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# Bicycling

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# WORKSHOP



Jim Kabanweiler photo

## Off-Road Test: Fat Tires Come of Age

What? You Haven't Ridden a Lightweight Fat-Tire Bike Yet? Hurry!

John Schubert

If you haven't yet ridden a lightweight ballooner, you won't believe how good it feels. Certainly, it doesn't look as if it should feel good. The bike looks big and heavy, and the fat tires thumb their noses

at everything you ever "learned" about rolling resistance.

Ride one and you'll be scratching your head. The wonderfully secure handling of the rock-solid chrome-moly steel frame

and sure-footed 26 x 2.125 tires is to be expected. But in a 30-pound package, it's unexpectedly lithe. And the fat tires most certainly do thumb their noses at rolling resistance.

# WORKSHOP



(Above) Flawless brass fillet brazing has always been a trademark of frame-builder Tom Ritchey, who built this MountainBikes Annapurna frame in his California shop. The reinforcing sleeves, sculpted to look like lugs, and the hardwood plug atop the handlebar/stem unit are additional touches. To reuse an old popular saying, "This frame has lugwork in places where other frames don't even have places!" (Left) The Trek 850's front end shows rims and hubs anodized black, to match the paint. Braking surfaces on the rims are left silver, since brake shoes wear the black anodizing off anyway. Note that the Trek, like almost all off-road bikes, uses solid axles and axle nuts instead of quick-release hubs. Solid axles are stronger than hollow quick-releases axles—a factor off-road testers have come to value. *Andy Stohs/Edlinson photos*



## Not Quite a Fantasy

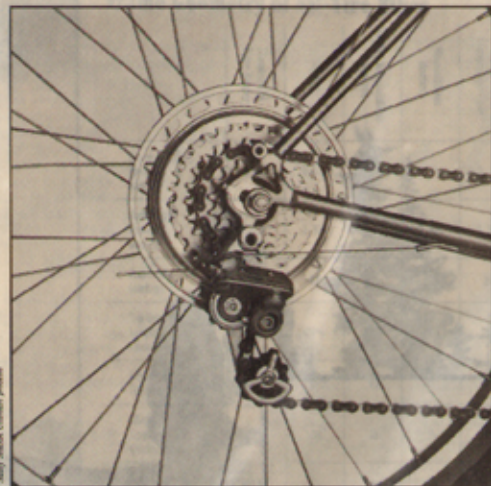
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Racks, pump, water bottle and cage are optional accessories.

## WORKSHOP



The Diamondback Ridge Runner's rear end uses the SunTour Superbe Tech rear derailleur. Note the sealed box which replaced the conventional hinged parallelogram, the two sprung pivots (one in the jockey pulley, the other in the derailleur body), and the direct cable routing.

After a few pedal strokes down the road, the little boy (or girl) in you will take over the handlebars—and you'll steer off the pavement, across a field or down a rock-strewn dirt road. You'll feel relaxed, confident, and in complete control.

### A Mere Sales Pitch?

This may sound like a sales pitch, rather than *Bicycling's* usual honest reporting, but it's absolutely true. More times than I can count, I've seen skeptics ride lightweight fat tire bikes around the block and return with ear-to-ear grins. Major luminaries from the world of skinny-tire bicycle companies have called me to report how delighted they are to have discovered fat tires. As *Bicycling's* technical illustrator, George Retseck, succinctly put it, "This is a fun bike. Anybody want to buy my Raleigh Pro?"

And now the lightweight balloon is coming of age. The bike that was first invented in 1976, first marketed to the public by a few custom framebuilders in 1979, and first sold in any notable quan-

tity last year, is now a mainstream product.

Every major manufacturer in the U.S. and Japan has recognized the appeal of the "all terrain bike," "klunker," "wilderness touring bike," "lightweight fat tire bike," or whatever the industry will eventually choose to call it. Even the purist European manufacturers are looking into lightweight fat tires. The bike that is so easy to learn on and relaxing for a newcomer to ride (two attributes a road racing bike doesn't have) is poised to make major inroads into the mainstream market.

When we last tested off-road bikes 11 months ago ("The Klunkers of Marin," June 1982), only two of our test bikes were made in mass production factories. In our current test, the tables are turned: only one test bike is handbuilt.

*Continued on page 114*

*Indeed, there is no general agreement on a generic name for these bikes. People I've talked with rule out "klunker" because it sounds undignified, "muser" because it refers to firm-ed-purposive beach cruisers, "off-road bike" because they're quite usable on the road, and "MountainBike" because it's a trademark.*

## Organized Off-Road Touring

"The hottest thing to hit the outdoor travel market since cross-country skiing" is how Howard Potter of Adirondack Wilderness Tours describes the advent of organized off-road bicycle touring. Adirondack Wilderness Tours is one of several companies that have already begun offering organized tours, complete with rental of high-quality 15-speed off-road bicycles.

These group tours enable cyclists with little navigational expertise to complete multi-day backcountry tours. Since trails aren't as well-marked as streets, this can be an important advantage. Depending on the individual tour, amenities such as sagwagon service and alternating hotel lodging and camping may be offered.

Many such companies are sure to appear in the coming months. Watch *Bicycling's* classified ads for details. In the meantime, here are four that we already know of:

Adirondack Wilderness Tours (Cargo Lake, NY 12032) offers weekend, mid-week, and week-long tours, with Puch and Ross rental bikes. Some of their tours will be directed toward younger (teen-age) participants; others will be for all ages. Some tours will offer a combination of off-road bicycling, canoeing, and backpacking, all during the same expedition.

Rough Stuff Touring (Box 265, Port Townsend, WA 98368) is led by *Bicycling* contributor Bonnie Wong. Specialized Stumpplumper bicycles are provided for the two-to-ten-day tours in Western areas such as Baja California and Canyonlands National Park.

Wilderness Bicycle Tours (Box 692, Topanga, CA 90290) offers day trips, weekend, week-long and longer trips in southern California's eastern Sierra range, desert regions, and Catalina Island. Director Casey Patterson promises camping in remote, primitive areas (with occasional stops at campgrounds and motels), and offers rental bikes.

Bicycle Detours of the Great Southwest (535 Conlora Road, Suite 463, Santa Fe, NM 87501) takes you through Indian and "old West" monuments, offers whitewater rafting and rides on steam-powered trains, and includes informal lectures on local culture. Trips are one and two weeks long. ☐

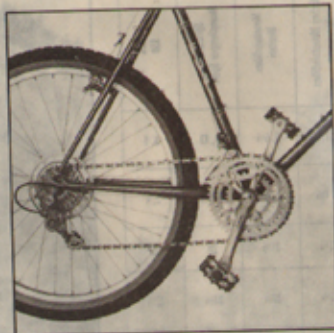


The Stumpjumper Sport displays some of the new tooling that has gone into off-road bikes: new tubesets include oversized top tubes, down tubes, and fork blades, which necessitates lugs and fork crowns to match. TIG-welded handlebars, cantilever brake bosses, and a host of new components make these bikes the most original we've seen in decades.

### Frame Geometry of Fat-Tire Bikes

	Downcountry Bike Runner	MTB	Full-on MountainBikes Mountain	MountainBikes Mountain	Specialized Stumpjumper Sport	Full End
Frame Weight (pounds, ounces)	6, 2½	5, 6½	5, 11½	5, 6½	4, 13	5, 9
Fork Weight (pounds, ounces)	2, 9	2, 5½	2, 4½	2, 4½	2, 9½	2, 4
Frame Size (inches)	19½	22	23½	21½	20	22
Top Tube Length (inches)	23½	23½	23½	22½	23½	22½
Wheelbase (inches)	44	44	43	43	43½	42½
Chainstay Length (inches)	18½	18½	18	18	18½	19
Front Center (inches)	25½	25½	25	25½	26½	25½
Head Tube Angle (degrees)	70	68½	69	69	67	71
Seat Tube Angle (degrees)	70	70	70	70	69½	70
Bottom Bracket Height (inches)	12½	12	10½	10½	10½	11
Fork Rake (inches)	2½	2	2	2	3	1½
Trail (inches)	2½	1½	3	3	2½	2½

## WORKSHOP



The Mt. Fuji displays a typical off-road drivetrain: SunTour MounTech derailleur, Sugino AT triple crankset, and SunTour "bear trap" pedals. Note that the frame has bosses for two water bottles, rear rack, cantilever brakes, and fenders.

Continued from page 111

But don't infer from this that handbuilt, custom ballooners are passe. On the contrary, U.S. custom builders are producing an ever-widening variety of beautiful machines in the \$700-to-\$2000+ price range. We've seen enough that we could fill the magazine with them. Since we can't do that, we're using one—the Ritchey MountainBikes Annapurna—to serve as an example of how the finest off-road bikes are made.

### No Compromise

Meanwhile, we concentrated on the new wave of affordable bikes that are factory-built. Out of dozens of attractive brands and models, we arbitrarily picked five. The five range in price from \$475 to \$610; four are made in Japan and one in the U.S.

These bikes show that the industry norm in 1983 is impressively good. No manufacturer wants his bike to be labeled "a turkey in the dirt," and all have carefully studied the U.S. handbuilt mod-

els before coming up with their own designs. I only wish that skinny-tire bikes were all so well thought out.

The test bikes do differ from one another, but the design differences are subtle, and they're all within the limits of high performance. The cost-cutting compromises that make these bikes hundreds less than their handbuilt brethren are mostly niceties of appearance. Every one of the bikes has all the off-road high performance features from the following list:

**1) Wheels:** The single most important element that makes fat-tire cycling fun is the aluminum balloonner rim and the lightweight skinsall balloonner tire. Together, these components shed three pounds per wheel when compared with yesteryear's steel balloonner rims and blackwall tires.

**2) Frames:** Different builders are using slightly different frame geometry, but all have one thing in common: long wheelbases and slack frame angles. While most skinny-tire bikes fall between 40 and 41 inches in wheelbase, balloonners range between 42 and 46 inches—and 42 is considered quite short. Head and seat angles are usually 68 to 70 degrees, compared with the road bike's 72 to 74 degrees. Chainstays and top tubes are long (18-plus inches, 23-plus inches) to add wheelbase and keep the rider's weight between the wheels, even on the steepest hills. Bottom brackets are about 12 inches high, giving around 1½ inches more ground clearance than road bikes have.

The long top tube, slack head angle, and ample fork rake add up to a long front center measurement (distance from chainstay to front axle)—usually 25 inches or more, around two or three inches more than a road bike will have. By putting the front wheel that much farther in front, you get a bike that feels more secure and controllable on steep descents.

I'm pleased to see that the industry has adopted oversized tubing as a standard for fat-tire bikes. Oversized tubing is more rigid and stronger, so it buttresses the frame against the stresses of rocky road

"Balloonner frames use 1½-inch top tubes instead of the road bike standard one-inch top tubes. Down tubes are 1¼ inch instead of 1½ inch. Chainstays, seatstays, and fork blades are correspondingly bigger, with the exact dimensions varying from manufacturer to manufacturer. Seat tubes remain the same as road bike seat tubes at 1¼ inch, mostly because no component manufacturer has started to build leopolds for oversized seat tubes.

## WORKSHOP

riding and chance encounters with trees; moreover, the increased rigidity gives a wonderfully secure and controllable road feel. True, there's a weight penalty—but it's a trivial pound or two. Remember, the entire bike still weighs only 29 to 32 pounds!

It would have been quite tempting for factories to abandon oversized tubing in

the rush to manufacture fat-tire bikes. Oversized tubing requires much expensive new tooling. But the factories opted for the benefits of the beefier tubing, and tubing and lug manufacturers cooperated by tooling up the necessary frame components. Thanks, folks!

Double-butted oversized tubing is now

Continued on page 120

First in a series on touring equipment

## HANDLEBAR PACKS



by Shaun Jackson and Leslie Bohm, founders of Eclipse

### Pockets— "Handy as pockets on pants"

Trousers have immortalized pockets. But pockets, in pants or packs, are only handy if they're really usable. They must be easy to reach and easy to get into.

Because handlebar packs carry frequently used items, pockets and zippers must be

accessible with one hand from the rider's position. Zipper openings should have two sliders for convenience and wrap around three sides for complete access to interior space.



### Mapcase— More than 2 sides to this story.

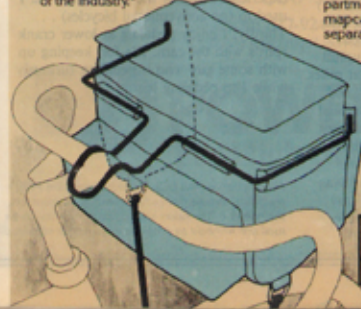
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## WORKSHOP

### Picking the Right Frame Size on an Off-Road Bike

Erik Koski

The rules of thumb people use to select the proper frame size for their road bikes frequently result in the selection of

a frame that is slightly bigger (and hence heavier, less rigid, and less maneuverable) than necessary. For off-road bikes, the same rules don't apply at all—and if they're followed, the cyclist will have a frame far too large to deliver optimum handling and rider confidence. Here's why:

When the bike is to be used primarily on rough and uneven terrain with steep downhill, it increases the rider's control and confidence to have a greater amount of crotch-to-top tube clearance than on a road bike. This allows the saddle to be dropped lower for steep descents. The lowered saddle, in turn, enables the rider to lower his or her center of gravity. More importantly, it allows the rider to control weight distribution, putting more body weight over the rear wheel to provide better rear wheel traction during braking. This weight shift downward and rearward enables the rider to stay in control and keep from going over the handlebars on steep descents.

Other benefits of the smaller frame size are being able to use body English more efficiently, and the ability to put a foot down on uneven terrain.

With a smaller frame size as a given, the straight riding position provided by the off-road bike's handlebars helps to maintain a comfortable seat/handlebar relationship. (So does the combination of small frame size and long top tube that most designers of off-road bikes employ.) An optional, extra-long seatpost (10 to 12 inches or 250 to 305 millimeters) may be required along with the smaller frame sizes. (Remember, you need a minimum of 2½ inches of seatpost inside the frame.)

The common bottom bracket height for off-road bikes is 12 inches, compared to 10½ to 10¾ inches for road bikes—thus the top tube height (and straddle clearance) for a mountain bike is approximately 1½ inches higher when compared to a road bike of equivalent frame size. Since an off road bike fitted for rough riding should give 2½ to 3 inches of crotch clearance, compared with 1 to 1½ inches on a road bike, you usually want an off road bike with a frame about three inches smaller than your road bike.

Confirm proper fit by straddling the bike with the shoes you will cycle in (lug-sole running shoes or lightweight hiking boots are best), and pick the bike off the ground. Have a friend measure the clearance between the tires and the ground.

If the bike is not going to be used for rough riding, but rather for smooth dirt roads and pavement, you can fit it as you would a road bike. This will bring the handlebars higher—a benefit for some people, a detriment for others—and, depending on the brand of bike you select, it will lengthen the top tube. ☐

*Erik Koski is the designer of the custom hand-built Trailmaster bike that we reviewed in June 1982. His Cycle Bike Shop (1 Blackfield Dr., Torrance, CA 90501) is one place that does stock extra-long seatposts.*

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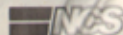
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