

BACK ISSUES

We couldn't possibly take the time to answer everyone individually who has asked about back issues, so we'll do it here. Some issues are out of print and out of stock, never to be seen again except by the fortunate few who subscribed early. We do have available copies of some of our back issues. You will be relieved to know that the price indicated includes postage, which costs us more than the bulk rate we use for your subscription copy. Price is **\$2.50** per copy. Outside the U.S., add **\$1.50** (U.S.) for each copy.

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March-April 1982

(Cyclo-Cross, Ricky Cha, MudPup)



May-June 1982

(Resenda-to-the-Sea, Coyote Derby, San Anselmo Race, Ricky Cha, MudPup)



July-August 1982

(Race Reports, Carmel Valley Clunker Tour, Here Come the Kids, Ricky Cha MudPup)



January-February 1983

(The Wheel Thing, Crested Butte Tour, Las Vegas Show, Tech Tips, Fat Tires Explode in America)



March-April 1983

(Gearing, NORBA, Glossary, Balmly the Frog, TechTips, Products)



July-August 1983

(Of Bikes and Men...and One Crazy Lady, Brake Review, TechTips, Frames...Why Custom?, MudPup, Shimano Grand Prix, Poetry Corner)



January-February 1984

(Crested Butte, Race Results, NORBA vs. USCF, Wreck Tips, TechTips, Race Reports, Trail Etiquette, MudPup)



July-August 1984

(Joe Murray Interview, Mudpup, TechTips, Wreck Trips, Whiskeytown Downhill, Tecate to Ensenda, Book Review)



September-October 1984

(Flyer Jets to Japan, Mulga Bill's Bicycle, Chequamegon Fat Tire Festival, Get Thee Behind Me, Mudpup, TechTips, To The Top Down Under)



November-December 1984

(An Elder of the Off-Road Tribe, Mountain Bikes in Mountain State, Uncommon Options, Point Reyes Update, TechTips, NORBA Nationals)



February-March 1985

(Call to Perspective, Poetry Corner, Race Reports, Tecktips, Uncommon Options, FatNotes)



April-May 1985

(Fat Tire Touring, Al Farrell, Guest Opinions, Products, Uncommon Options, Punk Bike Enduro, FatNotes)



June-July 1985

(Biking in Brooklyn, Mountain Bike Anecdote, Fatnotes, Fat Fotos, Tech Tips, Products, Minority Opinion)



November-December 1985

(Kamikaze, Flume Trail, Bodfish, Moab Slickrock, Teck Tips, Wreck Tips, Sport Racin', USCF/NORBA, Race Warp)



January-February 1986

(Trials Issue: Nicol, Norton, Earley, Teck Tips, Out to Launch, Ice and Snow, Wreck Tips; Bodfish, Mudpup, Mountains in MO, Fastest Chances, Ratios)

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- 6 **EDITORIAL** Worthless Opinions
- 7 **DESIGN** Form Follows Funk-Tion
- 9 **THE HITE-RITE STORY** Height Rites of Spring
by SeeKay
- 11 **FATANIUM** Heavy Duty Goes Light Weight
by Dave Teich
- 14 **DESIGNERS** Caustic Comments and Inspired Insights
- 20 **CLOTHING** Fashion for Thrashin'
by Don Mertle
- 25 **FAT TIRE FEMININITY** Get Down, Get Dirty; Get
Up, Get Clean.
by Linda McCreery
- 28 **LETTERS** Do Not Write in This Space
- 30 **BEATING THE DRUMS** If the Shoe Fits, Brake It
by Geoff Apps
- 33 **F. EWE BAILOUT** Pen in Hand, Cartoonist Goes
Insane
by Art Read
- 34 **RACE SCHEDULE** Where to Go and Be Scene
- 35 **FATNOTES** All the News That's Fat to Print
- 36 **FAT TIRE SUPPLIERS** Just Tell 'Em Who Sent You
- 38 **MUDPUP** Accidental High Fashion
by Kevin Coffey

THRASHER



FASHION

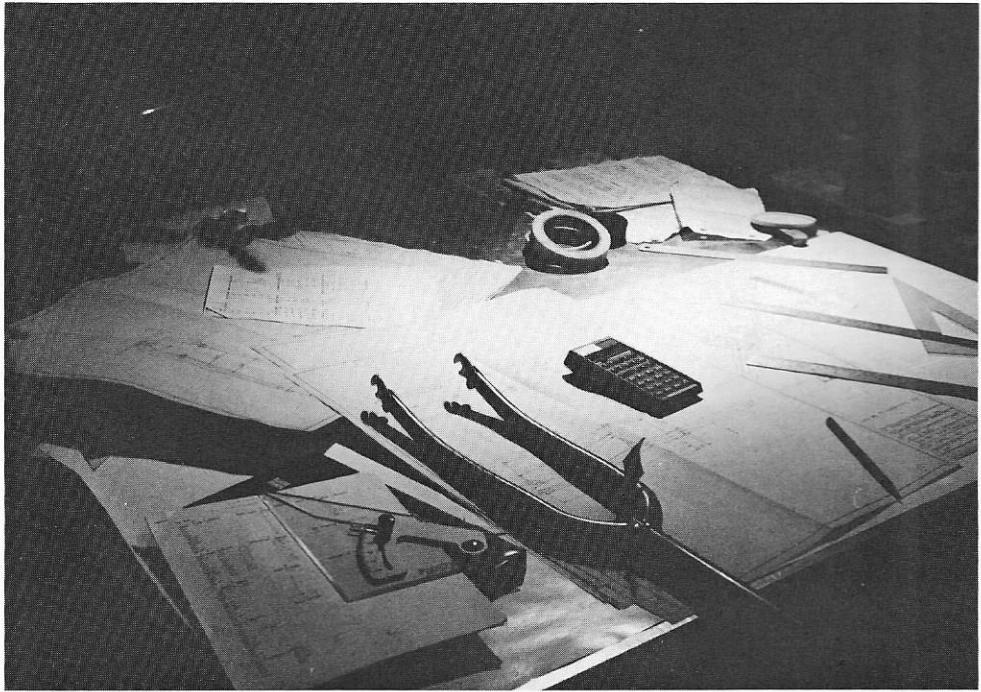
& Design



Editorial

In this issue we would like to give a few words of appreciation to those who toil, often anonymously, on behalf of the rest of the off-road world by developing the ideas and trends for our young sport. These include especially the gadgeteers, those tinkerers and hobbyists whose brain cells and garages harbor the future of the mountain bike. Certainly, as in any other evolutionary process, the majority of new developments will not survive and prosper; this being the case, we'll take this opportunity to quote Chaucer, "For he that naught n' assaieth, naught n' achieveth." In modern English, nothing ventured, nothing gained.

Also in this issue, we would like to draw attention to bicycle clothing as it pertains to off-road riding. "Fashion for Thrashin'" is our theme here, and in the clothing section we round up the items of apparel for mountain bikers that are turning heads as well as profits. Remember, when you're out riding it's not important what you wear, as long as you wear something! (And that something should include a helmet.)



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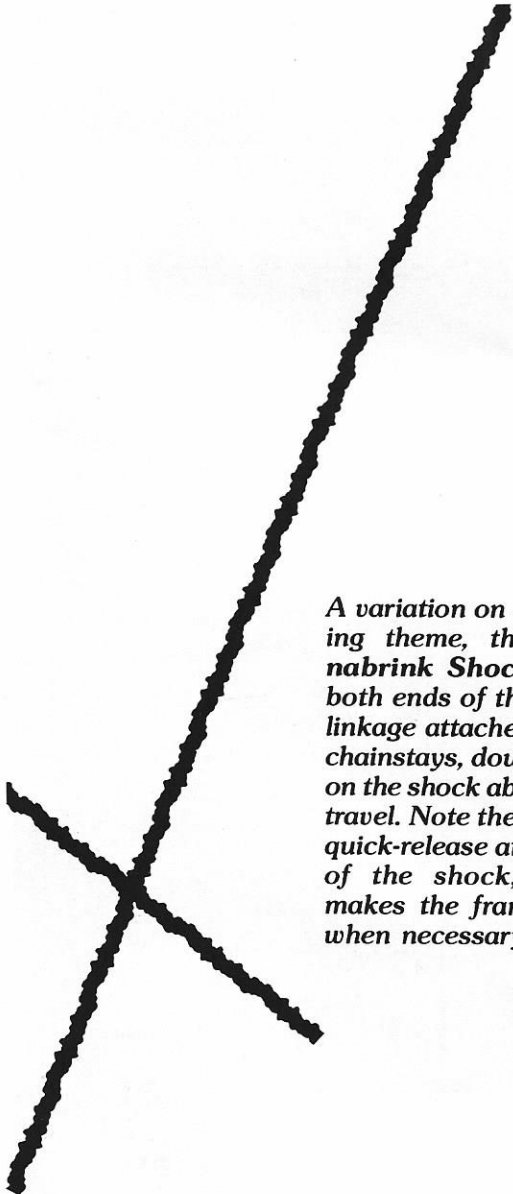
Form, Fashion . . .

by
Don Mertle

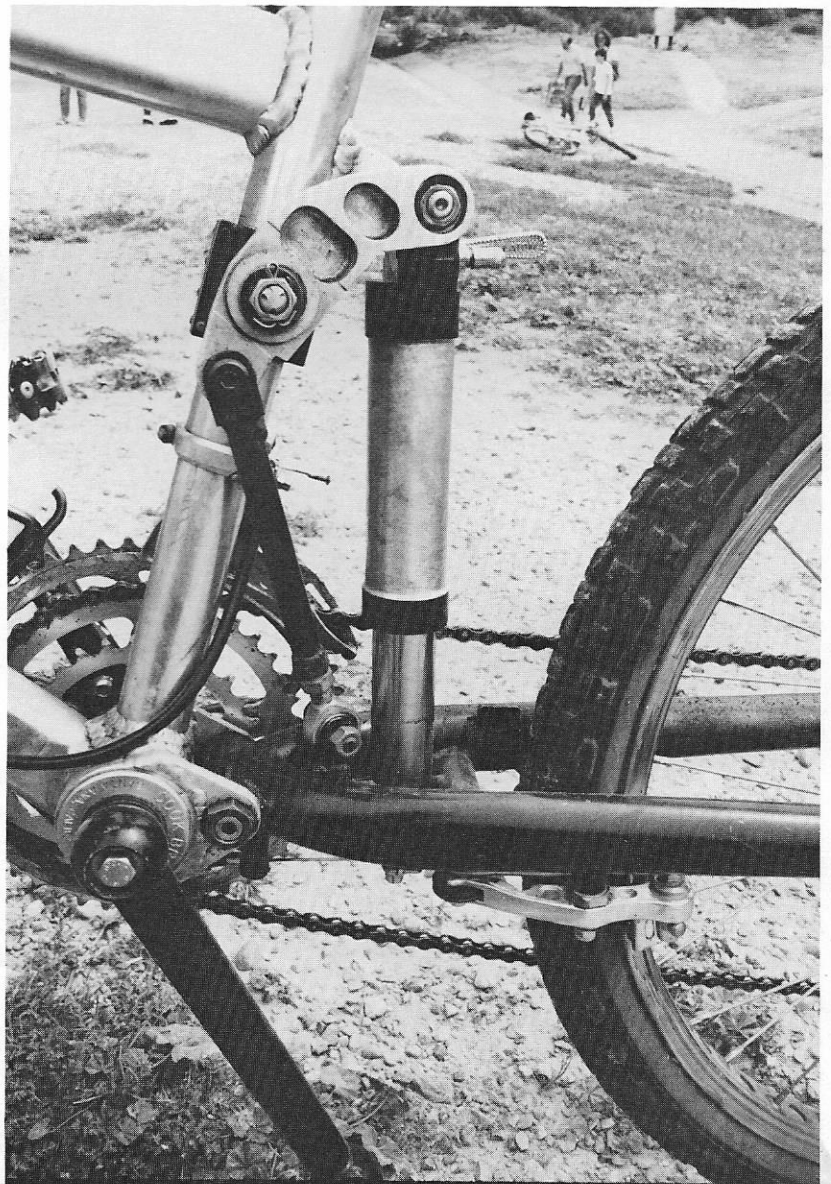
Form, fashion, design and technique are essential elements of commercial manufacture. Designers in fabrics or framesets search for new concepts to satisfy new trends and new customers. The consumer profile of the mountain biker includes the original outdoors trekkers and cruisers, plus a new demographic lump of mainstream consumers who want something besides earthtones and basic blacks. Paint, plating and anodizing are both decorative and protectively functional, and

they open the door for the builder or home customizer to detail the cycle mildly or exotically. The natural fabric casuals are joined by dedicated dirt designs in hardy materials. Swisstex (TM) and plaited fabrics are new surfaces to sweat against. The first dirt bikes were composed of parts and pieces intended for other use and most dirt riders use clothes intended for different uses, cycling or otherwise. More and more serious riding leads the cyclist to appreciate not only the better bike, but the more comfortable and practical apparel as well.

The visual nature of fashion and design make them a natural combination. Today is a fertile time in the fat tire world; the vital vastness of the public interest drives the basement and backroom efforts to challenge the off-road divisions of mainstream cycle concerns. It's an opportune time to pause from enjoying the sights of nature and watch the fashion show at the trail head.



A variation on a shocking theme, the Han-nabrink Shocker has both ends of the shock linkage attached to the chainstays, doubling up on the shock absorber's travel. Note the lockout quick-release at the top of the shock, which makes the frame rigid when necessary.



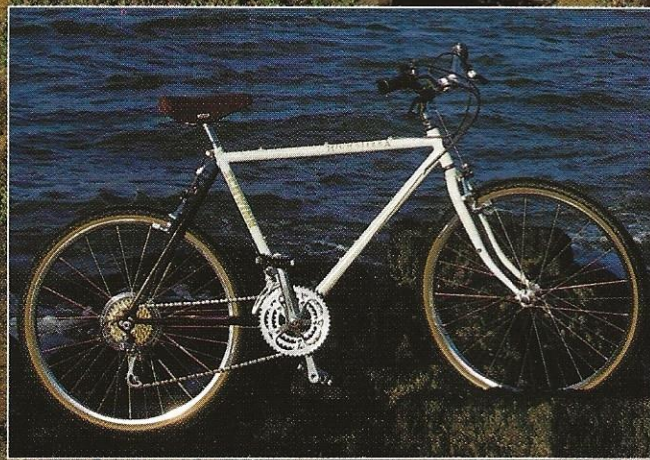
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HOPE SPRINGS

by
SeekKay

Mountain bike design is a ferment of inventive ideas and creative products large and small. Because our bikes are used over the entire range of special local conditions, each area breeds its own adaptations. Like the garage mechanics and tinkerers who developed the sport in the face of total indifference from the rest of the bicycle industry, hundreds if not thousands of mountain bikers are out in the shed or garage at this very moment, filing little parts, bending sheet metal, sewing, or just drawing and doodling on a the back of a shopping bag. Those who aren't actively engaged in making or modifying components are talking about all their ideas with their friends.

From this group has come a plethora of devices and add-ons, each of whose purpose is to solve each inventor's most nagging personal problem, be that carrying the bike comfortably or

riding up the steepest local trials hill. Many of the inventors no doubt plan to get rich quickly as they add up the number of riders who will instantly purchase the new product, but success stories are as much the result of hard work and business acumen as they are inventiveness. Some of the successful products now on the market are knock-offs of products whose original developers failed either to protect their ideas by patent or to market them successfully.

Still, hope springs eternal, and speaking of springs (how clever), we would like to point to partners Joe Breeze and Josh Angell as an example of how to be on top of the entrepreneur/design game. Their product, of course is the Hite-Rite, a simple little spring and clamp that allows the

rider to lower the saddle and raise it back to a preset height to deal with changing conditions, without dismounting.

As a piece of design, the Hite-Rite fulfills every necessity for successful marketing. First, and

Other designers had experimented with coil springs either inside the seatpost or wrapped around it, but none of these designs had come to fruition because they either didn't adapt well to unmodified bikes or

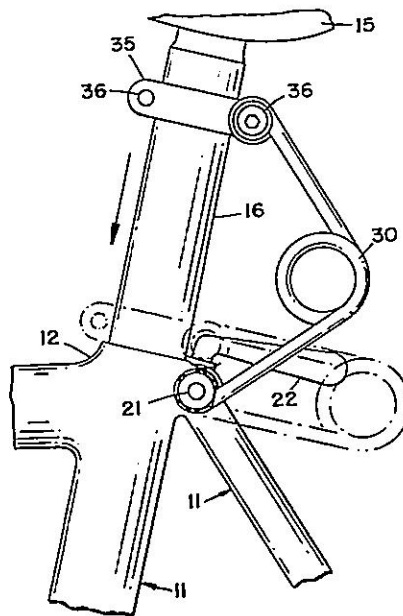
"Those who aren't actively engaged in making or modifying components are talking about all their ideas with their friends."

probably most important, it is protected by a patent. The idea is so simple that most people say, "Of course," when they see for the first time. But as simple as it is, basically an extender spring similar to a hand exerciser, along with clamping hardware, no one had thought of it before Breeze and Angell.

because no one had come up with a good method to keep the seatpost aligned.

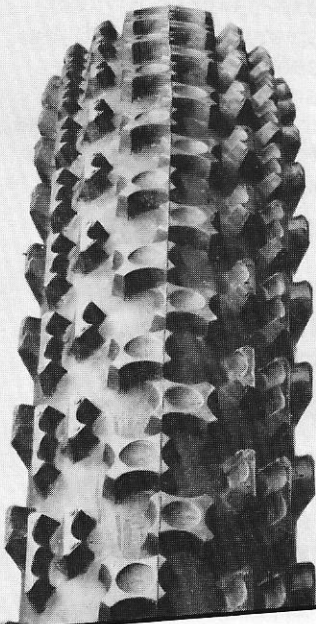
We spoke to Joe Breeze about what it took to get from the idea stage to the production stage. The first thing he pointed out was that the Hite Rite was not the first idea that he and Josh Angell had come up with, it was just the first successful one (if you leave out the fact that Joe built the first successful custom off-road frames we know about). Two other ideas that they had experimented with for two years before coming up with the Hite Rite were a kick-back brake for derailleur bikes, and a quick release pedal that would allow a clipped-in rider to pull his foot out in an emergency. Joe laughs about the latter item, "It worked perfectly as long as it was absolutely clean."

Breeze and Angell found that more complex the idea, the more involved the production. What they needed was something with only a few simple parts, and when they came up with the Hite Rite idea



Continued on page

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Continued from page 9

seemed too good to be true. Joe says, "I remember when I went to bed that night after we made a crude prototype I thought it was so simple that we probably couldn't get a patent on it."

They called their patent attorney who assured them that the best ideas were sometimes the simplest. At this point they moved into phase two, which was a patent search. Conveniently for Joe and Josh, the U.S. Patent Office maintains a large library in Sunnyvale, about 60 miles from where they live, so they spent the better part of several days travelling back and forth and searching all bicycle patents for similar devices. By doing the research themselves they saved a considerable amount of money, but they invested their own time in the process, and of course an expert could have done the job more efficiently.

In the course of their research they found only five devices whose descriptions were similar to the idea of the Hite Rite, so they requested copies of these patents at \$2 each. Interestingly, several other seat raising and lowering devices had been patented around the turn of the century, but the common purpose of these was not increased performance in hills, it was ease of mounting and dismounting. Since nothing even came close to their design they took the fruits of their research to the patent attorney and filed for a patent. This process, including filing fees and attorney's fees came to about \$2000.

Now they waited for six months, only to find that the initial application had been rejected. The patent examiner had found similar devices in fields unrelated to bicycles, such as a spring-loaded device for raising and lowering a camera tripod. They refiled the patent with an explanation as to why the Hite Rite was unique. Finally, the patent was granted. The entire process, from idea to patent approval, had taken two years, about average, and had cost them several thousand dollars, which didn't include the thousands of dollars in manufacturing costs and many hours spent in the machine shop making prototypes and designing the production version. After all this, the Hite Rite was finally ready to be an overnight success.

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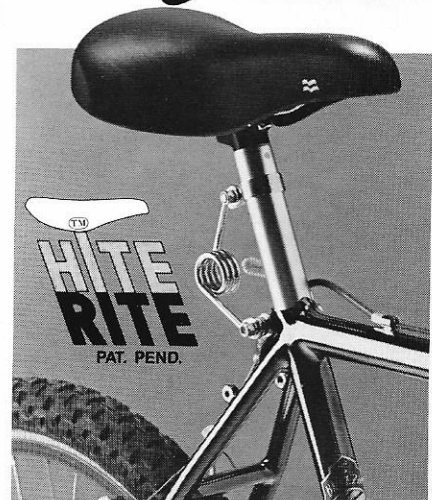
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by
Dave Teich

At the International Cycle Show in New York last March, I met the people from **Fat City Cycles** in Somerville, Massachusetts, makers of the "Fat Chance." Their display included several of their off-road bikes and framesets painted in wild and vivid color schemes: a red frame with a yellow fork and black bars, a lavender and blue fade job, a camouflage frameset, and in the midst of this riot of color, a completely unpainted, unadorned (except for the Fat City decal) frameset made of titanium. In the course of a conversation with **Gary Helfrich**, Fat City's master framebuilder and creator of the titanium frameset, I got a quick course in metallurgy, physics, and modern welding technology. Gary's credentials include having built over 2000 frames. Before then he built "a lot of things, but they were all made out of metal tubes."

Why Titanium?

Titanium is one of the most common elements on our planet, yet it is one of the most expensive to build with because it is extremely energy intensive to recover titanium from its ore. It is also difficult to work with due to its high melting point and high oxygen reactivity.

"Titanium tubing comes in two grades: sewage heat-treated junk, or space shuttle quality..."

Given the expense (at the show I heard estimates from \$1600 to \$2300 for the frameset), why choose titanium for a frame material, and specifically, why for a mountain bike frame? What makes it worth the trouble and expense?

Gary Helfrich: "Assume for a moment that all frame building materials cost the same and were equally easy to work with. If these things were true, which they aren't, titanium would be the material of choice for all bike frames. It has a specific

gravity of about half that of the steels used in bike tubing. It is extremely corrosion resistant and fatigues much more slowly than chrome-moly steel. It's exceptionally durable, and the frame has 'spring' without being prone to failure. Its high ratio of elasticity-to-yield strength allows you to design as much flex into the frame as you want. Because of its light weight, increasing the wall thickness increases its strength and rigidity while keeping the weight down. And it rides comfortably, yet remains responsive. With aluminum, for example, you

must design a rigid frame. You have to use huge tubes with thick walls to have the load-bearing capacity necessary to withstand the stresses of off-road riding."

What about composites?

GH: "Composites are good for road bikes, which have predictable stresses. But in off-road biking, stresses are more random. There are always going to be crashes. You can't tell where the stress will be the greatest and where the tubes are going to fail. Metals are the choice for off-road frames."

Continued on page 12

FAT ANIUM CHANCE

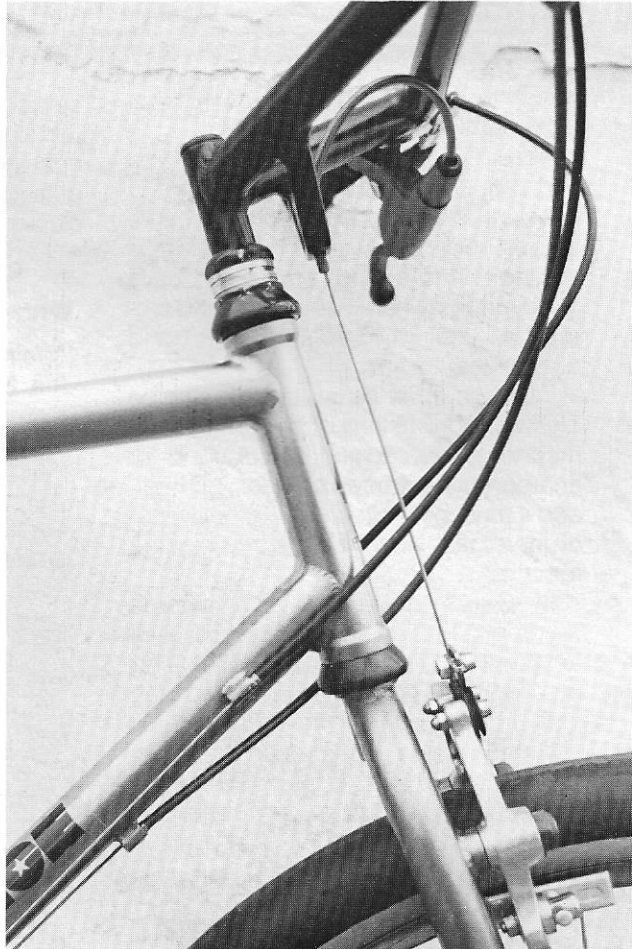


Photo courtesy Fat City Cycles

Construction

The straight gauge tubes of the titanium fat bike's main triangle have a wall thickness of .041 inch, which is thicker than most steel tubing used in bike frames, and is twice as strong as the best steels. The thickness was specified in order to overcome any objectionable amount of flex, and if anything the bike may be "a little on the stiff side." Why straight gauge? *GH*: "No butted stuff available. But I wish there were."

There have been a few road frames made of titanium, but because makers tried to keep weight down by using thin-walled tubes, the soft-feeling frame gave the bike a "dead" and unresponsive feel. Lower grades of titanium are still available: CP Titanium grades 1 through 4 is available in all lots and sizes but has given titanium a bad reputation. "Chris [Chance] had a Titan [titanium] frameset, and he bent one of the dropouts, which were brittle. When he tried to fix it, the standard H-tool broke the dropout off." According to Gary, titanium tubing comes in only two grades: sewage heat-treatment junk, *OR* space shuttle quality, every-inch-of-every-tube x-rayed for imperfections, aircraft grade tubing. He uses the latter. Because of such intense quality control he can build with thinner tubing and doesn't need to build as great a fudge-factor into his designs.

This tubing is also very forgiving of bad welding conditions, such as air contamination and shielding problems.

The rear triangle is made of .032-inch wall tubes, and the dropouts are

machined from forged, heat treated solid titanium bar stock.

"When you build a steel frame, you can buy exact sizes of everything you need, such as dropouts and cable guides. But with titanium, nothing is available, and all the "braze-ons" have to be made by hand. You can't weld chromo to titanium, because the bond doesn't last."

Titanium must be welded. It can be TIG-welded, but it must be done by someone very proficient; it's not a job for an apprentice welder. It takes high heat, and it must be melted in an atmosphere of inert gas, since it is highly oxygen reactive.

In Gary's basement is a plasma welding setup, a technique which uses a jet of ionized gas as the heating mechanism. The temperature is so high that it cannot be measured, only estimated, and estimates run from 50,000 to 100,000 degrees Fahrenheit. The Argon gas atmosphere eliminates oxygen contamination. The plasma

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setup looks like a laser; it can be focused magnetically and loses little energy over distance, so it's good for getting into tight places such as the seat cluster. The major problem with plasma welding is cost. about \$14,000.

Who will buy this frame?

"We're not building this frame for the Joe Murrays. We're building for the average rider who is very into the sport. Our goal is to make a bike that is as light as the lightest one-season racing bike, but will last a lifetime, a bike you can trust. It will never replace our basic \$800 bike, but it could replace our team comp. We want to make a bike that you can beat up and ride rough, and which can also be used for trials, which are very popular here. The complete bike with titanium frame weighs an honest 24.5 pounds. We use standard components, without any trick stuff such as butted spokes. With titanium we can get away with steep geometry (72/72) but it's still flexy enough not to give you too much pounding.

"Raw materials cost us \$500. We are only going to build 25 of these bikes this year, and they will sell for \$2900. Next year the price will come down. If the finished bike has to be sold for more than \$2000, we're not going to market it. We've already sold titanium handlebars (being used by Joe Murray and Ned Overend), and we'll be doing a bullmoose-type version. We will be offering a straight-bladed titanium fork which will have high torsional rigidity, but will ride as soft as a fork made with Tange Prestige tubing.

"The titanium fat bike's fork weighs 11 ounces and has straight blades. It will cost around \$250, and I think there will definitely be a market for them. A lot of people would spend \$250 to upgrade their bikes with titanium forks, while not so many would spend way over a thousand to upgrade with a titanium frameset."

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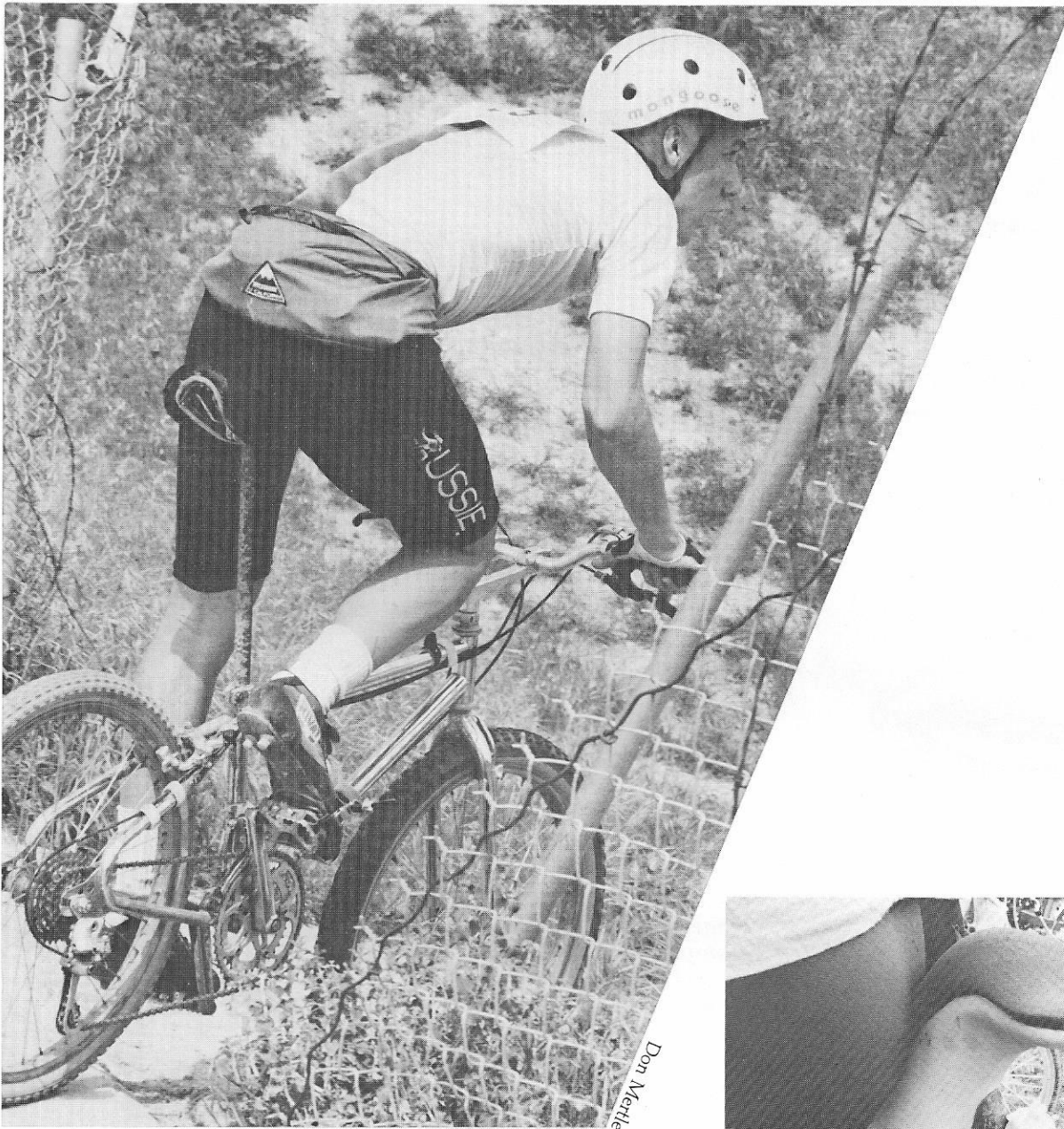
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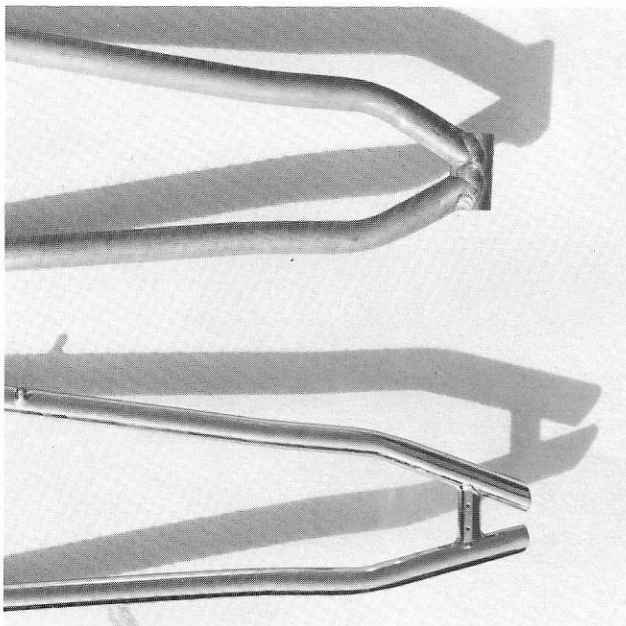
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"I have one word for you. Plastic." Ron Anderson has suffered with his one-of-a-kind Thoroughly Amazing Plastic Bike through several incarnations. (right)

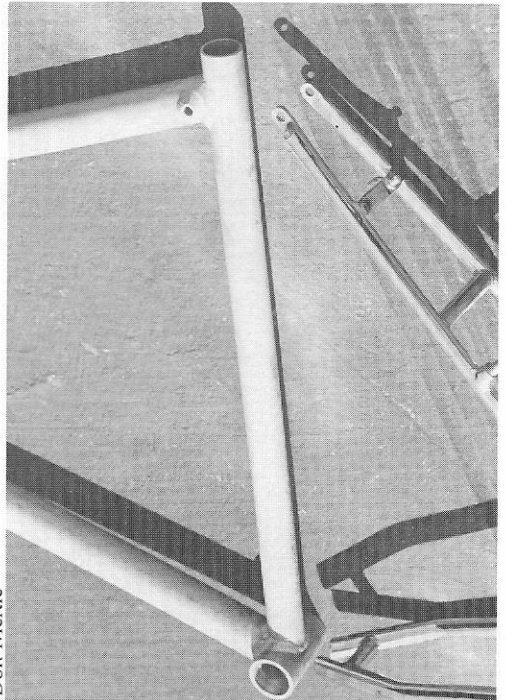
Richard Cunningham on Design:

For a race bike 2 1/2 years on a steel bike and it's going. For a self sponsored racer a prestige tube set in a championship race doesn't make sense; it breaks and you lose the bike and the race.

It's past the point where you can charge [extra] for your ineptitude as a manufacturer.



Don Mertle



Don Mertle

Steel stays, aluminum stays. Note the double bend in each for needed clearance to accommodate inner chainring, crank arm, and fat tire.

In bike magazines I read the cards and letters; that's where you get a good idea of which people are responding. [I read] Bike Tech to see what my customers will be armed with next month.

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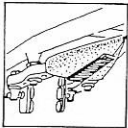
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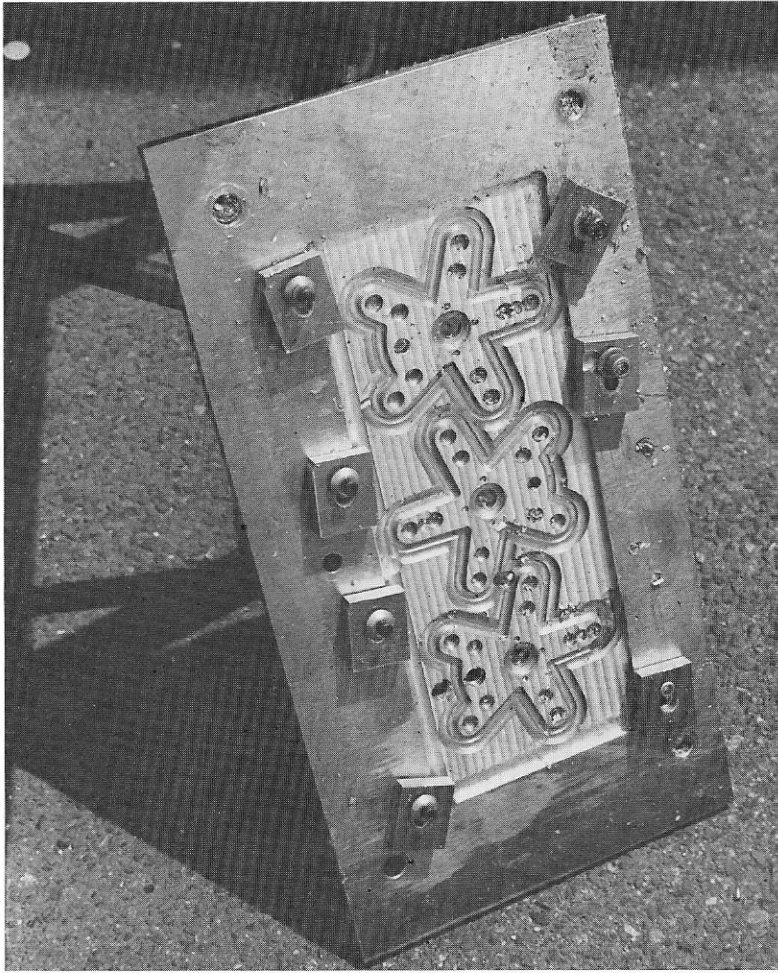
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Don Mertle

This is work in progress on Cook Brothers Racing cranksets, which are individually machined rather than forged like virtually all other cranksets.



COOK BROTHERS RACING

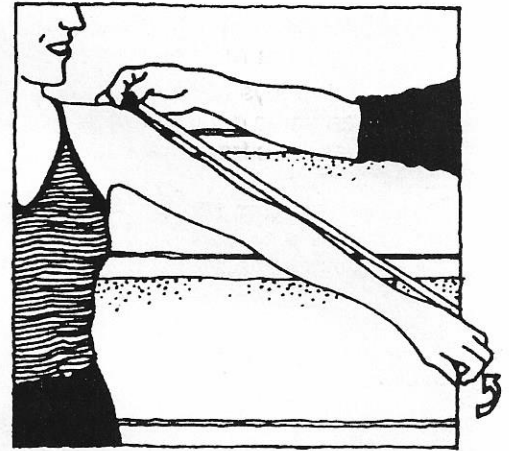
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Manufacturers of fine components for Off-Road, Road, Tandem, BMX

Fat Tire Flyer 15

FITTING THE BIKE TO THE BODY



We caught this sizing machine, a Cycle Sizer from Serrota modified for mountain bike adjustment, at the Fisher factory. This is built for comfort, not for speed.



Even some of the "custom" framesets from domestic manufacturers are not available in true custom angles and dimensions. This is how some of the custom builders determine their customers' frameset requirements.

ibis

IBIS RIDER DARYL LICKT

cycles

IBIS builds limited production custom mountain bikes. Each bike is unique, built for the customer. We sweat the details; like custom sizing, components, paint, braze ons, and alignment. This means the bike you receive is truly custom.

TRIALS The IBIS Trials bicycle is a truly versatile machine. Although designed primarily for trials use, this bicycle will perform beautifully in virtually any off-road situation. The departure from conventional geometry yields a bike that is extremely nimble, and climbs like no other bike.

NEW ITEM! CYCLE OPS

NIGHT VISION™

The finest Lighting System available for off road (or road) riding. Cycle Ops is a lightweight, helmet mounted, rechargeable halogen light with a unique quick release mount. Mounts on any helmet. Comes complete with charger. Daryl Lickt sez "ya gotta get one."

Imprinted Sportswear (Tee shirts, etc.)
Our very popular 6 color design. Beautiful artwork.

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Heather Grey	\$10	White	\$12
White "cycling tee" with rear pockets	\$15	Silver Blue	\$12
		all shirts available S,M,L,XL	

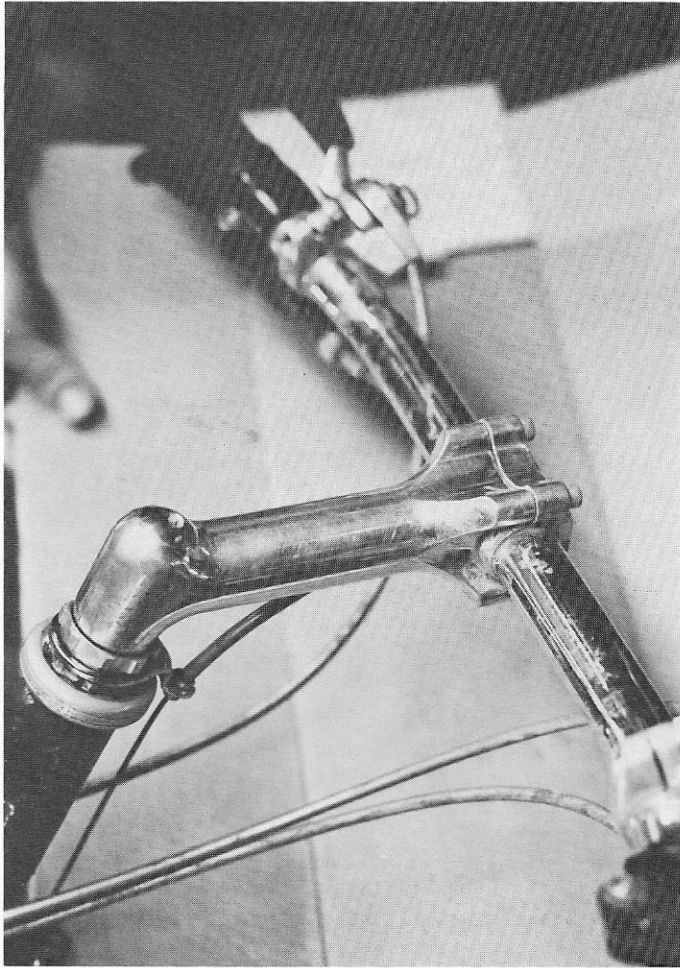
Please indicate 2nd choice. CA residents add 6% tax. Add \$2.00 for shipping.

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(707) 829-5615 Send \$2.00 for Brochure



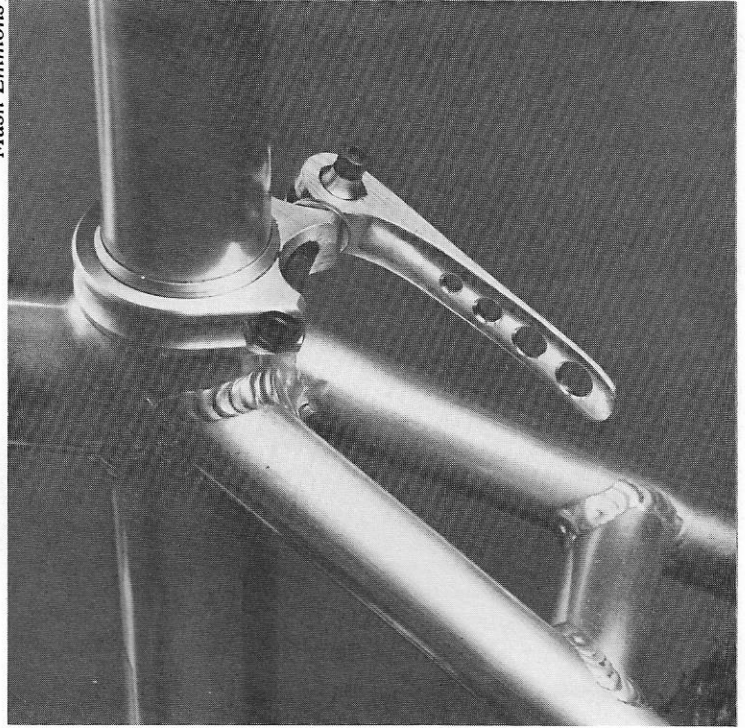
Salsa Cycles uses a complete set of body measurements to fit the custom bike. Measurements used include arm length, leg length, length of torso, and overall height.



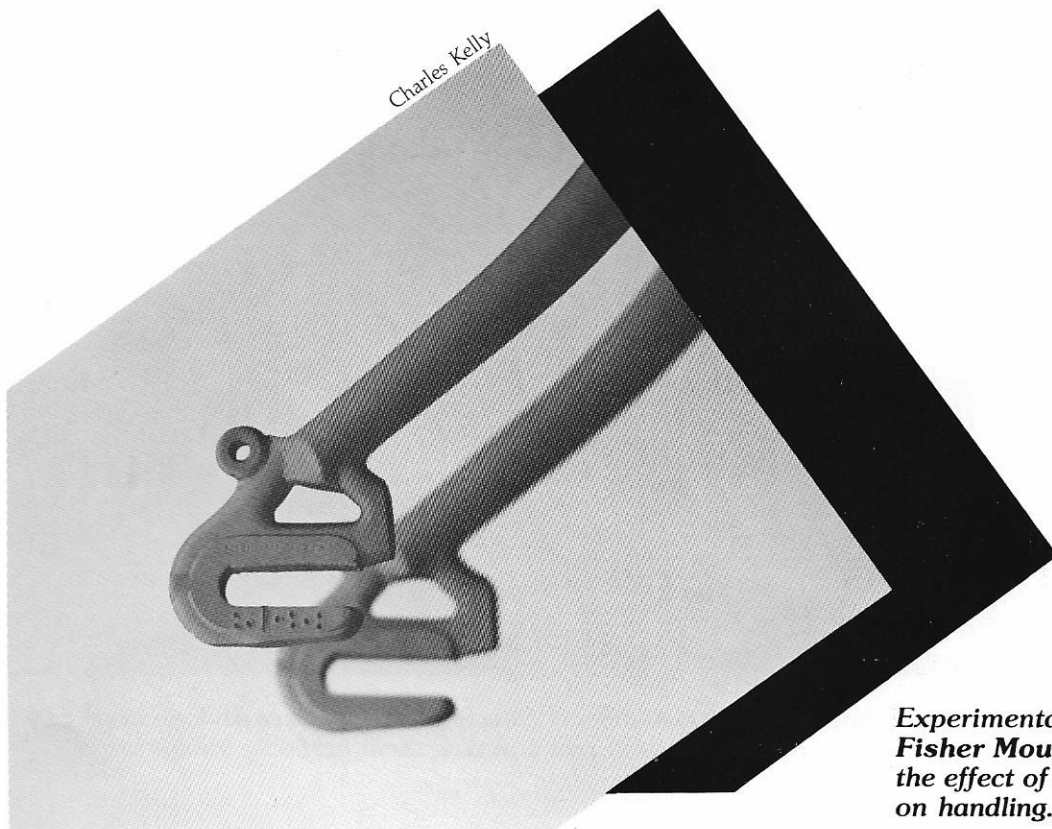


Charles Kelly

Mush Emmons



Cunningham seatpost quick-release is the lightest, and ventilated, so it is also the coolest.



Charles Kelly

Experimental fork is used by Fisher MountainBikes to check the effect of different fork offsets on handling.



Don Mertle



Roger Durham has his own machine shop and likes to tinker with his bike. It doesn't look as though he's missed anything.

Note the large hollow spindle Durham uses on his custom crankset.



BULLSEYE

COMPONENTS

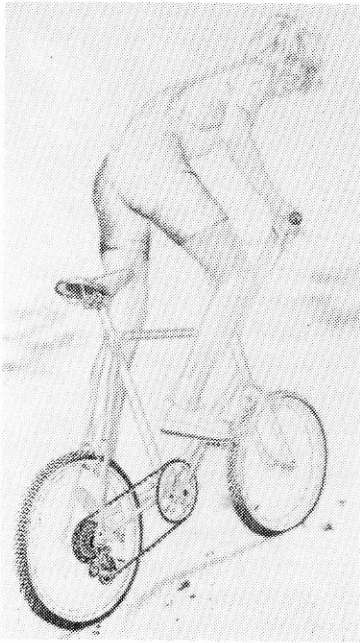
— PULLEYS —
 — SEALED BOTTOM BRACKETS —
 — TUBULAR 2-PIECE CRANKS —
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 — 3 TIMES AS RIGID —

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Don Mertle



Art Nouveau seatpost look is achieved through clever trick photography. Interloc Racing Design really makes them perfectly straight.



VICTOR VINCENTE OF AMERICA

AVANT-GARDE DESIGN SINCE 1991



Victor's Topanga bikes got their geometry from the 20" rims which were the only ones available in aluminum at the time. The rider's bib shorts were an earlier Vic first which has been more widely copied. His downhill rider is from the Tee shirt catalogue . . . since 1991.

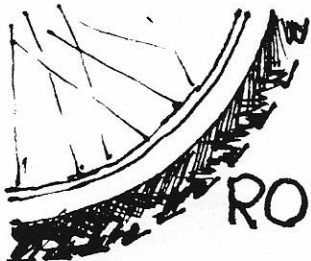


*Who said stiffer is better? The **SlingShot** frameset is for non-rigid thinkers. Spring-loaded cables replace the downtube, and the bike is hinged at the seat cluster.*



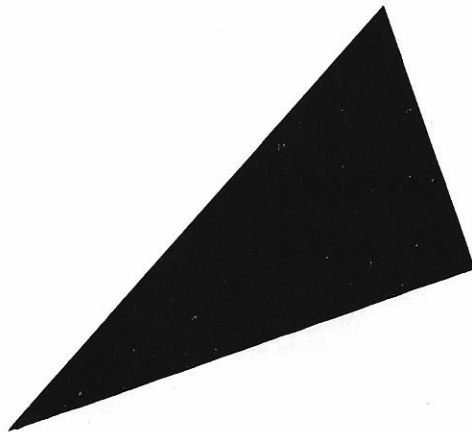
Photo courtesy Mountain Goat Cycles

Fork crown by Mountain Goat is a classic of design.



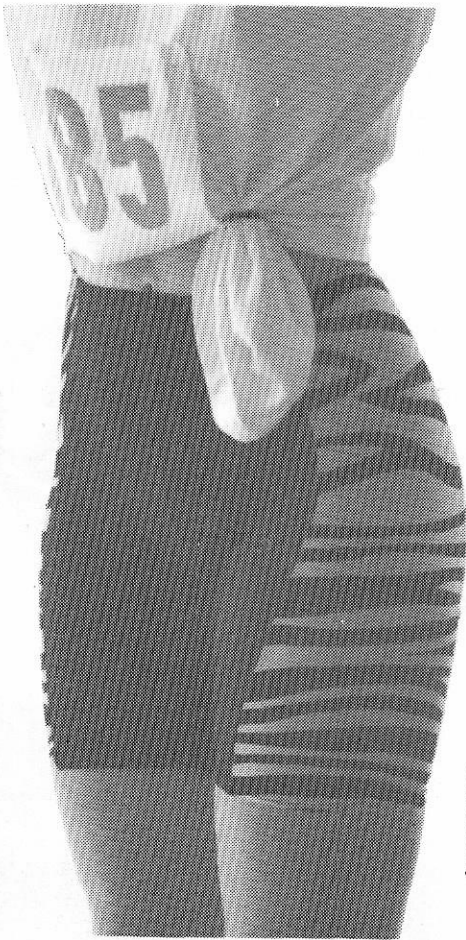
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Charles Kelly

Our concept of off-road clothing, which is in part theoretical, is that it should be comfortable, i.e. warm when it needs to be and cool when that is appropriate, nonbinding, and most of all, durable. Although *we* never dismount in violent fashion, the concept of extra padding or protection in exposed areas has value. Okay, so you could have thought that up yourself.

Knickers (a word that will make our British readers laugh; across the Pond they're called "plus-fours") are being pushed as a stylish and practical alternative to shorts. The models made for mountain biking generally have padded knees such as those made by Kucharik and Plumline. Emily K's shorts, which resemble touring shorts, have padded hips for protection from falls, while the padded right shoulder in the sleeveless jersey is for cushioning while carrying the bike. In an unplanned test of practicality the Kucharik pants survived an abrasive crash with no damage, more than can be said for the tester, although his knees were unscathed due to the padded pants. Unfortunately, we could not persuade anyone to submit to a series of several dozen such crashes in order to develop statistical data.

We have mixed feelings about Lycra. Sure, it looks great (if you have the right stuff to stretch it over), and it's warm, and it's available everywhere. What it isn't is resistant to abrasion, which is a fact of life among mountain bikers. Even sitting around chewing the fat in an outdoor setting can be hard on this fabric, and in any kind of a crash it practically melts. Come to think of it, our feelings aren't that mixed. It's good stuff if you're careful about abrasion. Other materials for traditional-style knit black shorts that have more resistance to abrasion are wool and polypropylene,

which some riders swear by.

"Touring" shorts are a good alternative to regular black stretch riding shorts, because they have enough pockets for the rider to carry tools, food, spare parts, geological-samples, whatever. These shorts also don't immediately identify the wearer as a biker (even though that isn't anything to be ashamed of) because they resemble ordinary hiking shorts. Most are equipped with synthetic chamois liners and are made of a stretchy material to reduce binding and chafing.

Road cycling jerseys are common on off-roaders, but for the most part the pockets in back are unused unless the rider is travelling extremely light. The reason for the pockets in the first place is for a road racer to stuff his food into, but mountain riders generally have too much extra gear to get it all into a couple of pockets. As

When we started putting together this issue, one of our ideas (not entirely original) was to go to a bunch of clothing manufacturers and see what they had for mountain biking. Three of our more well-known clothing manufacturers have been experimenting with off-road clothing for several years; these are Kucharik, Plumline and Emily K.

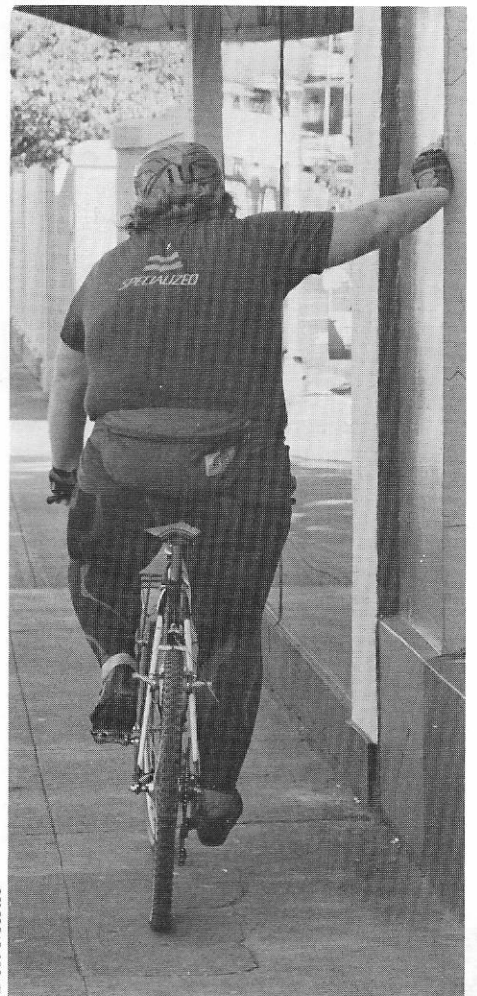
Meanwhile, some of the other clothing people seem to be waiting for a direction to be established before risking large investments. When we visited these people, typically the exchange went something like this:

"Hello, we're from the FAT TIRE FLYER and we'd like to ask you about what kind of clothing you make for mountain bike riding."

"Well, we have these nice jerseys and black shorts and these tights and . . ."

"Excuse us, but isn't that stuff all pretty much road riding clothing?"

"Well, yes. Perhaps you can tell us what mountain bikers would like to wear..."



Don Mertle