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AMERICAN
HANDBUILT
FRAME

DAVID TESCH
**BUILT
FOR SPEED**

In the dry hills of the Southern California desert, Dave Tesch is quickly building a reputation for the fastest bikes in the West.

By Doug Roosa



Dave Tesch builds racing bikes and only racing bikes. He doesn't build touring bikes and he doesn't build off-road bikes. "Why should I build touring bikes when there's someone out there who takes them as seriously as I do racing bikes?" he asks with a shrug. "Why should I compete with Ross Schaefer or Tom Ritchey when those guys get out and ride the mountain bikes and know what's happening?" Tesch knows what's happening in road racing and in track racing, and he builds bikes for both.

Tesch builds bikes in San Marcos, a small town in Southern California, ten miles northwest of Escondido. Thirty miles to the south is the lush, coastal city of San Diego, but the area around San Marcos is dry, sparsely populated rangeland where the boulder-strewn hills and craggy vegetation mark it as the western limit of the desert Southwest. It is warm there most of the

year and the roads are in good shape, so the region has become a small satellite in the bicycle industry's expanding West Coast galaxy. Bicycle Parts Pacific, a major importer of bicycle components and

Olmo framesets operates in nearby San-tee, and Tesch has three framebuilding neighbors in San Marcos: framebuilders Cicli Masi and English expatriate Dave Moulton, and CyclArt, the noted frame repair and paint company.

Tesch is a relative newcomer to San Marcos. He moved there in 1982 from his native Wisconsin. He is also relatively new to framebuilding. At 28, he is one of this country's youngest self-employed artisans. His building experience dates back to 1980, however, when, after his release from the Navy, he took a job as a production brazer at Trek Bicycle Corp. in Waterloo, Wisconsin. He was lucky. Most production employees at Trek start at the bottom as grinders, cleaning and prepping tubes and lugs for the assembly-line brazers. But Tesch had learned metalworking and brazing in the Navy; that experience let him circumvent years of mind-numbing apprenticeship at Trek.

Tesch approached his job



At 28, Dave Tesch has little interest in handmade bikes. Instead, he wants to build the fastest-handling production frames in America.



Alignment remains a labor-intensive task, but Tesch uses machines for most work. "There's no glory in mitering by hand when a lathe can do it more accurately in less time."

with a real desire to learn framebuilding. He was bitten by the bicycle bug as a kid, and later raced as an intermediate and junior-class road racer. He was also intrigued by the bicycle as a machine and fascinated by that rarest of bicycles, the custom. "You could really pick out the custom frames back then; they were different," he notes. Different even from the coveted Italian racing bikes, the Frejuses, the Legnanos, and the Bottecchias that a few lucky riders owned. Most of the custom frames that Tesch spotted were built by Albert Eisentraut. Eisentraut was one of the few American builders in business back then and, as he has been to so many American framebuilders, he was an inspiration to Tesch. "His bikes were special, and I knew I had to do that, too."

While Tesch soon became a whiz at assembly-line brazing, it was not until he met Tim Isaac, Trek's frame engineer and

master builder, that he really learned how to build bikes. "Isaac taught me a way," Tesch explains. "That's how all builders start. They learn a way, and then they evolve their own way." Tesch watched Isaac build prototype frames and other projects for Trek, hanging around after hours to ask questions and discuss the finer points of framebuilding. Isaac built in the traditional manner—he did everything by hand, eschewing the convenience of machines—but he explained the art of framebuilding in terms that made sense to Tesch's no-nonsense Navy schooling, without the mysticism that Tesch feels some framebuilders hide behind.

Tesch's break from the routine at Trek came in 1982. He had heard that Masi had moved the production of its Gran Criterium bicycles from Italy to California. In fact, Masi, under the direction of Ted Kirkbride, had set up shop in a build-

ing that also rented space to the CyclArt frame service coöperative, an ill-fated experiment at communal frame repairing and renovation stocked with people like frame painters Jim Cunningham and Brian Baylis, and framebuilder Dave Moulton. Tesch got a job at CyclArt, but his real desire was to step into a role at Masi. After spending his early days doing the sort of production work for CyclArt that he had done at Trek, and building a few of his own frames on the side, Tesch realized that what he had really stepped into was a roiling cauldron of egos. With his own ego added, the cauldron boiled over; the group split up, and after Moulton ceased building Masis to concentrate on his own frames, Tesch got his chance.

Tesch built close to 200 Gran Criteriums for Masi, and he regards the experience as time well spent. "I got a lot of practice refining my skills and figuring

ON THE ROAD: TESCH 101

PHOTOGRAPHY BY TONY SCARPETTA



Seemingly taller than it is long, Tesch's ultra-short wheelbase 101 demonstrates how much quick handling can be built into a bike without sacrificing stability.

Riding the Tesch 101 is an eye-opening experience. It shows just how much quick handling can be designed into a road bicycle while still retaining adequate stability. The 101 responds to directional commands with astonishing immediacy, yet it delivers a very stable ride, holds its line well at all speeds, and never feels out of balance. I could negotiate any convoluted path I chose at virtually any speed, with complete trust. This is as acrobatic a bike as I've ridden, and I can surely appreciate how valuable it would be in crowded racing packs on tight, twisty courses.

After I'd gotten used to the handling characteristics of the Tesch—and I think this bike is just different enough that it takes a few rides to learn what it can really do—I found that every other racing bike I rode afterward felt a little sluggish. And I compared it to some damn good bikes, including ones built by some of the world's best framebuilders. The differences are subtle in some cases, but no other bike I tried can cut corners as tightly and maintain the same degree of poise and stability as the Tesch.

The 101's terrific handling quickness can be traced to its short front center and wheelbase, along with a good rake and head angle combination. It is easy to forget the forest for the trees on bike handling, dwelling at length on how front end steering geometry, like trail and head angle, affect handling. But bike handling is a function of many things besides front end geometry, including wheelbase, the location of the rider's center of mass in

relation to the bike's two wheels, frame alignment, wheel mass, and tire type. All these factors interact to establish a bike's maneuverability and stability, and it is usually hard to pick out which one is doing what.

In the case of wheelbase, the issue is clear—the shorter it is, the quicker the bike can negotiate a corner. Take the example of a bicycle with a wheelbase of zero, a unicycle. A unicycle can cut the tightest curve of all—it can turn on its steering axis. A two-wheeled bike must cut an arc, but the closer the wheels, the smaller that arc can be.

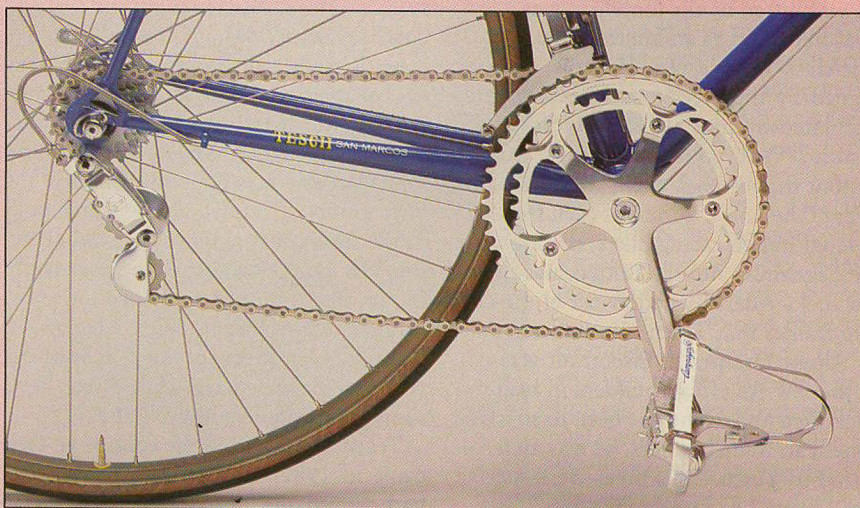
But short wheelbase is not a panacea. If the bike has a poor front-to-rear balance—that is, if the rider's center of mass isn't correctly located within the contact patches of the two wheels, or if

the steering geometry is wrong—then all the handling quickness of the short wheelbase can be ruined by instability. There are several examples of short wheelbase bikes that proved to be horrible handlers. One was the Rigi. Its split seat tube drew the rear wheel far up under the rider giving the bike an extremely short wheelbase, yet riders found the Rigi very hard to ride in a straight line.

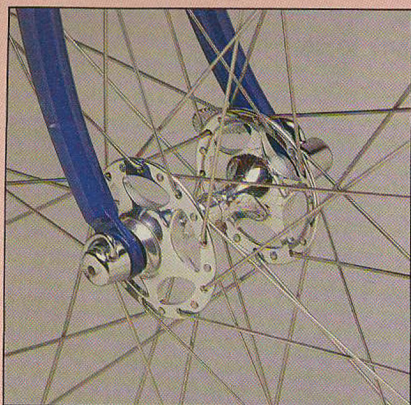
The Tesch has no such problems of instability. It has prudent steering geometry, and its chainstays are of normal length; its front wheel is simply drawn in closer. The compromise in this chassis layout is toe clip overlap. If you fear toe clip overlap, you will be terrified by a Tesch bicycle.

A good set of tires helps handling, too. I have heard for years that Continental tubulars are the favorites of quite a few American racers, and now I know why. Tesch sent along a set of 250-gram Continental Sprinters, the German company's next-to-lowest grade of tubular tire. For the very reasonable retail price of around \$25 each, these ordinary butyl-tubed, nylon-carcased tires deliver a remarkable combination of ride comfort, grip, low rolling friction, and resistance to tread cuts. I can only wonder what performance lies in one of the company's cold-vulcanized, cotton-cased Special Class racing tubulars.

Tesch built our road test 101 with a combination of SL and SP-gauge Columbus tubing brazed into investment-cast lugs. He uses predominantly SL in all smaller frame sizes, adding a thicker SP down tube in sizes 60 centimeters and up. In all frames, however, he installs SP chainstays. He likes the extra rigidity that SP chainstays give the rear



Tesch likes the extra rigidity in Columbus SP, and uses that thicker tubing in all of his bikes' chainstays, regardless of frame size.

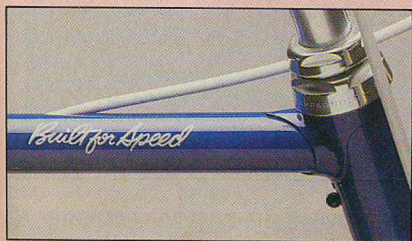


"I think a straighter fork looks racier," Tesch says, so he puts just a bit of a bend into the blades near the dropouts.

triangle and feels that the gauge of SP stays is more in balance with the rest of the SL tubeset. He has resisted going to the newer, faddish Columbus SLX internally ribbed tubesets because he doesn't want to charge more for his frames, something that the higher cost of SLX would force him to do. "I'm considering a move towards SLX and SPX next year, but, realistically, I don't think anyone can tell the difference between a bike made out of SLX and one from SL with SP stays."

Tesch's mix of Columbus SL and SP frame tubing is an excellent combination for a rider of my weight, which is around 160 pounds. The thinner SL tubing gives the frame a bit of life, expressed in flexibility to road and pedaling forces, that lets the bike move with me as I ride. The frame is by no means a rigid panel, and that is good, because the short wheelbase does tend to make the bike hobby-horse over large bumps and certain frequencies of road roughness.

All in all, I found the Tesch model 101 to be a terrific bicycle, whether I rode it in the confines of the city or out on long stretches of open road. And at a price of \$780 for the frameset, it goes head to head with many framesets built by the coveted Italian marques. If you can ignore the Italian mystique, you will find that the Tesch 101 is a much better deal: Its workmanship is flawless, its geometry is right on, and it will safely outmaneuver almost anything on the road. —Doug Roosa

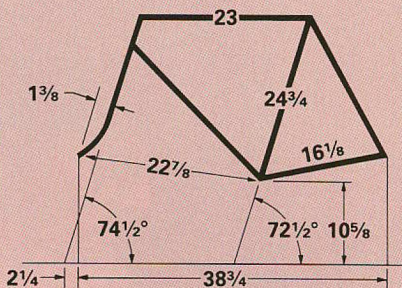


TESCH 101

\$780, frameset only (price may vary)

Sizes available: 49 to 64 centimeters in one cm increments, measured center to top

Size tested: 63 cm



Frame weight without fork: 4 lbs, 11 oz

Fork weight only: 1 lb, 10 1/2 oz

Frame: Columbus SL double-buttressed chrome-moly tubing with SP down tube and chainstays; Campagnolo forged dropouts; bosses for shift levers, rear derailleur cable stop, chain hanger, frame pump, and two water bottles; internal top tube rear brake cable guide.

Manufactured by: David Tesch, Box 1711, San Marcos, CA 92069

things out. You can only figure things out by doing a lot of frames." But he grew tired of the repetitiveness, of building frames that didn't have his name on them, of working for someone else. The time had come to strike out on his own. He leased a building in San Marcos, hung up a shingle, and went in search of business.

One thing of significance did come out of Tesch's brief tenure at CyclArt, however, something that was to have a profound influence on his style of framebuilding: He was contracted by Raleigh Cycle Co. to build frames for its racing team. It was the year before the 1984 Olympics and the Raleigh team was stocked with strong riders, several of whom were destined to ride the road and track events in that quadrennial competition.

Tesch savored the opportunity to build for such an elite group of riders, figuring that their feedback would be invaluable. And sure enough, the riders made their needs known right away. "They all wanted bikes that were quicker than anything you could buy," he explains. At the time, Tesch's own bikes were similar to those he was building for Masi, bikes with longish wheelbases and generous fork

HOT DAMN.

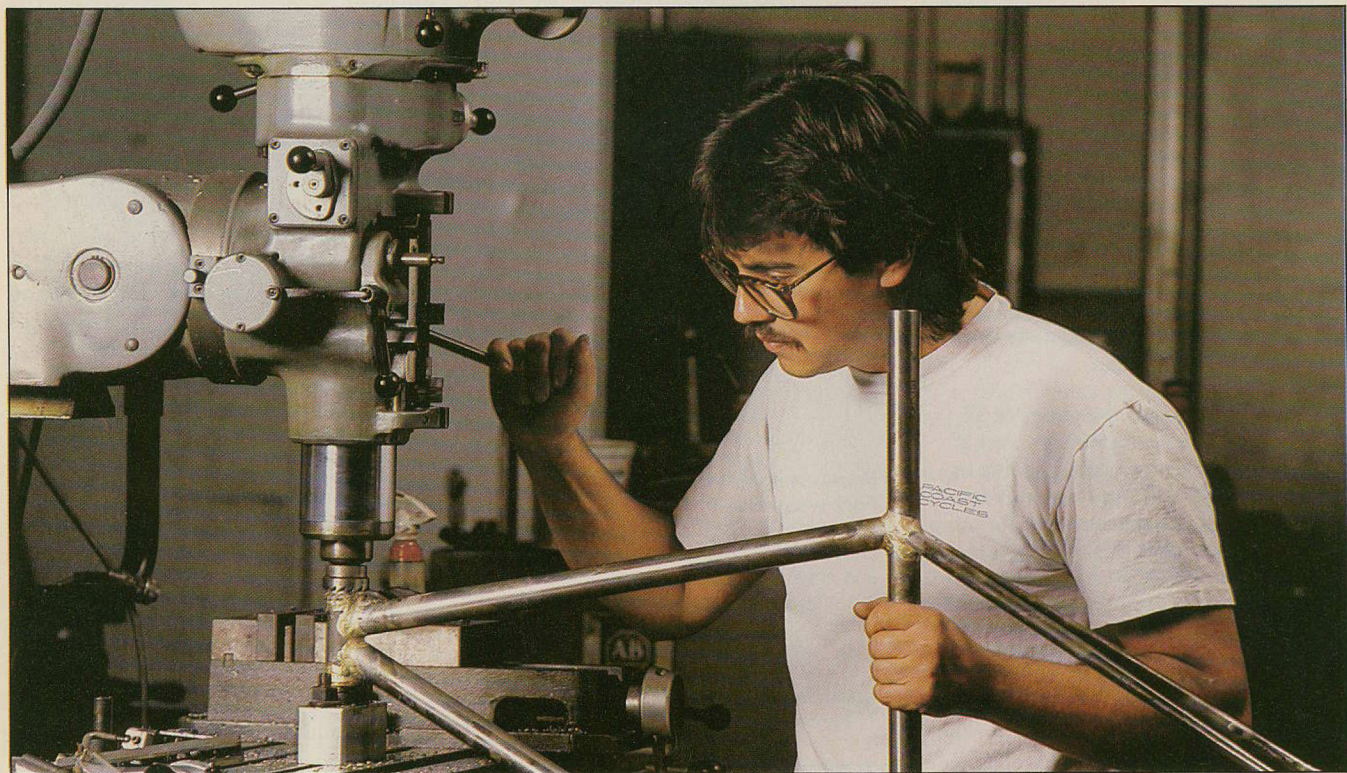
Peter Weigle's one hot framebuilder. When he takes care of business, he really takes care of business. That's why Peter rides Specialized's Turbos. Impressive clinchers with unbelievably low rolling resistance. So if you want to drop the competition, put on a set of Turbos. They can definitely take the heat.


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Peter Weigle
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Tesch understands the merit in production lines,
and so has hired others to man the work stations. "No one in my
shop builds a bike start to finish."



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rakes that hewed closely to the classic design of an Italian road bike.

The type of handling the Raleigh riders wanted, however, required bikes with short wheelbases, less fork rake, and steeper head angles. This geometry was not uncharted territory for Tesch; he had raced at the Kenosha Velodrome in Wisconsin, and that experience had given him a thorough lesson on how a bike with quick responses should ride.

The Raleigh riders liked the bikes Tesch built. They liked them so much, he claims, that in 1984, when Raleigh issued the framebuilding contract to another builder who designed bikes in the Italian manner, several of the team members queued up at Tesch's door to purchase frames with money taken out of their own pockets.

The feedback from the Raleigh riders was so positive that Tesch adopted the revised geometry for his own bikes. This geometry has earned him a reputation for building "tight" bikes, meaning his frames are compact and have short wheelbases. But he takes offense at hearing his bikes described as "radical" or "track-like" because that implies that his bikes are somehow hard to ride. Tesch simply refuses to compromise his racing designs for his largely non-racing clientele. "If I'm going to represent myself as a builder of fine racing bikes, then I want people who come into my shop to walk away with the same thing I would design for the world's best racer."

What Tesch offers is a bike equipped with the reflexes for the typical American-style race, which he says occurs over several laps on short, closed courses that have a lot of corners. Race conditions dictate that riders spend most of the time jostling for position in tight packs. "Sure, my bikes are on the fast side," he admits. "My bikes let the rider cut his way through a crowded racing pack in the shortest path possible." That means a bike that can hit the gaps when they open and one that can cut the tightest line in a corner.

And Tesch insists he is not thinking solely of criteriums when he describes American racing. Not that his standard design would let a rider down in a criterium, but for the serious criterium specialist, Tesch will build a bike that is even tighter, with a higher bottom bracket, steeper frame angles, and more rigid tubing than his standard racing model. And for track racing, he says, "my bikes are fast, with wicked-high bottom brackets." He adds, with much pride, that his track bikes have been favorites of several na-

tional-class American racers for years, "whether my name has been on them or not," and that his bikes have also seen international competition.

A fair appraisal of Tesch's road frame

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geometry reveals no new secrets. Indeed, his seat and head angles and the lengths of the top tube and chainstays all fall squarely within accepted ranges of frame design. His divergence from "normal" wheelbases is the consequence of a two-

pronged effort to give all sizes of bikes similar handling characteristics, and to give each one good weight balance.

"Suppose there is a row of progressively bigger riders entering a corner," he suggests. "If the bikes for the taller riders are built longer than those for the smaller ones, then the tall guys will be just about breaking loose trying to follow the line of the smaller riders." But by giving all bikes similar wheelbases, Tesch reasons, the tall riders can cut a corner just as tightly as their smaller competition can.

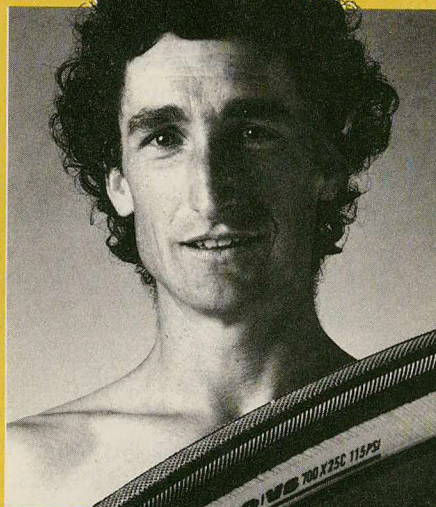
Good cornering performance also depends on weight balance, Tesch adds. "Bikes typically have more weight on the rear wheel, but I try to get it as close to 50/50 as I can." Tesch believes careful attention to weight distribution lessens the chance that one wheel will lose traction before the other. "With both wheels really hanging on until the last moment, the bike has more cornering power and you get more confident in the corners."

Getting the right balance and wheelbase dimensions in all frame sizes is a matter of varying frame angles, Tesch continues. Like most good builders, he varies seat angle with frame size to put all sizes of rider in the same relative position over the pedals; larger frames get shal-

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World record holder

lower seat angles. That, however, shifts the weight of the larger rider rearward, so to maintain good weight distribution in the larger sizes, Tesch has to draw the front wheel back, too, by steepening the head angle.

As Tesch frames get larger, then, the seat angles slacken and the head angles steepen. But Tesch does keep one thing constant in all frame sizes: fork rake. "You have to keep something constant in your designs. Some builders choose trail, others head angle. I think I can more accurately predict how my bikes will ride by giving each the same fork," he says, pointing to the rake column in a thick notebook of computer printouts that log his frame dimensions. Tesch follows Italian building philosophy here, except that his forks have only 35 millimeters of rake, whereas virtually all Italian (and many American) builders use 40 or 45 mm on their racing bikes. Interestingly, he doesn't get all his fork rake by curving the fork blades; he cants the blades forward in the crown, getting extra rake with less bend in the blades. "I think a straighter-looking fork looks racier," he admits.

With frame designs sorted out to his satisfaction, Tesch has put a lot of effort of late into making his building chores less labor intensive. Unlike his mentor Tim Isaac, Tesch tries to do as many framebuilding steps as he can by machine. "There is certainly no glory for me in spending ten minutes mitering a tube by hand when a lathe can do it in less time and do it as accurately." He has accumulated several large machine tools and has equipped them with special jigs and fixtures to handle mundane chores.

Having these tools makes his job more pleasurable, Tesch says, but they are also an integral part of his future. Unlike many American builders who have reached a comfortable limit of hand production, Tesch has plans to expand his operation and grab a larger market share. "I hope to become more of a manufacturer and less of a small-time guy," he says. "I never want to turn away business; I want to get to the point that no matter who wants a frame or how many they want, I can do it." Tesch knows that is a hard step to take, but he also knows that many American framebuilders who have chosen to remain small make very little money. He figures the key to small scale production lies in efficiency. That includes having enough tools to do the job quickly and accurately, and having a good labor force. Despite his discomfort at working the production line at Trek,

he understands the merit in the Henry Ford approach to manufacturing. "No one in my shop right now builds a whole bike from start to finish."

Tesch got his first taste of production

Tesch wants to expand his operation by half this year. "I hope to become more of a manufacturer and less of a small-time guy," he says. "I never want to turn away business."



building when he fabricated "about 100" John Howard signature framesets shortly after he opened shop in San Marcos. He used that experience to develop his own production model, the 101 that is fea-

tured in the accompanying road test. In 1986, he built about 200 101s; this year, he is on track to build over 300.

For 1987, Tesch has accepted a contract from Specialized Bicycle Components, a Morgan Hill, California, importer of bicycles and components, to build its top-of-the-line road and mountain bikes, the Allez Team and the Stump-jumper Team.

One final product that Tesch hopes to develop this year is his new OTTL frame. "OTTL stands for oversized top tube, lugless," he explains. The OTTL is a lugless brazed frame built from Tange Prestige steel tubing. Prestige is a light-gauge, high-strength tube that saves a bit of frame weight, but the main reason Tesch likes the lugless concept is that it gives him more flexibility to vary angles and build non-standard designs for the track.

Whatever bikes Tesch builds now and in the future, you can be assured that they will be built as true to a pure racing design as he knows how. "People keep saying my bikes are radical. Well, my motto is 'Built for Speed,' and I say my bikes are built to give the most experienced rider everything he needs to go fast. If I thought I could build bikes a better way, I'd do it." □

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