although the initial costs for tooling are quite high, the Technium process can produce frames efficiently and economically once the set-up costs are amortized.

Considering these advantages, it's not too surprising that Raleigh of England is now experimenting with bonded steel frames; prototypes have been tested by some European pros (including Laurent Fignon) with favorable results. If the Old World follows Raleigh USA's lead in producing bonded steel bikes, this may the beginning of a new tradition in framebuilding. Regardless, Technium is unquestionably breathing new life into a familiar frame material. □