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THE RIVENDELL READER

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27

Summer 2002



Summer 2002

27

A QUARTERLY FOR BICYCLERS

In This Issue

How to repair a bad sidewall cut and make your tire stronger than new, almost.

Luka the Wire-Haired Fox Terrier bicycle tourist from South America.

An interview with Charlie Cunningham.

How to Press in a Headset at Home.

Fixing Lousy Knees.

Many other fine sections.



When Kids Chewed Tar and Chased the Bug Truck

YOU'D NEVER BUY A PAIR OF SHOES TOO SMALL, even if they were knocked down from \$20 to \$9.99, but people buy thousand, two-thousand, three-thousand and four-thousand dollar bicycles too small all the time. By "all the time," I don't mean 100 percent of the time, just mean it's common; but still, it doesn't happen with shoes.

Too-small shoes are obvious. You can't wiggle your toes, or your heel lifts as you walk. You know that because you wear shoes every day. Imagine that you get a guy from the jungles of New Guinea and bring him to a shoe store. Assuming he has been primed to want shoes, and he can't wait to get some, it's pretty likely he'll be thrilled with the first pair of fancy ones he tries on, so long as he can fit his EEEE feet into them. He hasn't had a proper fit before, and may think (or be told) that the novel feeling of toes being slightly scrunched, or the shoe wanting to come off when he runs, will go away, or he'll get used to it. So he pulls out his wampum and gets them.

The difference between shoes and bikes is that a bad-fitting pair of shoes is more obvious a week or two later. With bikes, you give yourself time to adjust, and your body is remarkably hinged and more flexible than your foot is, and it *does* adjust somewhat, so it seems to bear out the salesperson's claim that the size is right, even when it's wrong.

Another difference is that fitting shoes is easier than fitting bikes, and shoe fitters have lots more experience with it. Twenty-seven years ago I learned to fit shoes at REI. We learned this on other employees before we were allowed to help customers. Here's how to do it. (1) You determine the proper style for the intended use. (2) You make sure the guy's wearing the right sox. (3) You loosen the shoe, make sure his heel is above or forward of his ankle, and have him push his toes all the way forward 'til his toes are touching the end. Then you feel the clearance at the heel, and when it's enough to stick your finger in there and wiggle it just slightly and no more, it's good.

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THE RIVENDELL READER

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Grant, who still has a long way to go

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(4) Then you have him reset his heel back where it's supposed to be, and lace up the shoe/boot. (5) Is there room to wiggle toes? Does it feel fine at this stage? (6) The walking test: Does the heel stay down when he pushes off? If it's a hiking boot, does the heel stay down when he simulates uphill hiking on the portable slope the store ought to have if it's selling hiking boots? (7) Does his foot stay with the sole as he stands sideways on the slope?

There is a proper way to lace boots to make the heel stay put (to prevent rubbing and blisters). If the boot has 3 hooks up top, you lace over the top of the lower hooks, then cinch tight with an overhand knot. That keeps the heel in place, provided the heel more or less fits the boot, and some heels are too skinny and some boots are too wide for their heel, so there's that to determine, too. People with narrow heels usually know it. Women are famous for narrow heels.

After you've cinched the overhand knot tight at the bottom hook, you can lace the upper two hooks normally or even loosely, without affecting the snugged-down heel. Usually new boots are stiff up at the top, and a snug lacing there won't feel good. But if you lace loosely up top without using the heel-slug trick, the heel will come up and you'll get blisters.

One difference between shoes and bikes is that everybody who works fitting shoes in any respectable store gets trained. The store owner doesn't just get untrained hikers in there, people they assume know how to fit shoes just because they can hike fast and long, or because they like hiking.

Another difference is that shoes cost a lot less than bikes do, and most adults don't have any qualms about returning a pair of shoes that didn't work out after a few days or a week. And, if you're rich or the shoes were cheap, and especially if you're rich *and* the shoes were cheap, you might figure *big deal, try again, I've got other shoes, so I don't need to bother returning. This assumes you aren't a born returner, and some people are.*

With bikes, a lot more money's at stake, and it may be a month or several months before you've given it a good trial, especially if you only get out on weekends, and not even every day of every weekend. With something expensive like that, that you've been told will take some getting used to, you're not likely to return it if it's not comfortable after a ride or two or even seven. The next thing you know, your bike is 3 months old, and you're still not comfortable on it, but you don't want to be one of those nightmare customers who returns expensive things months after they buy them, and they can't be sold for new anymore.

Even if that weren't mean, it still involves a certain amount of admitting that you aren't flexible enough for the bike, or you haven't ridden enough miles to get used to it, or some other threat to your physicality. It's not like that with shoes. There's no shame in saying, "My toes get all twisted in these," or "Want to see something gross? Let me show you my blisters."

There are more differences in bodies than there are in just feet. Add to that the fact that different types of riding, and different degrees of flexibility, different preferred riding positions, pre-existing medical issues to deal with (carpal tunnel, sciatica, fused disks, to name three), and it all suggests that maybe you shouldn't put yourself in the hands of a commissioned teenager during a busy sale day.

Commercial fitting devices such as the Fit Kit and the Serotta Size Cycle are a step in right direction, because they attempt to objectify the fit. But we've seen poor results too many times to trust them entirely. They depend on the fitter's skills and abilities to follow instructions and to not throw in his or her own bias. Whatever the actual result, they are a conscientious attempt to do good.

Our way of fitting customers on our bikes is dialed in as close to

perfect as it can be. You're never more than one stem change away from Just Right, and stem changes don't cost much. But our method is tailored to the idiosyncracies of our bikes, and doesn't work as well for bikes that don't have the same features.

Technology (the word) gets batted around a lot. How do you define it? Change, improvement, complication? One definition I buy is that technology is a better way to do something, like laser-blasting away cancerous lesions inside your guts through a tube and using a television camera to make the pin-head sized cancer look at big as a nickel. It's being able to resize digital images and obliterate distracting backgrounds. Or, it's containing oil spills and sucking up the oil before it wrecks things even worse.

Bicycles have been around for more than 130 years, and have evolved along the way to the beautiful, spare, and efficient form they are today. Bicycle technology can be stronger metals, more reliable and better performing suspension forks, tubeless tires, disc brakes, and a few other things that may not be up our alley here, but for what they are, they're good. For instance, downhill-specific mountain bikes aren't our deal, but it's only right to call them technological advances in their own new arena.

Sunken (internal) headsets, on the other hand, are not technology, just a change masquerading as technology, hoping to be mistaken for an advancement just because they're different. Many of the companies making and using them must do so out of fear of being accused of not keeping up with technology, and losing sales. That has to be the reason, because it can't be because external headsets lack anything. When most or all of your competitors are going one way—for whatever reason—it is safer to do the same. If it all craps out, you don't look any worse than anybody else. It happened with Biopace rings and U-brakes, and it's happening now with sunken headsets.

Sunken headsets will take over, but offer no advantages. "Stiffer" is not an advantage, because stiffness isn't an issue with headsets. "Lighter" isn't either, because headsets are light enough, and there's not much difference between a heavy one and a light one. "More aerodynamic" is a morose joke. Tucking something inside a tube will hide it from the wind, but looking to your headset for improved aerodynamics is an idea that's not even worth a breath. Finally, sunken headsets let you set the handlebars lower, but who wants that?

The headset makers and many of the reviewers have not stated any actual advantages of sunken headsets, and don't wait for that to happen, because there aren't any. Instead, they focus on fashion, and count on the support of an industry that's desperate to maintain and grow sales in a flat market, and is therefore primed to regard anything different, even if it's a fashion-only difference, even if it's bad fashion, as a possible savior.

I don't like the missing look of the sunken headsets. The bike looks like a bike in a children's book, where they always forget to draw the headset. Headsets are small and at worst harmless looking, but the better-looking ones look like flattened silver bubbles with fine hardware, nobody would ever say, "Hey pal, nice-looking bike you have there. Too bad the headset is visible." A good-looking headset is smart and adds to the look of a nice bike. Raise your hand if you hate the look of a Chris King headset, for instance.

On the practical side, it's not so smart to support a headset on an internal, permanent, non-removable shelf in the head tube, especially when that shelf isn't steel. Normal wear and tear will distort the shelf over time, and the headsets will wear out sooner. When you put a new headset in, it will be on the distorted shelf, and won't last as long as the first one.

A decent external headset, whether it's a traditional style or an
continued on page 24

Mail

Another Tube Repair Tip

The easy way to mount a tire is just the opposite of your instructions in Riv. Reader 26; the very last part of the tire bead to snap into the rim should be the piece right at the stem, not opposite the stem. I learned this from pictures on a Michelin Hi-Lite tire box about twenty years ago. It worked then, still does, and I've done it like this ever since. —Bill Mennuti, Lodi, CA

Good idea. If the tire's tight, it must make it easier. I used to do it that way, but the valve kept shifting, so I started starting there, and working around evenly. Some other readers felt I didn't emphasize enough the importance of seating the tire at the valve, so here goes: Seat the tire at the valve! —GP

The Horse Shoe—Fork Crown Connection

A horse has got two feet that stand behind two feet that stand before and if you stand behind those feet you'll find out what those feet that stand behind be for. I learned more about horseshoeing yesterday than I expected to, but the most important horse lesson I learned I learned some years ago. Don't try to stop a horse from walking away by grabbing his tail.

You only offer one sloping fork crown, is this because of aesthetic or functional reasons, or both?—Chuck Lathe

Nothing functional. Flat crowns have always looked the nicest to me, sort of like soldiers with those uniforms with stiffened shoulders on them. In the old days when people even talked about fork crowns, the scuttlebutt was that flat crowns allow longer blades that absorbed more shock. Fully sloping crowns shortened blades and made the bike stiffer in corners. There are so many other influences, though, that you can't just say that any more and be taken seriously. I like the look; and the only semi-sloping crown we sell looks really nice, too.—GP

What's All this Shaking?

I ride 61cm Trek 600 with a 58cm tt and 73° seat/head tube angles and 5.5cm of rake with an 11cm stem, saddle height 81cm. I bought the frame about six months ago and have put about 500 miles on it. All of my riding until last week has been on relatively flat ground, 16–22mph depending on wind direction and the handling has been fantastic

(this is, however, my first road bike so I don't have anything to compare it to).

Anyhoo... I wanted to see how fast I could go so I rode to the closest good sized hill to see what I could do. Accelerating through 35mph I felt a slight shimmy and decided not to go past 40mph. When I slowed back down through 35mph the bike shook so violently I thought I would lose my grip on the bars, the shaking continued almost until I came to a stop with progressively slower and larger oscillation as speed decreased. I checked the hubs, headset and stem, all were secure. Is there something else I can check or is there possibly something with the frame geometry that doesn't like high speeds? —Jim Roselle

First, Trek makes good bikes and always has. They're not our style, but they're still good bikes, backed up with sound designs and good engineering, and I think it's unusual to hear of any complaints. Bike shimmy can be caused by all kinds of things, and I'll list them, but don't go thinking I'm accusing your bike of any of these. Then I'll make a guess.

Shimmy causes: Loose headset. Too-skinny and therefore flexible top tube. Uneven packing (using one rear pannier, for instance). Lousy wheels (too light, too flexy, out-of-true). Frame out of alignment? Not sure about that one, but it's often cited. Too little trail.

When I got 2/3 of the way through your first sentence, the 5.5cm of rake jumped out. Trail is a figure derived from the head tube angle, fork rake, and wheel radius. I'm on my 50th email in 3+ hours right now, so I'm not at my best here, but I'll try to describe it briefly. Call A the imaginary point where the head tube would intersect the ground; a line straight through the head tube, along the fork blades, straight to the ground. A straight line. A is the point where it hits the ground. Call B the point where a plumb line dropped from the center of the front hub hits the ground. Trail is the distance A to B.

Typical road bike trail is about 58mm, or 2.25 inches or so. That is the figger most often cited as resulting in "neutral" handling, or a good combination of high-speed controllability and low-speed maneuverability. For a given head tube angle, more rake makes for less trail. For a normal 700x23 road tire (it's not normal HERE, but...), this neutral trail figure would result

from a 73 deg head tube with 45mm of rake. Treks used to have that. The 73x45 combo is a classic, old-time, all-time standard. I'd be surprised if your fork had 55mm of rake. If it does, it does, and then I'd suggest getting another fork with less rake. Another option: Use a bigger tire, since that'll increase trail, too. Or use a larger front than rear tire, since that'll decrease head tube angle, which will increase trail.

Summary, assuming it's not a loose headset or bad wheels, and your aren't a really heavy fellow on a really light bike: Get a new fork with 4.25 to 4.5cm of rake, or ride a larger tire, if the fork will accept it.—GP

Well, Andrew—He's not Here Anymore

Someone deserves a big heaping credit for the graphics. The photos are very impressive; they show what you want to show and they are clear. All this means that the pics are good and the halftones are good and the printer is good. All I can say is I will stay a member for awhile just to read the articles.

I still consider myself a novice bike type, and I know I'm an exception to the general recreational-bike-riding person. My wife and I ride every day to work, 4 whole miles round trip. We take errands on bikes and whoa, hold onto your hat, we ride to exercise classes! All of our single bikes are upright handlebar and with the exception of my fixie, all are Shimano Nexus 7-speed equipped (even my wife's Pederson). I completely agree with you, get your handlebars up, be more comfortable. I would go one more step and say preist bars for everyone. We bought a fancy-pants tandem (S and S couplers, softride beam for my wife the stoker) with drop bars and I'm trying to learn to like them, but the jury's still out. —John F. Hess, Davis, California

Wants a New Frame. Are We a Good Match?

I've been riding the same lugged-steel Spectrum for the last 14 years and something like 40k miles and there's not a dang thing wrong with it, other than the fact that about 1/4 of the original paint is gone and some of the parts are in need of replacement and, well, I deserve a new bike now and again. I'm concerned about fitting.

See, Everyone always put me on a bike that was way too big. I have a 37" inseam, and everyone insisted on a 63–63cm frame, but

that gave me a waaaay too long top tube, which meant a short stem, which gave lousy handling. Tom Kellogg had the experience (and genius) to give me a frame with a 60cm seat tube, 180mm cranks, a 57.5cm top tube and a 12cm stem. The handling of my bike is perfect.

And now the fit is even better. I started taking yoga classes a year ago, and now I have a much greater range of flexibility in my spine—so much so, that I actually lowered my stem, which now has only about an inch more that it can go down. And I have never, ever been more comfortable. I now regard flexibility up there with strength and aerobic conditioning.

So main question is: will you take input regarding frame design based on my personal experience? I've read that you believe a much more upright position is better, but I don't think that would apply to me. I have a commuter bike with an upright position and I really don't like it. I'd love to hear your input on this.—D. R.

Sure...I'd be dumb not to listen. Part of the fitting is knowing your current bike, size, model, feedback, etc., and you've started

that. I'd like to see a sideview photo of it, too, and maybe a sideview of you on it.

It's true I think most people are on bikes too small, but that doesn't mean I put 'em on bikes too big. There's also the *psychological fit*; I bring that up all the time. If I put them on the size I think is right, and they're psychologically uncomfortable (some folks who should be on a 61 but have always ridden 57–57 see 60 as a monstrous barrier), then it's not right. So I'm flexible, too.

If you proceed, we'll talk, and we'll see how it goes. One thing I'd point out early is that tt length is not related to seat tube length. I mean, there's a point at which a tt will be too short for a given st, but fundamentally they're separate. Have you seen RR26 yet? There's a story in there. If you grab the end of the top tube when you ride, it would matter more. But what matters is how far the bars are, how far you have to reach, and other things BESIDES tt length affect that.

Also, I'd have you give a PBH measurement. Inseam is for pants, not legs, and some people offer it up as their leg mea-

surement. It's good to be clear on what measurement we're talking about. If your PBH is 37-inches, that's 94cm. Based on that and assuming you're otherwise normally proportioned, you'd be on a 65–67cm frame.

Finally, consider the notion that you can have two bikes that you fit differently that feel equally good, just different. At some point, it wouldn't make sense to get a Rivendell designed around another bike. It would have Riv lugs and all, but it wouldn't be a Rivendell.

Tom Kellogg is a friend, and one of the smartest bike guys out there. I'd like the order because we're trying to keep Joe and Curt and JB employed, but I wouldn't consider it a lost chance if you went back to Tom. Second-frame orders from any customer are always sweeter than the first, and I know it would mean a lot to Tom to get it. On the other hand, if you want a Rivendell and we can work out the fitting issues, that'd be great, too. It shouldn't feel like a tug-o-war. I'll be in touch, and let's see if we can meet somewhere that's comfortable for both of us.—GP

Answer Form For the Quiz on Page 49

Perfect scorers will receive a \$25 merchandise credit toward anything in our catalogue. This form must be received by regular mail. Mail to **RBW RR27 Quiz, Box 5289, Walnut Creek, CA 94596**

Entries must be received by September 31, and if you win, you will be notified on or before October 15. No individual processing, emailing questions about the questions, no holding up orders until you get your score, no cashing in your credits. Let's keep it fun!

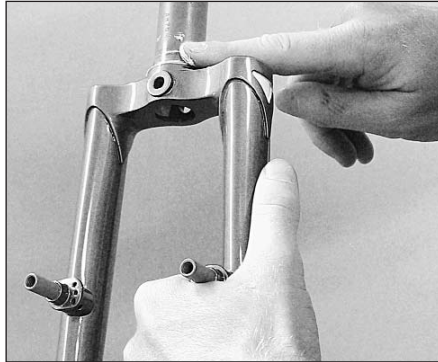
Are You a Member? _____ Your Name _____ Your member no.? _____

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Installing a Normal Headset

In Your Garage, with Cheap Tools



ONE

Grease the shoulder at the base of the steerer. Some folks don't, but it seems to help. Lanolin works fine. Anything will do, though. It's always good to treat contact surfaces.



TWO

Rest the bottom headset cone (bearing surface) on the shoulder. Slam it on and make a racket. Two to four hard blows usually seats it. You can probably get a pipe to use as a tool, but every now and then a real shop tool won't hurt you! Bicycle Research makes a good, inexpensive one.



THREE

Grease the inside of the head tube, where you'll press in the bearing cups. Again and curiously, some mechanics don't bother with this, but there's no way a little lubrication will ever hurt there, so we recommend it. It makes removal easier five years from now, anyway.

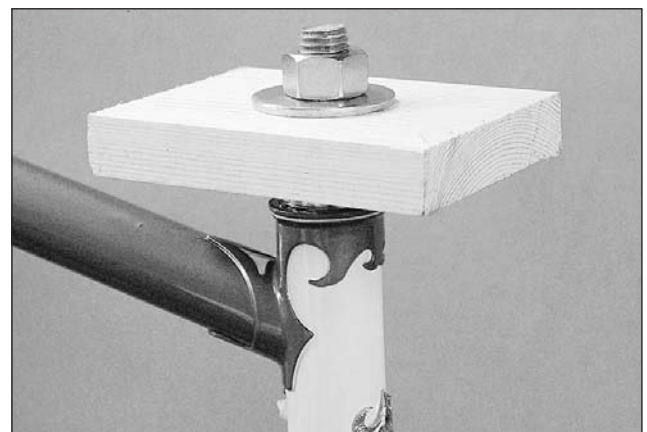
You'll Need:

- Two blocks of hardwood—oak or maple.
- A length of 5/8" or so All-Thread, which you can get at any hardware store.
- Nuts and washers that fit it the All-Thread. The washers should be bigger than your headset.
- Grease. And it helps to have a bike stand, too.



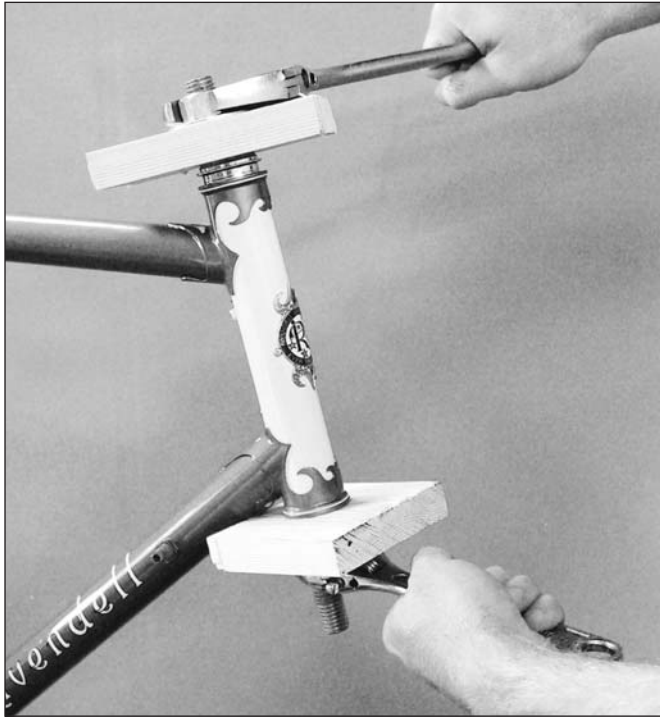
FOUR

Set the upper bearing cone gently into the head tube. Some headsets have a cup here, instead of a cone. No matter, you still have to press it in, and the first step for doing that is doing this. Eyeball it straight.



FIVE

It goes like this, moving on up: Head tube, headset piece, hardwood block (no soft wood allowed), metal washer, big old nut. A similar arrangement on the bottom, making sure the lower block doesn't run into the downtube. The AllThread runs through it all.



SIX

Here's a better picture. Forgot to mention—you'll need at least one wrench, or better yet, a wrench and a Vise Grip. You can do both sides at once (the way pros with real tools do it), but if you're new to it, go one at a time, and watch to make sure it presses in straight. If it gets off to a wacky start, you might need to knock it out with a punch and have another try at it. Note how lugs reinforce the tube.



EIGHT

After you screw down the upper cup (or cone, if it's that kind of headset), add any required spacers, lock washer and brake cable hanger; then fit the locknut. The final adjustment should come after the stem is in place, so for now, just adjust it good enough by hand. Turn to make sure it all seems smooth.

Other Notes

If you use wood, it's got to be really hard. Oak, maple, something like that; otherwise the force will mush it out as you try to press the cups in ... Pro tools for doing this job cost as much as \$100, and they're good if you do it a lot, but they work the same way as this ... A shop will typically charge about \$25 to \$35 install a headset. It makes for a high hourly rate (the job takes 15 minutes), but don't squawk at that fee, because they're assuming all the risk. If they mess up your frame or headset, they'll replace it.



SEVEN

We're skipping a step. You should have pressed in the lower headset cup, also. Then you grease the bearings, insert the fork, and grease and install the upper bearings, shown here. These bearings are balls held in a retainer, so they don't fall out. Grease the threads, too. Use lots of grease, wipe off the extra.

Ed & Fred Talk about Knees

By Ed Pavelka and Fred Matheny

Ed and Fred operate www.RoadBikeRider.com. They offer “how to” cycling books as well as a free weekly newsletter for road riders. Subscribe on the website and receive a complimentary copy of their eBook, “29 Pro Cycling Secrets for Roadies.”

When you’re spinning along at a nice 90-rpm cadence, you’re making 5,400 pedal strokes every hour. That’s over a million strokes in a 5,000-mile year, which seems as though it ought to be tough on knees.

Yet without the heel strike of running, cycling is good for knees. In fact, pedaling is the recommended rehabilitation for many knee injuries. The reason, according to Andy Pruitt, Ed.D., director of the Boulder Center for Sports Medicine in Boulder, CO:

“Injured knees, knees that have been surgically repaired and aging knees all want movement. And you want exercise. It all comes together on a bike.”

Even so, cyclists sometimes suffer knee injuries from pedaling. What makes your knees hurt, and what should you do about it? Here, courtesy of the book that Fred coauthored with Andy Pruitt, is a list of precautions to help you avoid and treat the most common problems. (The book is titled “Andy Pruitt’s Medical Guide for Cyclists” and it’s available at www.RoadBikeRider.com.)

PROBLEM PREVENTION

Find the right saddle height. Andy’s rule: If the pain is in the front of the knee or under your kneecap, your saddle is too low. If it’s behind the knee, the saddle is too high.

Ease into high mileage. Knees can suffer from big jumps in mileage. Build up gradually, limiting increases to about 10 percent per week to let your knees adapt.

Keep cozy. Riding in freezing temps or even cool windchills with bare knees is a recipe for trouble. Cover up with tights or leg warmers when it’s below 65 degrees.

Start slowly. Knees like at least 15 minutes of spinning in a small gear to get the blood flowing. Gradually increase resistance and cadence until you’re feeling warmed up and pedaling is free and easy.

Spin. Use gears that let you keep your cadence above 80 rpm on the flats and no lower than 75 rpm when you’re climbing in the saddle.

TENDINITIS

A sore knee is usually due to tendinitis—inflammation of the tendons that surround the kneecap or are behind joint. These are the two most common forms:

Spring knee. Sharp pain along the top of the patella (kneecap). The patella is triangle shaped with the single point at the bottom. The pain in spring knee usually occurs

on the right or left points on top. It often occurs in the spring, and is due to big increases in mileage or gearing.

Patellar tendinitis. Pain develops in the front of the knee, in the thick tendon you can feel below the kneecap. It hurts while riding and maybe when walking up stairs. If your knee swells or squeaks when bent, it’s telling you that the tendon’s normal lubrication is in short supply.

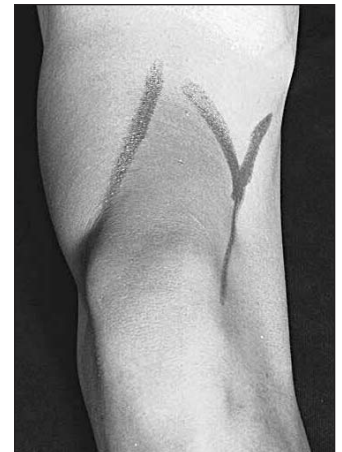
And Andy Pruitt’s suggestion if you suffer from either:

- Apply ice (in a plastic food storage bag) one to three times a day for 15–20 minutes each time. Protect your skin with a cloth. Put the ice bag on the injured area and hold it in place with an elastic bandage. Leave it off for at least 20 minutes between applications.

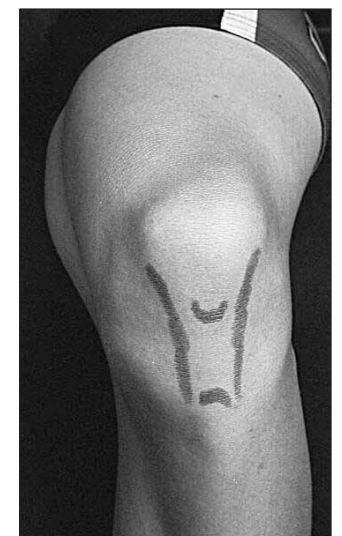
- Take a non-steroidal anti-inflammatory drug (NSAID) with food. Ibuprofen is a popular choice. But be careful—these over-the-counter medications can be dangerous. If you’re dehydrated, kidney problems could result (and it’s easy to become dehydrated during the summer season). Don’t exceed the manufacturer’s recommended dosage. This is especially important on a multiday tour when dehydration is more likely.

- Use a counter-irritant (heat rub) to encourage blood flow to the injured knee before riding. Then shield it from cool air with a coating of vaseline, or wear leg warmers.

If the injury persists, get a professional position check from a qualified cycling coach, reputable bike shop or a sports medicine facility with knowledge of cycling. Still hurting? See a physical therapist who has experience working with cyclists.



Spring knee hurts here.



Spring knee hurts here.

ILIO-TIBIAL BAND FRICTION SYNDROME

This is another common knee injury, named after the wide sheath of fibrous material that extends from the crest of the hip bone, along the outer side of the thigh, to slightly below the side of the knee. The lower end crosses a bony protuberance on the joint.

Symptoms are a sharp, stabbing pain on the outer middle of the knee. It can feel like someone is sticking you with an ice pick. It makes you dread the downstroke.

IT band problems are usually caused by a saddle too high, feet too close together, or badly adjusted cleats. Bowlegged riders and those with flat feet are susceptible, too.

These are Andy Pruitt's treatment tips:

- Apply ice and take a NSAID as outlined above.
- Widen your stance on the bike by moving your cleats as far to the inside of the shoe sole as possible.
- Switch to pedals that a few degrees of "float."
- Lower your saddle about one-quarter inch. IT band friction syndrome is one of the few knee problems where the saddle should be lowered rather than raised.
- Try arch supports or orthotics.



That's where the ilio-tibial (IT) band is. When it twangs against your knee knuckle, it gets inflamed, and you just want to lay down and die, honest. When you have to keep riding, lower your saddle, spread your feet apart, and point your toe outward a bit.

If these fixes don't relieve the pain in one day, stop riding. Once this injury gets established, it's hard to heal. For advanced cases, surgery may be necessary.

While you're off the bike, see a physical therapist for instruction on the stretches designed to treat an IT band problem. (ed note: Riv member Mark Rosenburg is one of those fellows and has a website: howtostretch.com.)

CHONDROMALACIA

You often hear about this knee injury in running, but it can be a problem for cyclists, too. Chondromalacia is used to describe everything from irritation of the cartilage on the back of the patella to actual degeneration that can lead to arthritis. It isn't specific to one area of the knee. It's just "in" the knee. You might feel pain behind the patella, especially when going up or down stairs or pushing big gears. There might be clicking or grating, and your knee might stiffen and ache after sitting.

Ride lower gears and avoid kneeling, squatting and weight exercises (like full-range leg extensions).

Andy Pruitt's treatment advice includes:

- Ice and NSAID as outlined above.
- Set your saddle high. The lower the saddle, the more shearing force on the back of the kneecap. Raise the saddle until your hips begin rocking during the pedal stroke, then lower it just enough to stop this motion.

Any time you raise the saddle, also raise the stem the same amount. Then you'll retain the correct relationship between the height of the handlebar and the top of the saddle.

- Ride with a high cadence and low gears so there's little resistance on each pedal stroke. Avoid climbing, if possible. If not, climb standing, not in the saddle.

Chondromalacia treatment includes strengthening the vastus medialis (the pear-shaped part of the quadriceps muscle just above and to the inner side of the knee).



Pedaling itself strengthens this muscle, as do short-arc leg extensions. Let your knee bend only about 15 degrees before straightening.

Rule of thumb: If you can walk down stairs pain-free, the symptoms are under control.

PRE-EXISTING INJURIES

Sometimes, people take up cycling and have knee problems they can't solve. In this case, the problem may very well be a pre-existing knee injury that flares up during cycling.

One example—a slight cartilage tear from another sport. Cycling is usually ideal for this sort of knee problem because it strengthens the muscles that stabilize the patella. So, reduce mileage and continue to ride. Your body should soon adapt. If not, see a doctor.

Both of us have had knee operations (three for Ed) necessitated by cartilage damage from other activities. Even so, we're nearing a combined half-million lifetime miles—and our knees are going strong.

Note This Note:

Many of you know of Ed Pavelka and Fred Matheny from years of reading cycling magazines. Both have been around a long time, learned a lot, and have written about it. They're accomplished as riders, and humble and nice people. They aren't shellackers and twiners, and they're more performance-oriented than I tend to be these years, but they've got so much to offer, even if you aren't obsessed with speed or distance. Subscribe to their online newsletter. It's free and good. GP

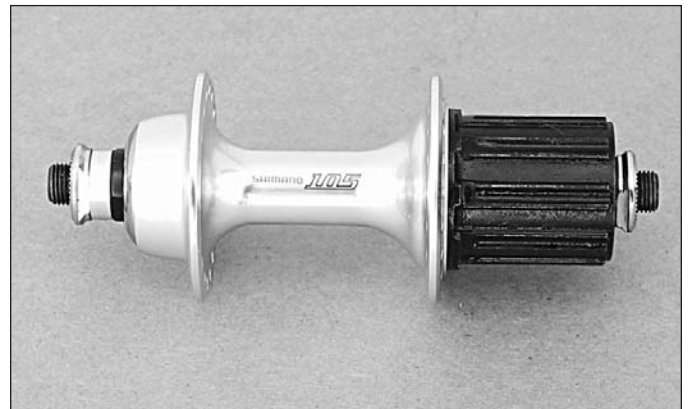
Freewheels & Cassettes

A Rookie's Helper, and Pretty Much All Anybody Needs to Know

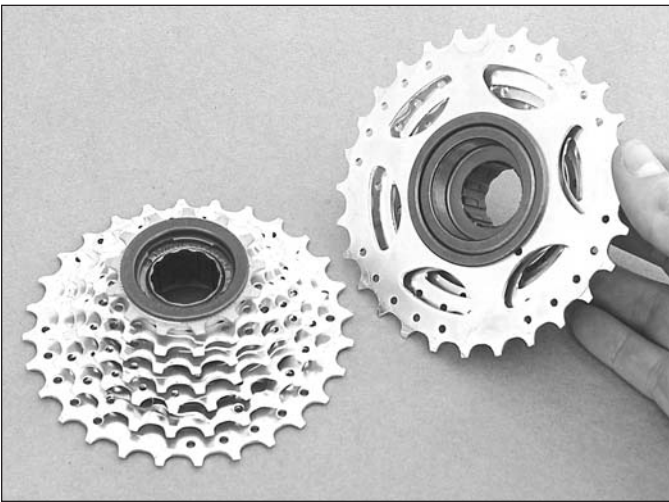
If you want to make the rear wheel go forward when you pedal, and to coast when you stop pedaling, you need a mechanism in the rear wheel (the drive wheel) that lets that happen. What has evolved over the last 80 years or so is a mechanism that works much like a ratchet, which catches and shoves in one direction, and slips in the other. That's not a perfect description of what happens, but it's close enough. That mechanism can be in the gears, as it is in a freewheel, or it can be in the hub, as it is in a "freehub." On these two pages, you'll learn how to tell one from the other by looking, and pros and cons of each.



A normal rear hub for threaded-on freewheels. Inside the hub there's just bearings, but no ratcheting thing. The identifying feature is the hub body. On this style hub, it is the same diameter between the flanges. It might be fat, it might be skinny, but between the flanges, the diameter stays the same. And, just outside the right flange is a threaded section, onto which you screw the freewheel. Until about 1982, virtually all rear hubs were this type.



A rear "freehub." Invented or at least re-invented by Shimano in the early 1980s, you can tell it by the bulge in the body, just inside the right flange. It has to be fatter there to make room for the fancy ratcheting mechanism. Just outside the right flange is a splined (grooved) section. The rest of the ratcheting part is in here, and you slide the rear cogs onto this.



A thread-on freewheel. This contains the bearings and ratcheting part, which lets you drive the rear wheel when you pedal forward, and coast when you don't.



A splined cassette. This is nothing more than a group of cogs, usually attached to one another, but sometimes separated, which you slide onto the freehub body.



A freewheel threaded onto a threaded rear hub. You screw it on by hand, and pedaling just tightens it. Since it's tightened by leg power, it can be tough to remove (for replacment) by arm power. The right tools and a little oomph generally get it off, though.



A cassette on a rear freehub. Up to the late '90s, most cassette-style rear hubs had a bulge on the drive side to house part of the cassette, and it was easy to tell at a glance what kind of hub style you were looking at. Now many cassette hubs look normal, like this one.

An advantage of cassettes: With the right tools, it's easy to remove, so even really weak people can do it.

Freewheel Pros and Cons

Pro: Actually, it's hard to come up with a modern-day pro. Freewheels used to dominate, and when they did, there was tremendous interbrand changeability, and that was delightful and convenient. Freehub makers made it easy to customize your cogs, so you could get any gearing you wanted. Mechanically, they work fine, but no better than freehubs and cassettes.

One possible con: As freewheel makers added more and more (6, 7, +) cogs to freewheels, the standard threaded-hub axles tended to break, due to extra stress and a design that wasn't made to take more than about 5 cogs. Phil, Bullseye, and others have solved that problem with better rear hub designs, but "normal" rear hubs still broke a lot.

Cassette Pros and Cons

Con: You give up some interbrand changeability, and an increasing number of modern cassettes come with the cogs riveted together, which takes the fun out of customizing your ratios. But if you can live with that, you'll also get the peace of mind that comes from knowing the rear axle won't bend or break.

Pro: By putting the ratcheting mechanism into the hub, they allow the outer bearing to move outward, to the end of the axle. As a result, the axle flexes less and doesn't fail due to fatigue. There are ways to customize ratios, even with riveted-together cogs. But that's advanced, and this is a Basics column!

Almost Last Words

Don't lock yourself in to either all freewheels or all cassettes. I/Grant used to hate cassettes, but that was in the early years when I saw them as Shimano's plan to stifle interchangeability between brands. I'm still not convinced that this wasn't part of the plan, and that any mechanical advantages weren't just a smokescreen. But at some point you have to move on, too, and these days it's fairly easy to do that, unless you're a real gear-freak (that is a descriptive term, not a perjorative).

The easy way to approach gearing, and the way that pretty much guarantees a minimum of frustration and a maximum of sanity, is to stay flexible, make sure your high gear is high enough, your low gear is low enough, and take whatever comes in between without counting.

How Many Cogs is Enough? 8.

There are still sound reasons for limiting yourself to 8 rear cogs, but if your bike comes with 9 or even 10, it won't kill you. Thankfully and to Shimano's credit, they've made 8- and 9-speed cassettes fit on the same freehub, so if you start out with one, you can go to the other. You will likely have to change chains to do that, but chains come and go all the time, so that's easy.

We still prefer 8 to 9. The cogs last longer. The chains are easier to take off and put on again, and are more tolerant of less than perfect reinstalling. Since there's more space between the individual cogs, shifting isn't as sensitive. Eight is plenty for any riding. But if you have 9, fine. If you have ten, that's okay, too.

Is This the First Issue You've Seen of the *Rivendell Reader*?

If not, then you don't need to read this page.

If it is, then here's what you ought to know:

We're Rivendell Bicycle Works. We have a business designing-making-selling bicycle frames, bicycles, parts and accessories, and the occasional book, eraser, and soap; and we have this publication also.

The Reader is a quarterly. It's usually 48 pages, we guarantee at least 40, and this one here is 54. It's our attempt to bring intelligent, information, and thought-provoking articles to bicycle riders who, for the most part, really like riding bikes, are not opposed to long articles, and in general don't worship racers and racing. We try to bring intelligence and dignity to riding for fun, riding for utility, and riding to see the sights.

We also strongly believe that a little mechanical and even technical knowledge of bicycles helps you like bikes more, because it makes you fear bikes less. So, each issue has some sort of article to further along *that* sort of knowledge.

We try really hard to not put any bicycle rider up on a pedestal, or any group of riders; mainly because with four exceptions, nobody belongs there. Along those lines, we don't promote role models, or tell you how you can improve yourself or your riding by being more like this guy, or that girl, or those folks. There is some self-improvement stuff here (Ed and Fred), but that's because I/Grant know both Ed and Fred and like them a lot, and think they have good insights to offer those who do want to ride a little faster or a little longer. But we don't present that as a goal, and you'll not read here how you can ride faster than your friends, or even follow a wheel in a paceline. It isn't even so much that we're trying to withhold information as much as it is because that kind of information is in all the other publications.

We should say, also, that the other bicycling publications offer some things we don't. That sort of information is one example. Better paper and color photos are two more. Higher frequency and "morsels of information" are others.

We don't have any paid advertisements, and there are pluses and minuses to that. But the reality is, ads are priced according to circulation, and our circulation is so small (5,000 paid, another 3,000-4,000 circulated at rides and through about 20 bike shops in the whole country, and we don't know what happens to them)—it's so small that all we could ask for a page is maybe \$200, and that wouldn't begin to cover the cost of printing or circulating it; and so we'd rather use the space for other content.

There are two main benefits to not having ads. One is that we're not beholden to advertisers. We don't feel obligated to cover their products. It gives us freedom to say what we want to say, period.

The other benefit is that we don't have any advertisement-to-editorial ration. Typically it's about 45-55, or 40-60. Either way, half the pages are ads. That more or less guarantees short, undeveloped stories, boxes of information, quips and quotes, and not a lot of substance. This issue's interview of Charlie Cunningham, for instance, is 8,400 words. There is no way in heck a major publication would do that, because the pages are too valuable. So in our measly, pulpy publication, we can do things the rich magazines can't, or at least won't. We're like the hobo who can eat anything and sleep anywhere, in that way.

There aren't enough bike magazines covering road bikes out there. Bicycling does, and in its way it's a good magazine, but its approach is different from ours. VeloNews is as good a racing publication as you'll find anywhere, but it's racing (with some great technical articles, too). There are several mountain bike publications, and they're mostly racing, too. There's Adventure Cycling, a fine travel magazine (with some good technical articles, too). The Rivendell Reader has a broader scope than any of those, and we say this not to knock them, just to point out that we are, actually, really and truly, a semi-general purpose cycling publication. We go into great detail about some things nobody else addresses at all. We interview people they've forgotten or ignore. We show you how to do things, so you'll become more comfortable with your bike. We show behind-the-scenes processes so you'll understand how something is made, and why it is made that way.

If you picked this up at a bike shop or an event, it is likely the last issue you'll see unless you subscribe. Since you've made it this far in the page, please hang in there a wee bit longer and listen to our pitch:

A subscription costs \$15, and for that you get 4 issues of the Reader, at least 3 Rivendell catalogues, at least 2 flyers. Plus, when you subscribe before the end of 2002, we'll include a \$10 merchandise credit toward anything in our catalogue. So it's quite like getting the subscription for just \$5.

It's easy to subscribe. There's a form in this issue. You can call us at 1 (925) 933-7304. You can fax us toll-free at 1 (877) 269-5847. Or you can do it online at www.rivendellbicycles.com.

Thanks.—Grant



This is as Marin County as it gets. Foggy rolling hills, steep climbs, rocks, and lots of redwood, oak, and bay trees ... and Charlie Cunningham.

Charlie Cunningham is the guy who would have invented the bicycle if it hadn't been invented already; and if somebody else invented the bicycle frame, Charlie would have been the guy who invented components. It was just a matter of bad timing that it didn't work out like that, so he has been relegated to the job of making bikes better. He is an inventor, innovator, designer, thinker, perfectionist,

and most remarkable of all is that he's not a cranky, antisocial genius.

When it comes to anything having to do with bikes, he's thought about it, studied it, tested it, used it on a bike, and formed an opinion about it.

Usually when somebody knows this much, he'll exude the kind of confidence that comes off as arrogance,

but Charlie is almost eerily serene. I'm not sure that came out right. He's easy to talk to and hang out with, and a pleasure to ride with—he's not like one of those monks who makes you feel uncomfortable. His only fault, so far as I can tell, is that he's not as nuts about lugs as I am. That, combined with the fact that he's smarter than I am, is cause for concern.—Grant

An Interview with Charlie Cunningham

Where did you grow up, and what did you do as a kid?

When I was a kid, we relocated every three years or so because Dad was a pilot in the Air Force. When I was about 7 we moved to Virginia. We lived there longer than usual and we had more time to bond to the people and land.

You seem outdoorsy and independent. How did that come about?

Well, even as a kid I liked to go on long hikes alone in the woods between our house and the Potomac River. I've always been comfortable alone in nature.

Do you remember your first bike, or one of them?

In Virginia I had a rusty one-speed bike that was too big. I liked how fast I could get the rear wheel spinning when I turned it upside down and revved the cranks. That bike became my best friend. It carried me far into the boonies, enlarging my sense of home. After Virginia, we moved to Japan, which was novel and somewhat traumatic.

Your shop here is amazing. How did you get interested in tools and metal?

I learned a lot as a kid by abusing my Dad's tools. I remember blowing up Dad's vise by putting a whole roll of caps in it, tightening the jaws and hitting the handle with a hammer. It made a very satisfying boom but it fractured the brittle cast iron. That was my first lesson in metallurgy. I also had my erector set confiscated when I made a big metal propeller and mounted it directly on the high-speed motor shaft, instead of the geared-down jackshaft like the instructions said to. My parents freaked out when they saw it in action, I also liked turtles, jet airplanes, racecars, motorcycles, go-karts, space travel, and such.

Did you like school?

Not very much at first, but it got better when I went to college. I studied for an engineering degree at Cal Berkeley, but throughout college I spent a lot of time studying things that weren't offered in school that I found interesting. I think



Charlie with the first bike he ever built (1977), and the only steel one. This is a folder with an adjustable front dropout, shown in detail on some other page here.

most of what I learned in school has been useful.

How did you come to build your first bike? Who taught you, when?

I didn't exactly start by building bikes. I started "improving" them when we moved to Mill Valley in about 1964. Mom had a really nice German one-speed I adopted for exploring Mount Tam. For lower gearing I bolted a big cog onto the small rear cog. It allowed me to go up steeper hills but it spun out at higher speeds. I didn't mind though, because I could coast down the hills. Later, I got a brazing outfit for my birthday. I made the usual acetylene-oxygen bombs and built a smokeless powder cannon that could blast huge lead slugs that I cast clear through really thick steel plate. I also used the torch to modify my go-kart frame and to modify my Gitane ten-speed. With shortened chainstays and raised BB, it became my official trail bike, replacing Mom's one speed. I made my first custom chainstay mounted toggle brake for the Gitane. After moving to Fairfax I used this bike to learn all the trails on this side of Tam. That was before the mountain bike thing started to happen.

In the mid seventies, a great machine shop teacher named Ray at College of Marin let me make some parts for my first bike fixtures after hours. I was living in Fairfax when the fat tire thing got going. I had my first encounter with a "mountain bike" as I was riding Yolanda Trail on my Gitane. I came up behind two people riding their cruiser bikes with fat tires, cantilever brakes and ten speed gears. The bikes looked fun but my bike was going faster with less energy. They showed off the bikes and told me about the Repack race the next weekend. I went, and that's when I connected with all these other people who were as crazy about bikes as I was. These folks were living the early mountain bike culture here in Marin.

When did you build your first whole bike?

It was about 1975, and it wasn't a mountain bike. It was a folder made out of thin, big diameter CrMo (steel) tubing, and it had 20" sew-ups. It is a little rocket that rides like a track bike and fits into a canvas bag small enough to take on a bus or put in an airplane overhead compartment.

Okay. What about your first Cunningham mountain bike?

Well, that came a bit after the Repack race. Ukai, a Japanese rim maker, came out with a light aluminum 26 x 1.75" rim and Cycle Pro brought out the first fat skinwall tire, the Snakebelly. That gave me an alternative to the heavy tires and steel rims and made it possible to build a light bike with light wheels.

Your folder was steel. Why did you use aluminum for the mountain bike?

Mainly because of Gary Klein's influence. Sunshine Bikes here in Fairfax got a cool aluminum Klein road frame, and I was impressed by how light it was. I wanted it. There were other aluminum bikes like the Alan, but they

were flimsy by comparison. Maybe because I studied mechanical/aeronautical engineering at UC Berkeley, Gary Klein's literature and his analysis of aluminum frames clicked with my own approach to engineering. I nearly bought the Klein, but I wanted a mountain bike more, so I used the money to get a TIG welder and build my frame jig instead. I heat-treated some of my first batch of frames by renting the equipment at a heat-treating facility in South San Francisco. Later Bill Abright, a ceramics teacher at College of Marin, built me my own aluminum heat-treating kiln in exchange for a bike.

To learn how to weld aluminum I read the available literature from the aircraft industry and just started doing it. I learned how to heat-treat aluminum the same way. Read and do. But as I discovered, heat-treating bike frames introduces special problems. Back then, the available literature told what had to be done thermally with 6061 to get good properties, but it didn't tell how to do it with a bike frame. I solved the problems by experimenting and worked out a sophisticated process that I'm really proud of. I made really strong, long-lasting, straight frames.

Did you wreck any frames during the heat-treating experiments? It must have made you nervous, trying to heat treat a frame you'd just built, not knowing whether you'd ruin it or not. And what would constitute a "failed process," anyway? I mean, if it didn't work, how could you tell?

One "failed process" would be a melted frame! Fortunately I never ruined a frame during heat-treating but I was constantly wary. The first stage of heat-treating 6061 aluminum requires the frames to get near the melting point. I used an experimental method to control the temperature accurately in the kiln with high quality thermocouples and surplus controllers. I was quite nervous during the first use, but avoided the dreaded molten blob!

My first mountain bike frame in 1978 used big diameter aluminum tubing, but it wasn't heat-treated. I wanted to be able to cut and re-weld the frame to experiment with geometry and tubing dimensions. Most of the fat tire bikes of the time were made from heavy old cruiser frames. A few were custom built but they copied the Schwinn Excelsior geometry, with long wheelbases and shallow head angles. They were great for Repack but they didn't work well on the twisty singletrack where I did most of my riding. I test rode a lot of borrowed bikes and formed a mental list of improvements I wanted. My bike had to be much lighter, have better climbing traction, better handling, better brakes and a whole slew of other things. When I built the bike, I spent a lot of time building the frame but even more building the other parts. The fork was built with butted 1" Ishiwata (CrMo) top tubes, the stem was machined from magnesium bar, the toggle brakes were carved out of aluminum plate. The brake linkages were meticulously fabricated small steel parts brazed together. The hubs were made from Hi-E parts and parts I made. The titanium chainguide was carefully fitted by forming at red heat. After many test rides and chopping and rewelding the frame, the bike was finally finished toward the end of 1979. It was incredibly fun to ride! After riding that bike for many years I sold it to Diane Hopkins and later bought it back and restored it for the Mountain Bike Hall of Fame Museum in Crested Butte. It weighs about 23 pounds, has a sloping top tube, the original 1.6 pound Type II fork, handmade toggle brakes mounted on the fork and chainstays, single front chainring with magnesium and titanium chainguide, custom wide ratio rear freewheel, toe clips, drop bars, etc. Everything about it was untraditional and considered outrageous at the time. I went out to Crested Butte with it in 1980, caravanning with Scot Nicol, Joe Breeze, Charlie Kelly, Denise Caramagno, Wendy Cragg, Gary Fisher and others. I was fairly fit and the bike impressed the most avid riders from Crested Butte. Don Cook and Steve Cook placed the first order. Lawrence Malone and George Work were next. Mountain bike racing was just beginning to take off and the demands of racing produced the most mechanical improvements.

At about this time I met my lifetime honeypie, Jacquie Phelan. She was into road racing and I made her a mountain bike that she named Otto. (Which rhymes with auto.) We had great fun riding Marin's trails together and she won lots of races on Otto, including several nationals. She pestered me into racing in 1984. I was a reluctant old fart even then but managed to beat most of the pros while winning the over 35 class. That, along with Jacquie and other winning Cunningham racers, helped promote the bikes and establish the use of aluminum for mountain bikes. I'm proud of the fact that I never had a mechanical failure or even a flat tire in all my races. I built over 150 bikes before retiring my frame building business in about 1990 to focus my full energies on Wilderness Trail Bikes.

How did you meet Mark Slate and Steve Potts, and how did that alliance lead to WTB?

I think it was 1982 or 1983 when I met Mark and Steve on the Pearl Pass tour from Crested Butte to Aspen. We lived near each other in Marin, but this was the first time we



No, it's not actually touching, but if you think the spokes are close to the fork blades, you're right. It's an early Hi-E hub, modified with a grease port, and increased width between the flanges. Charlie has always tried to make or modify bike parts to improve their strength, and widening the flanges increases the spoke's angle to the rim, which increases lateral strength. See the nice scallops at the dropout, and the modified (and lightened) skewer nut.

rode together. The friendship that grew out of that Pearl Pass Tour led to our business collaboration.

What was your plan for Wilderness Trail Bikes?

We wanted to manufacture and sell the same mountain bike components that we made for our own personal bikes. Many of the early components were designs I created in my shop originally for use on my Cunningham bikes. Some were adopted for sale through WTB without change and some were refined in my shop with input from Mark and Steve. Examples are the Type I and Type II forks, cartridge bearing modified Hi-E hubs in standard width and extra wide 118 mm front and zero dish 135mm rear, fixed-angle seatposts, toe flips, the Roller Cam brake, Grease Guard bottom bracket bearings, Grease Guard hub bearings, Grease Guard headsets. I coined the Grease Guard name.

What was WTB's first product?

I think it might have been the Roller Cam brake, although hubs followed soon after. The brake was constantly evolving with the improvements derived from our riding experiences. My first improvement to the Roller Cam was the linear spring. I wish I'd patented that spring design! It was the first time a linear spring had been used on a bicycle brake,



Charlie keeps a full-sized pump inside his seat tube and seat post (not shown). A strip of foam keeps it from jangling.



Some early "toe flips" to make flipping up the pedal easier. A makeshift platform for easy in-and-out; a strap modified for grabbing and to keep the hole open wide. Above it, a chain cage to reduce flop and slap. All Charlie made, and typical of the thought he doles out on every part of the bicycle.

and it works much better. The linear spring strongly centers the brake arms because of its rapidly rising spring rate and it is easily adjusted for tension. Shimano was the first to adopt it. Nowadays, linear springs are standard on V-brakes.

With Mark and Steve's input, lots of other things on the Roller Cam improved like pivot bearings, pad clamping hardware and the linkage. The cam shape and rollers were improved but I eventually replaced the cam with the Toggle Cam linkage and later one called the Lever Link. The Lever Link never made it into production though because disc brakes were replacing rim brakes. The Toggle Cam and the super powerful Lever Link are highly evolved rim brakes. It's hard for me to imagine a better rim brake in terms of power, controllability, light weight, ease of adjustment, reliability and low maintenance. For cross-country riding in dry conditions they can't be beat.

The Roller Cam brake, as I understood it and I think I heard this from Steve or you or Mark about a million years ago, was developed because you didn't feel comfortable welding brake studs onto relatively skinny aluminum seat stays ... so you went to the chainstay for it. Right?

Not quite. Actually, I wanted a brake that worked better than the cantilever. I've always felt that the mounting system used for cantilever brakes is inadequate. The stud is not stiff or strong enough and too much flex is introduced by its mounting location on the frame tubing, which is too far from the end of the seat tubes or forkblades. The flimsy stud and mounting location produce a grabby "spring" effect in the brake system, reducing power, feel and con-

trollability. Imagine putting a big soft spring on top of the brake pedal in your car. It would mask any feedback you get through the pedal and slow your reaction time for changes to pedal pressure. The springy canti mounting not only masks feedback, but it prevents accurate control, causing a grabby feel as the mounting loads and unloads. The modern V-brakes that mount on canti studs are fairly powerful but excessive flex in the mounting makes them impossible to control accurately.

So, the short answer: The reason I mounted the Roller Cam stud on the chainstays was to obtain maximum stiffness. The chainstays are much shorter than the seatstays, and on the bikes I build they are much thicker too. The beefy Roller Cam studs mount near the end of the chainstays or forkblades for even more stiffness. Further, I use a brake bridge that, unlike canti bridges, is compact and stiff. It all adds up to a really rigid platform for a really powerful brake.

But they sure collect a lot of mud, though. I remember riding them and stacking about 6-inches of mud right on top of the brake, and it's a mess.

Yes, really bad mud will collect on anything, but at least it doesn't affect braking on the bikes I build. I protect the brakes with an aluminum shield that keeps mud and water off. The brakes aren't bad in wet conditions but disc brakes can't be beat for wet riding. Unfortunately disc brakes need the wheels to be built heavier because the loads go through the spokes and I think disc brakes still need better feedback and precision controllability at low speeds.

Talk about the WTB-SunTour connection.

We'll, back in 1982, SunTour's president Junzo Kawai was doing some market research in Marin, and saw one of my bikes for sale at the Cove Bike Shop in Tiburon. So he came out to my house and shop one day with an entourage of Japanese engineers. I showed them my shop and all the goodies I was working on, and we became friends. Back then, SunTour and Shimano were the only manufacturers trying to make mountain bike parts. After patenting the Roller Cam Brake I wanted to license it to a big manufacturer. My first meeting was with Mr. Mangili of Campagnolo but he wasn't interested because Campagnolo figured mountain bikes were a passing fad. Because of my friendship with Junzo, I was able to license the brake to SunTour. My patent attorney, Robert Wickersham, helped me with the contract.

At the time, WTB and Cunningham had race teams and I convinced Junzo we could help promote SunTour if they supplied us with parts, jerseys, travel and entry expenses. The SunTour jerseys were scheduled to arrive for the 1984 RockHopper race but didn't quite make it in time. That inspired Jacquie's famous topless win with a jersey painted on her back.

It must have been exciting, making these deals with SunTour.

It was! I believe my brake license with SunTour established a precedent in the mountain bike industry. The SunTour deal opened the door for the other licensing deals that

Mark, Steve and I did later through WTB. We developed an excellent relationship with Bevel Hogg of Trek, which led to our designing Trek's first aluminum bicycle, the adhesive bonded Trek 7000. Trek also co-sponsored our WTB race team.

Later, we designed about 26 tires for Specialized. Our first assignment was a super mountain bike tire. I remember getting a lot of satisfaction out of identifying the rider's needs and analyzing what makes a mountain bike tire work and then applying theory to rubber to get the desired result. The Ground Control was a quantum leap in performance with much more traction and controllability than previous tires. Not many people know that Jacques named the Ground Control tire. I've heard that more Ground Controls have been sold than any other mountain bike tire, partly because it was in high demand for so many years. These days there are so many tires, and designs change often, so I think that's a record that won't be broken.

What were your plans for WTB originally, and has that changed much/how?

At first Mark, Steve and I just wanted to pool our resources to make the parts we needed more efficiently and cost effectively. Heck, back then, we were making each part in our shops with hacksaws and files. It was really exciting to have local CNC machinists make them in bigger quantities so we had some left over to sell to other riders and builders. Later, an opportunity to license Grease Guard to Suntour led to the formation of WTB Licensing and that eventually led to WTB's OE (original equipment) component business.

I guess word is out by now that Steve Potts and I are no longer involved with WTB. The settlement prevents me from saying much about it, though. It has been a really hard time in our lives and for our families. The loss of 20 years of hard work along with our equity in the business and our means for retirement was painful. Steve and I hope the outcome is good for WTB and we wish the best for the people who still work there. We're a lot wiser now and we're considering new business opportunities.

I didn't know that until two days ago. Well—what are you going to do now?

We might start new businesses ourselves or get involved with existing ones.

That keeps all options open, but who's going to hire you? And, would you move from Fairfax? I can't imagine you leaving this area for anything ...

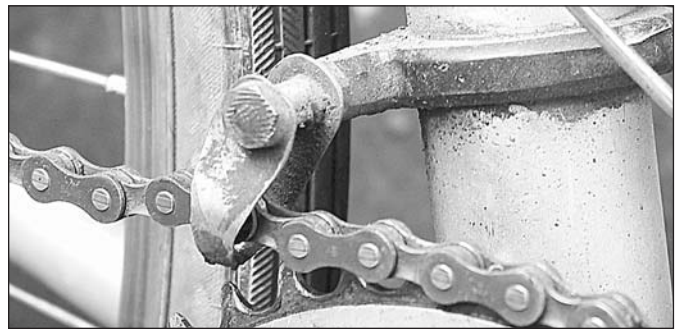
It remains to be seen. I don't want to move. I have lots of knowledge and experience and can apply it best by working here with my shop. I developed the specifications for products that are receiving wide use as original equipment these days, and I plan to continue developing high quality bicycle parts.

Do you know about Q-factor? If so, do you think that this is important? Do you know your Q-factor? You've never done a crank. Any thoughts on cranks?

Most definitely! My favorite crank of all time is the cold



A couple of pages back there's a picture of Charlie with his folder. Here's the front dropout, which allows you to adjust the fork rake. We've been working on one for testing purposes, too...but it may be three or four years until we actually hammer it out. This one's made from a rear dropout. Maybe we should do the same.

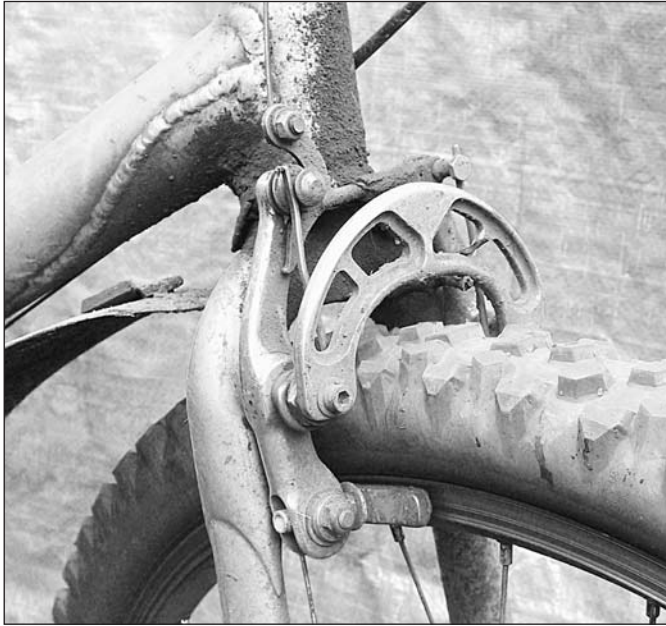


One of the regular bikes in Charlie's team is this one, with a single chainring (it is not a one-speed). To keep the chain from flopping off, he made this chainguide. The guide part is titanium, which Charlie found in a junkyard.



Charlie calls this a "steering limiter." Onto the homemade fender and the back side of the fork, he bolted a tab and tied it to the downtube. It prevents the wheel from turning too much. It's not any sort of a riding aid; just for parking the bike.

forged Specialized crank of the mid eighties. It's a clean and efficient design, but more importantly, it has the smallest Q factor of any crank I know of, allowing the pedals to be as close as possible to the centerline of the bike. The cold forged Suntour Micro drive is another favorite with a simi-



Charlie's brake of choice—a toggle brake with a linear spring and a stiffener. Note also, as though you could miss it, the extra material welded to the downtube. You see this a lot these days. The tire is a WTB-designed Specialized model with grey rubber.

lar Q but it can accept a 32 tooth middle ring. I don't use the small inner ring on most of my personal bikes. I've always been fanatical about minimizing pedal spacing on bikes I build. I go to great lengths to bias the chain-line in favor of the lower gears because this is where the chain loads are highest and where the chain spends most of the time in typical mountain riding. Minimal Q spacing gives the pedals better clearance when cornering, when traversing hillsides, and on narrow singletrack or recessed single-track (ala horse and cow trails). Biasing the chainline in favor of lower gears improves shifting under load and it significantly improves ergonomic efficiency along with chain life. Unfortunately these days, the chainline standards prescribed by the big manufacturers are far from what I consider ideal. Cranks arms tend to be thicker where the pedal screws on, adding even more spacing between pedals. The crank mounting standards have a bigger Q than it used to be. The standards are mostly a result of trying to make drive train parts work on a huge variety of bikes. Such is the price of generalization. The top priorities for most new industry standards are safety and maximizing profits by reducing manufacturing and assembly costs. Trying to design better performing or longer lasting products for the end user is not usually at the top of the list these days. Nonetheless, the current products are pretty good considering how broad the application is.

In the early days, I think I remember you were riding 45 x 32, with something like a 38t freewheel. Is that right, and what are your thoughts on gearing these days? What do you ride? In fact, what's your bike set up like? I'll tell you what I THINK it is: Flared drop bars, LD stem, Campy bar-end shifters, Deore XT crank with two rings, SunTour pedals, homemade hubs, I don't know what kind of rims and tires. Now, what's it really like?

Pretty close! Actually I have a bunch of bikes. My first mountain bike, the one in the museum, I recall has a single 44 tooth front chainring with a custom built 11-38 seven speed freewheel. One of my current favorites that I ride a lot was built in 1981. It has a 175mm Suntour Micro Drive Crank with 32, 42 chainrings and an 11-34 eight-speed freewheel. Yes, it has an LD gooseneck stem with modified Specialized RM 3 drop bars with increased flare, Campy bar ends, modified Shimano pedals with customized toe clips, etc. It doesn't have any modern parts on it, but I don't care because it works so well. I hear some pros are starting to use double chainrings now. They must be discovering the benefits like better shifting and lighter weight that Jacquie and I enjoyed back in the eighties.

Since you ride doubles, I'm curious to know what you think, or thought about the Ritchey 2x9 system. I admit I was skeptical when it came out, and I'm still resisting (successfully and happily) 9-cog clusters, but I have it on one bike and I like it. Anyway, what are your thoughts on the 2x9? You can get inners down to about 28t, and outers up to 46t. It seems right up your alley.

I've never used Tom's 2x9 but I'm sure I'd like it. It probably didn't take because it bucked consumer perception and Shimano's plans for the drivetrain. I think it could have become an established gearing option for performance minded folks, but it would have needed more marketing and promotion and that's really expensive.

I started using this kind of set-up on my personal bikes in the early eighties to improve chainline and to avoid the shifting and chainsuck problems that triples on mountain bikes seemed to constantly have. Jacquie's race bikes had double chainrings for the same reasons. The bike I used when we rode Pine Mountain was made in the early eighties, originally with 34/44 chainrings and an 11-34 five speed freewheel. Now it has 32/42 chainrings with an 11-34 eight speed freewheel and I have a different 11-38 freewheel I can use for high altitude riding. Anyone who uses a good double chainring set-up on demanding singletrack knows you can always grab just the right gear quickly and easily without fussing around.

How many bikes do you own? How many do you ride?

I have way too many bikes. It must be an occupational hazard for anybody who likes bikes and can build them. I ride six or seven actively. I have five mountain bikes that get the most use. Three have rigid forks and two have Manitou forks including my full suspension WTB Bon Tempe that I modified to the ends of the Earth to make it ride the way I wanted a full-suspension bike to ride. Then there's a 17-pound road bike I built in 1982 to use for pure road riding. Then there's my cyclocross bike that I use everywhere, dirt and pavement. It has a single 42 tooth chainring, 11-34 freewheel, 26 x 1-3/8" front tire, 700C x 35 rear and a chainstay mounted mini-cam brake.

What do you enjoy most about bikes and about riding?

Bikes are just completely awesome! They're the perfect means for "right living". They're ridiculously efficient and inexpensive to use, both from an environmental and dollar

standpoint. They make people healthy and happy and they free us from the tyranny of cars and the guilt of waste. Of course there's a time and place for cars but most of us use them too much.

Beside bikes, what do you like?

Bach. I discovered him 15 years ago when I heard a live performance of his B Minor Mass, and I've been studying and collecting his music ever since. Most of his cantatas were composed as church music for different occasions. The words sometimes reflect religious dogma of his time, but the music is timeless. He wrote more than 200 cantatas, and most have at least five movements. Almost everything he touched became a masterpiece. He communicates from the heart with music of tremendous technical excellence. I think he was tuned to nature, which gave his music its mathematical quality. Like nature, it always contains something unexpected. His skill in the use of counterpoint is unparalleled. I think he used counterpoint to express a timeless message for humanity. He used it to show how the unique gifts of every individual can express themselves in a way that benefits the whole and how the whole benefits by supporting this diversity. I get so high listening to his music. Totally transported! I'm just in love with Bach's spirit and the creative process in general.

I've also gotten interested in the pipe organs of that period too. In Bach's day the organs were built by master craftsmen with a sonic aesthetic that was mostly lost as the organs were rebuilt over the years, but the old aesthetic is being rediscovered. They originally produced a soft, warm, rich sound with beautiful overtones.

I'm also interested in high quality music reproduction. A great recording is a combination of brilliant composition, inspired and talented musicians that understand the music, fine instruments and excellent recording techniques. The recording methods have been slow to improve, and sadly, many great performances of the past are stored on funky masters. The digital recording methods used to produce most of today's CDs were sonically flawed but fortunately some new technology is being adopted that could solve the problems.

So that's about it, bikes and Bach?

Well, I study astronomy in my free time and I'm a fanatic follower of GP motorcycle racing, AMA and FIM Superbike, Formula 1 and CART. The machines are fascinating but the human qualities in these sports are even more so. Same with bikes. OLN is televising a lot of awesome downhill and European road bike races these days. I just saw the Paris-Roubaix live. Wow!

Do you think that technology always improves the experience of riding? When does it? When doesn't it?

Boy, that's a great question for our time, isn't it? Obviously technology can do good or bad. To do good, it needs to be applied with insight, wisdom and skill. I like highly evolved, well thought out designs that are proven by the test of time and I'm thrilled by brilliant new approaches that do things better than ever before.



Not a flat bar in sight. Charlie and Andrew riding a rocky fire trail toward Repack Road. Charlie's riding the bike he's put the most miles on, built in 1981. Andrew's on his Andrew-style Rivendell, with 700x37 tires and Moustache Handlebars.

Why do you like riding drop bars off road?

Drops have more hand positions and absorb shock better because they're longer but I like them mainly because their shape is more ergonomically and aerodynamically efficient than flat bars. The more upright position of flat bars mostly limits leg power to the resistance of body weight. On drops, when you stand, your hands are lower and closer to the body so you can resist your leg muscles with your back to get more power. This really pays off in climbing. I'm lucky because I have pretty long arms which allow me to ride steep, technical descents with drops by sliding off the back of the saddle to keep my weight low over the rear wheel. People with short arms using drops may have problems in some offroad situations. The bummer is that my knuckles drag in the dust when I walk.

Are ergonomics and “bike fit” important to you?

Definitely! They are to everybody who rides. I made the Fitfinder Stem to help people get the ideal fit. It allows people to experiment with different bar positions while actually riding their bike in different situations. The literature that came with the Fitfinder gives guidelines on proper fit. All bar positions involve compromises, but good bike fit results from choosing the best combination of compromises for your priorities and riding style.

Saddle location is also critical. Once I find the ideal saddle and bar location for a bike, I measure and document them so I can reproduce them or use them as reference when I build other bikes.

I’ve seen you on the road a couple of times, and you wear even more civilian-type clothing than I do. Have you ever dressed like a cyclist?

I guess not. I mean, I don’t like that garish stuff. I like comfortable clothes that work well and blend in with nature. I like high performance wicking fabrics for undershirts and even long johns in cold, wet weather. Gortex is amazing, too. Good layering with wicking fabrics and Gortex allows total comfort even in ridiculous weather. I always wear long sleeve shirts and full pants because I prefer to physically cover my skin with sun-blocking fabrics rather than use chemicals. Also, I ride where there is a lot of brush. Tucking pants into my socks avoids scratches and ticks. Long, loose fitting clothes work well in hot weather because they conduct less of the sun’s heat to the skin than if it were uncovered. They also act as a radiator to cool the body as sweat evaporates from the cloth.

What did you do at WTB, and what do you see in your future? How would you like your life to change, if at all?

At WTB I helped guide the company and designed components and systems for doing business more efficiently. I was the main designer of WTB saddles and rims and was quite involved in designing bearing components, brakes, spokes and tires. I identified a lot of the principles that make the tread patterns work so well. I made machines to test WTB components and the competition and did lots of R&D. For example, I made a machine to test spokes and wheels and learned which spokes are best and how to design spokes that perform as well or better. I created product instructions and specifications, did lots of quality control and interacted with manufacturers to maintain quality standards and timely delivery. Even though I’m not involved with WTB anymore, I find it satisfying to see products I designed being enjoyed by people out on the trail. I always get a kick when I see tracks in the dirt left by tires I helped design.

Right now, I’m taking time to recover from the WTB-related events of the last couple years. I’m looking at the big picture and want to be extra careful choosing the people I get involved with. I’m as passionate as ever about bikes and I’m considering new bike related business ventures. WTB was like a child to me. It meant so much, but life is full of changes. Along with the pain of the loss, I feel thankfulness for a healthy life, a wonderful family, great friends and new possibilities.



Upside down view of a the bike after a muddy ride. Here, Charlie is squirting in fresh grease to force out the old stuff—he has always been a great believer in fastidious maintenance, to extract every last breath of life from any component. The BB shell has been modified with a grease port, and that’s a grease gun he’s wielding. Note also the mud-shield to prevent mud from building up on the chainstay-mounted roller cam brake, an original design.

What do you see as the future for Charlie-less WTB?

Hard to say. You’ll need to ask the new owners. I’m hoping for the best.

Do you stock up on bike parts that you don’t think you’ll be able to get later? I’ve heard you do ...

Most definitely! When I find something I like, I get enough to last Jacquie and me a lifetime. We have all the Suntour freewheel bodies and cogs we’ll ever need. We’ve sequestered away our favorite derailleurs, chains, pumps, bars, shifters, saddles, etc. I do the same thing for my modern bikes. Shimano changes drive-train standards so often that you have to snag the good stuff while it’s available. I’ve developed methods to make my bike parts last ridiculously long times. For instance I’ve found techniques to get absurd life out of drive-train parts. As much as I ride, my parts rarely need replacing.

What do you do to make parts last so long?

We’ll, I’m fanatic about getting a new bike set up perfectly. I go to huge lengths to take care of everything, down to the smallest detail. If it’s done right, you can get lots of use from a bike that’s perfect with minimal time spent on maintenance.

Can you be more specific, maybe part by part?

Starting with the drive train, I build the bike with a good chainline. I lube the chain with ProLink after any wet ride or ride over 3 hours. First I wipe the chain off with a clean absorbent rag and then lube and thoroughly re-wipe. I check chain wear with a pitch gauge and replace when

wear reaches 1mm over a 300mm length but I'm having a hard time wearing out chains since I started using ProLink. If the chain is never allowed to get beyond this wear limit, the cogs and chainrings last almost forever. I also flush the freehub or freewheel bearings with ProLink after wet rides by placing the bike on its side and dripping it through the bearings while spinning the wheel. This displaces water and leaves a rust preventative film. I also keep the freehub or freewheel bearings adjusted. They hardly ever need attention though. All these things make the whole drive train last an incredibly long time.

As for hubs, headset, pedals and bottom bracket, I just Grease Guard the bearings immediately after wet rides. It doesn't take long and it sure beats replacing them. When bearings get wet, you can't let the bike sit overnight or miss even one lube or the bearings start getting trashed. The bearings on my cross bike are over 12 years old and I use that bike a lot in all weather.

When I'm not riding my bikes, I keep them out of the sun because UV eventually ruins plastic and rubber parts. I try to ride smoothly and efficiently with lots of mechanical sympathy. I rarely get pinch flats or dent rims. I don't like to bash equipment. After many years of riding it's possible to sense how to ride just below the damage threshold.

How did you and Jacquie meet? (Jaquie is Jaquie Phelan, perennial National champion mountain bike racer famous for a healthy amount of battiness and eccentricities herself.)

In the early eighties I saw Jacquie riding her road bike several times and thought, wow, she's awesome! I was attracted big-time, pheromones and all. One day she brought me her road frame, which was causing knee problems. I looked it over, and found out it wasn't straight. I fixed it and we got to know each other better. Later, we shared a chair at a slide show at Joe Breeze's house because there weren't enough chairs to go around. We were starting to really like each other. A few days later I went to Jacquie's Full Moon party at the top of Mt. Tam. We rode down the mountain together and it was magic. We really enjoyed each other's company and after a few bike dates we were solidly connected. We got married on 8-8-88.

And, do you live in a tree house, really? And watch TV via mirrors? What's the story there?

I'm a bit eccentric but I don't live in a tree house. We sleep in it all year round though. We like the fresh air, the sounds of the animals at night, the birds in the morning, the rain on the roof, the lunar cycles and the seasons. It's a retreat away from phones, faxes and the busy-body world and we get the most refreshing sleep imaginable.

For a while I watched TV with a mirror. I'd recommend it as a bizarre left/right brain exercise. It reverses the normal direction of motion and makes faces and writing backwards which really tweaks the mind. It's fun and educational. You'll learn how to read backwards. Useful, huh?

Also from my eccentric department was the time I used a scuba tank and mask for air whenever I drove on the freeway or in the city. I got some pretty concerned looks—Is he nuts? Is something wrong with the air around here?

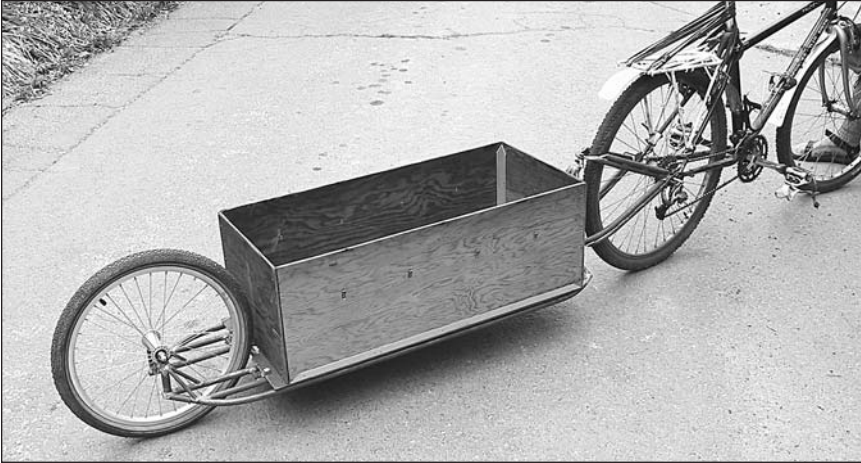
On our ride you mentioned climbing trees, and I heard from a mutual friend that you once climbed something like the world's tallest tree. I don't remember if it WAS the world's tallest or not (isn't that a tree named General Sherman? A giant sequoia down south of here near the coast?) But what's that all about, anyway?

In my college days, two friends and me were doing a lot of rock climbing, caving and mine exploring on desert trips. To keep things interesting here in Marin, we started climbing trees. After climbing some big oaks, firs and such we got the idea to climb the tallest tree in the world. I researched it at the library and found it is on Redwood Creek near the town of Orick, in northern California. As I recall, it's about 33 feet in diameter and 368 feet tall! (General Sherman is the biggest tree, not the tallest.) The lowest branches don't even start until a couple hundred feet up, so to climb it, we had to find a way to reach the lowest branches, and we didn't want to hurt the tree while doing it. We tried the usual ideas like a bow and arrow with a cord, but they didn't work, so after fiddling around, we ended up with a propane-oxygen cannon made from a scuba tank with a removable aluminum barrel and tripod, and a spark plug in the end with a piezo electric trigger. It could lob a 4 pound slug 400 feet up with a cord attached. We perfected our climbing technique on some big local redwoods to prepare for the giant in Orick. Using the cannon to place the cord over our branch of choice, we then pulled the climbing rope into place with the cord.

We planned to make what we figured would be the first ascent of the tallest tree over Easter vacation. Just days before leaving, we learned that a local professional tree surgeon had discovered our plans. In a competitive spirit, he attempted the climb first, but failed because his standard climbing harness didn't work on such a huge tree. On Easter day, we arrived at the Redwood Creek trailhead and began our march up the trail with a great heap of ropes and gear. We underestimated the time needed, and got to the tree late in the day. Our feet were sore, and we didn't have overnight gear.

The tree was huge, and it took till late in the day to even get a marginal rope placement, 200 feet up and too far out on the lowest branch. We were out of time and propane and had to make it work. We drew straws to decide who would climb the dangerous placement with jumar ascenders, and resecure the rope. Scott lost, so up he went. Fortunately he's a feather-weight and survived. He improved the rope and we joined him. That was the easy part. We discovered the monstrous lowest branches are far apart, making climbing difficult, hairy and slow.

We reached a point about half-way up where the tree split into two trunks. Because of the layout of branches, we couldn't continue without changing over to the other trunk. We had to pass through the gap between them, just big enough for a person, but it was opening and closing with the wind. A small timing miscalculation would squish whoever was in there. Several hair-raising maneuvers later, the three of us were through and continuing on up. As we got higher, an awesome panorama unfolded. The tops of the surrounding trees moved like a green sea, and Redwood



Charlie made this trailer in 2002 (this year). That's real wood there. He can use it with or without the wooden box, depending on the load.

Creek looked like a tiny sparkling silver ribbon. As we approached the top, the branches got smaller, polished and pointed downward. Finally, we reached the lightning damaged top, we were so thoroughly gripped and awestruck that we didn't drink the Heiniken we brought to celebrate. We managed to wired the beer and a copper tag bearing our names to a branch. We spent about two minutes basking in the setting sun, but we had to get down before dark. The descent took about two hours, and when we got down after all the swaying, the ground felt like it was moving. There was no way we were going to get back to the car in the dark, so we burrowed into the duff at the base of the tree and slept the night.

It's hard to describe what took place that night. I experienced something so special in my dreams, a gift from this ancient, noble being we had just visited, a communion I'll never forget. These big redwoods are kingdoms of life, homes to all kinds of plants and animals. Bathed in the four elements, they link Heaven and Earth with their trunk and hold a living wisdom that spans far beyond the scale of our own lives. Julia Butterfly knows all about this. I love what she has done and hope to meet her some day.

Yes, well my tree thing is ropeswings. I'm good at them, and until just now I thought I was pretty groovy for putting up so many good ones. Sheesh. Where you live and ride now has to be the best place in the world for cycling. How much have you ridden elsewhere, and do you have any desire to ride elsewhere?

I love riding everywhere. This planet has so much variety and I love it all. But I'm not a big fan of using cars and airplanes more than necessary because of the consequences for the planet and living things. So, the result is that I ride a lot where I live, and Marin is hard to beat. I do enjoy exploring though, and the less an area is known, the better. Jacquie and I like to jeep out into the boonies, far from everything, and camp and explore by bike. We'll probably continue to explore the Western states this way, especially the deserts.

Which parts on a bike do you think need the most redesigning?

Almost all of them could be designed to last longer and be more serviceable. Suspension still has a long way to go. Ten years from now bicycle suspension will be far more advanced. Sophisticated suspension won't be cheap but it can provide more ergonomic efficiency, traction and comfort than it does now. Also, I think we'll see better tubeless tires and disc brakes.

Is there a bike part that doesn't need any help?

Probably not. There will always be ways to make bicycles even more efficient, comfortable and easy to use. I'm attracted to the vision of a highly refined human powered machine with awesome capabilities, but I'm also a big fan of simple, well-designed, unsuspended bikes. They're efficient and need little maintenance, which is very appealing from a practical, minimalist standpoint.

Are you interested in fundamental changes or refinements? Do you think there are any fundamental, huge improvements that can be made still, after all these years?

Yes, but I don't want to talk about it. I've been excited by a technology that will revolutionize the bicycle. It will be applied some day. It's just a question of when. It won't be cheap though, because it needs to be high-tech to do it well. I'd like to develop it by teaming up with a good company.

Comment on indexing as fundamental or a refinement, and what place it has in your riding.

I used to grumble about it. But it works well now and lasts reasonably well. I have bikes with and without and I like both. I enjoy manual shifting, though. Once you develop the skill, it has the advantage of being lighter and simpler with less to go wrong. But for people that haven't developed the skills, index shifting is better. It probably is better for most racing too, because it takes less attention.

Do you ever get a hankering to ride a non-Charlie Cunningham-style bike? Just to see what it's like?

I try to ride the latest gear whenever possible. To improve anything we have to be informed about it. I like to borrow bikes that catch my interest and I learn a lot by careful observation of others riding the latest equipment.

A few years ago, pre-XTR, there was a flurry of American component makers—Paul, Joe's Derailleur, lots of CNC stuff. Then Shimano responded with XTR, and they all sort of—well, Paul's still around (and a Rivendell member), but it seems like there's nobody trying to compete with Shimano. I can understand that—why pick on the Genius Goliath and all; but for you, as a component designer, where does that leave you? What can ANYBODY do better than Shimano? What do you see as the holes in Shimano's armor? Or would you like to design parts for Shimano? And do you think they'd ever hire an American to do that? Would your former relationship with SunTour make it unlikely? Is there a chance you could design for the new SunTour, or Dia-Tech, or some other smaller

player/semi-casualty of the mid-to-late '90s? Are you connected anymore?

Significant improvements will be fewer and farther between but great contributions, as usual, will come out of the blue and be completely unexpected. That's the nature of real innovation. Smaller companies and individuals will still make significant improvements, and to the degree that big companies with lots of resources can work with creative people, more will be possible. I think most real improvements will continue to come from designers that ride a lot and companies that are closely associated with them.

A lot of things in recent years were considered out of bounds when they first arrived. I got plenty of flack for making aluminum mountain bikes in the beginning. Suspension and disc brakes were pooh-poohed. Lately, the non-traditional Egg Beater pedal seems to be doing well. I think my Grease Guard designs, SST-type saddles and the rim designs with the central beam are worthwhile improvements. They were accomplished without a lot of resources. I think the biggest improvements can be made by creative people working with companies with plenty of resources.

What is the prospect of your selling Charlie Cunningham frames? I can imagine a small local following, but many small framebuilders have a hard time reaching out beyond their county.

Custom frame building feels pretty limited. I'm more attracted to applying the business experience I've acquired and designing, prototyping, testing. I'd like to oversee limited production of high quality bike frames, components or complete bicycles. Whatever I choose to do, I want to maintain communication with the people that use the equipment as much as possible.

What's the best possible week of riding that you can imagine? Where, when, with whom, on what bike or bikes, and what kind of meals during and at the end of the day?

The riding around here comes close. The mountains in Nevada, Arizona and New Mexico also seem like bike heaven to me. Around Downieville (California foothills) is great too, but it's getting a bit zoo-like. I'd probably ride my Cunningham hardtail or my 1981 rigid bike depending on the expected terrain. I'd use my camping bike if I planned to ride with food and sleeping bag.

My favorite meal is a mixture of rice, wild rice and goat feta mixed with lots of chopped vegetables and some nuts and a little olive oil. Makes great fuel and tastes super good. I like fresh fruits and raisins too. I love fishing. Can't beat fresh bass and trout. I'm not very into processed food and I only buy organically grown. I've built a pretty high tech water purification system for our house. I guess my religion is clean food, clean air, clean water and clean living!

A Word about & from Jaquie (Phelan—Charlie's wife!)



I was born to reluctant parents and never grew up. We moved a lot, from Rhode Island, to Kansas, to Tarzana (by L.A.). I learned to ride Mom's huge bike at age 9. It was hard, but easier than babysitting five younger siblings.

I ran away often, and when I was old enough, I attended a college as far away from Los Angeles as I could get— Middlebury, in Vermont's dairy country. I was an OK scholar, but a better host to my friends who came by for waffles on Sunday in my dorm. Moving to San Francisco changed my life.

I decided to become famous. I glued a toy duck on my Bell Biker helmet, rode a lot in heavy urban traffic, and fame (at least in the Bay Area) came in a month.

I biked San Francisco streets for financial survival—a bike is cheap to ride and easy to park. I started racing on the road and dirt. I won a few National titles, usually with the same toy duck on my helmet. I've been a journalist, in cycling publications and others. I married Charlie. And here I am, a half-life later, trying to figure out something called "economic independence."

Several years ago I started WOMBATS—the Women's Mountain Bike & Tea Society. I know I'm doing something right: big companies regularly lift stuff off my web pages when they need ideas on selling bikes to women. My next mission: wearing one of those company's jersey and teaching all around the country. If just a handful of women take control of their right to hog some fun and show their friends how they did it, I can rest easy knowing I've done a good job.

Headset style, doesn't have that disadvantage. It lasts 20 thousand miles or more, and is cheap and easy to replace. Rough riding doesn't damage its support surface, so when you put in a new one, it's like putting it in a new frame. It's possible, and I'd say even *likely* that the problems inherent in sunken headsets will be resolved, but when you consider the total absence of advantages to them and their looks, it makes you wonder—*why even bother?*

There are lots of good things happening with bicycles, too. On the local bike paths, I see lots of people riding bicycles and looking comfortable. The bars are high, the tires are cushy, and they're easy to get on and off of. Those bikes often have shock forks and seat posts, and sometimes stems, too, but if that's what it takes, fine. Ten years ago there weren't many bikes that would be as good for older non-cyclers or for people who just aren't the sporty type, and it is great to see bike makers pay attention to those folks.

A COUPLE OF YEARS AGO THE WAIT FOR A FRAME WAS more than a year. It was a frustrating situation, but reassuring too, because it meant we didn't have to think about selling frames, or worry about keeping our two builders employed. Now we're sort of caught by surprise, to find out that there are only ten frames in the queue. Curt and Joe are concerned, since all of their income comes from building Rivendells, and I'm concerned too—and so is everybody here—because we want to keep them busy and keep making the frames.

There's the question—what are we going to do about it? How can we sell more frames? It's such an obvious question, but there's no easy answer to it. There's not enough profit in the frames to cut the price. We could cut it a little, wipe out the profit entirely, but maybe break even and be happy knowing that at least we're keeping the frames alive, and Joe and Curt busy. But we can't rightly sell frames for no profit for too long; and besides, once you cut a price, it's hard to raise it again back to where it should be. And then buyers who recently bought at the Real Price will want some kind of reimbursement. It's a mess, and we don't want to do it.

It is pathetic to have to cut prices on frames that ought to cost more than they do already; and when I see what other frames sell for, the price reduction seems just disgusting.

I also don't like having to push the frames. I'd rather just put out information about them and rely on that to get sales. That's the way it ought to work with special good things, but I don't know if it actually does work that way.

We have about 5,100 members now. We've sold about 600 Atlantises, 150 Rambouillets, and 900 Rivendells...which means that one third of our members have bought a frame from us. Some have more than one, and some who have frames may have dropped off the list, so the 1/3 figure is high, but it's not that high. We hear often, from new members, "I wish I'd known about your frames a year ago," and so do we.

So here we are, faced for the first time with trying to sell Rivendells (the Atlantis and Rambouillet are doing well). Maybe if we offer a deal on a complete bike, it would help. Maybe just letting people know the wait isn't so long any more. Maybe you have an idea.

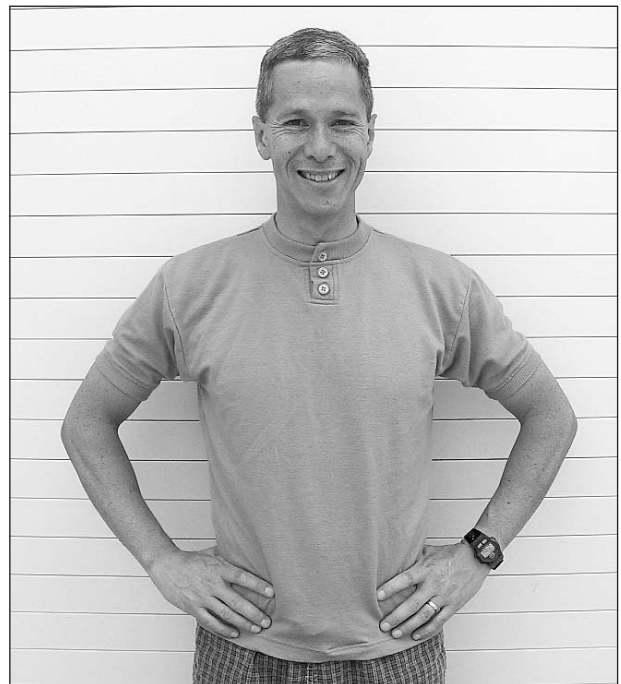
We in the office can get by fine selling forty or fifty frames a year, but it's not a sustainable number for Joe or Curt. We have to keep them busy, because they're not replaceable, and once they're forced out, it's really unlikely they'll come back without any reassurance or guarantee of steady work indefinitely—and that won't ever happen. We won't lower the quality of the frames to accommodate an eager beaver builder who means well and tries hard but who isn't as good. We have our pair and we want to keep them. Any ideas, send them in. There's no prize for any "winning" idea, but if you think you've got one, we'd like to hear it. And, if you've always dreamed of a Rivendell frame, there's no time like now. The first 20 orders can be delivered in 3 months. If a miracle happens and we get 50 orders, the bottleneck will force them out to about 5 months, but even that's not so long for a Rivendell frame that'll last you 30+ years and maintain its value.

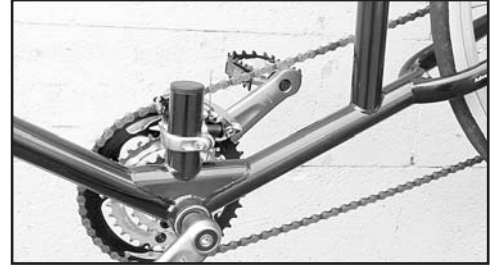
This is the 28th issue of the Rivendell Reader, but it's No. 27 because we started with issue Zero. It's also the first issue ever with a picture on the cover. That's Brad Wall and Luka, a Wire-Haired Fox Terrier. We needed a picture on the cover because we're actually trying to sell the Reader in bike shops, and I'm afraid without Luka, we wouldn't stand a chance against tough and daring costumed riders with perfect jaws and teeth. Go get 'em, Luka.—Grant

The WoolyWarm Short-Sleeved Jerseys Are Actually Here, Now

They cost \$65, are 100 percent merino wool, and are made in the USA to our most persnickety specifications. They are cut full. They're washable wool. No graphics. Buy your normal shirt size and shrink-to-fit according to instructions. The first ones are gold, short-sleeved. Sort of a mellow, warm, butterscotch-goldenrod gold, as opposed to "Hey Fellas, I'm in first place so far!" yellow. After the gold are gone, around mid-August, we'll bring in blue, again in short-sleeves, **and this time in a women's version, too.** After blue will come green ... then long-sleeved red in the Fall, followed by another long-sleever, in Festive Grey. We have information on our website, but the best source of is woolywarm.com, which is exclusively WoolyWarm.

We'll send out email spam to alert you of new colors and so on, but in the meantime, please go to our normal site (www.rivendellbicycles.com), or if you want even more information, please try www.woolywarm.com.





the crank and the chainstays, and the reinforcement at the base of the stub. In the lower photo you can see the stem is reversed to put the handlebars within easy reach as you sit way, way back behind the cranks; though not as far back as on a recumbent (which it is not).

The Vision Thoroughbred

Whether or not it's right up your alley, or the right bike for you, and even though it's one of those bikes without lugs, this is the most innovative, smart, and fantastic bicycle to come down the pike in about, say, fifty years; and once you understand the bike, you can probably think of at least five or six people who ought to have one, because nothing else will work for them.

Vision is a recumbent maker in Seattle. This bike, ironically called the Thoroughbred, isn't a recumbent, but it's as close as you can get to one without being one, because it has an effective seat tube angle of about 50 degrees, so you sit way behind the cranks (though not as far back as you do on a recumbent). And, with the stem's adjustability, you can get the bars nearly shoulder high.

The Thoroughbred (Tbred) is Vision designer Joel Smith's idea of a comfortable non-recumbent. It was conceived about two years ago. Shimano held a design contest for a "European-style townish road bike," or something like that, and the entrants were shown at the 1999 Las Vegas Interbike show or so. Joel surveyed the entrants and thought, "they don't look so comfortable to me," so he came up with his own idea.

It's neat for lots of reasons. I'll get to how it rides soon, but even before that, it's intriguing from a bicycle designer's point of view because although it's recognizable as a bicycle, it has extreme dimensions. The chainstays are 63.5cm, not 40cm. The seat tube angle is about 50-degrees, not 73. The wheelbase is 46.75 inches, not 39. It looks like a child's drawing of a bicycle come to life. Anybody who's interested in design and geometry and how all that affects function has to be curious. You can talk about changes in theory, but who'd go to the trouble of building such an extreme bike? That it came from a recumbent maker makes sense.

First, it's outstandingly comfortable, thanks to the high bars. Last month you raised your handlebars two inches and are now sold on the idea of getting your handlebar level with your saddle? Well, the Tbred doesn't even let you get them that low. You could have 3rd degree burns on your palms and still ride this bike comfortably. If all you have is carpal tunnel, this'll take care of that really quick.

Second, it is the world's best bike for slight to steep paved downhills. The front wheel is way out ahead of you, so you can't pitch over. On level ground, you're laying back so far that when you aim it down a 22 percent grade (or something) it feels about like 4 percent does on a normal bike. Third, when the saddle's set to the right height, you can put your feet flat on the ground. That's the neatest thing of all, because it offers insurance against toppling over. It makes super steep downhills much less hairy, and for normal riding (which this bike is intended for), it takes a lot of the fear out of riding a bike.

Who's afraid of bikes that way? Children and old people, mostly. Children insist on being able to steady the bike themselves, while sitting on the seat, and insist on setting the seat height so they can flatfoot the ground. But when you do that on a normal bike, the saddle's way too low. That's why kids pedal around with the seat too low, which is bad for knees and makes climbing even slight grades too



Mark rides. His head is lower, but overall he may not be all that much more aerodynamic. But for a lot of riding, that doesn't matter, and there's no disputing how comfortable this position is.



When you can flat-foot the ground like this, the saddle's at the right height for pedaling. This is ideal for children or old people who are afraid to ride normal bikes with the saddle at the proper pedaling height. It's a pretty smart thing, whether or not it's the bike for you.

hard. You want to raise the seat, but they'll have none of it.

The problem is, the Thoroughbred doesn't come in a children's size. Not many parents would spend that much (\$750+) for a kid's bike. Kids do learn to ride on normal bikes, after all, but it would be much, much easier on one of these, and I'd get one for Anna (7) if I could.

Older people who haven't been on a bike for years would feel safe on a Thoroughbred, too. Many of them grew up in the auto age, and haven't been on a bike since they were ten. Now they need exercise more than ever, but their balance is off, and a bike is a scary thing. It's hard to swing a stiff leg over, and once they're on it, they don't know how they'll dismount without falling over. A women's bike or mixte is a solution, but some guys won't go for it, they still face the high saddle problem, and pickings are slim, anyway. The Tbred is perfect for them.

What It's Like To Ride

It's like sitting in an easy chair and pedaling away. But since you sit down all the time, you'd best have a comfortable saddle. The Tbred's stock model looks comfy and comes mounted on a shock post; and maybe there's some "getting used to it" period. If it works for you, great, and if it doesn't, it's changeable.

Up hills it's not fantastic. First, the seat tube angle is so slack that pushing hard down on the pedals pushes you off the saddle. Designer Joel has talked about some kind of a ThrustResistor saddle to counter that—sort of a mini-version of the full height chairbacks on recumbents (which this is not). Anyway, lots of places don't have steep hills, and folks who buy it because they can reach the ground flat-footed don't seem like the type who'd voluntarily take on a steep hill, anyway.

Second, you can't just get off the saddle and use your body weight to hammer up the hill, because the seat's so far back, it's like getting out of a barcalounger. Then when you do, the handlebars are way, way too close. I imagine gigantic improvements could be had up hills if you change the bars to a kind that doesn't crowd you, but still allows a good grip for holding on when you're seated. I think a wide drop bar with those new cyclo-cross style "interrupter" brake levers would be great.

This bike added twelve minutes to what should have been a 39-minute, 6.5mile/2000-foot climb, and I found it difficult to get my heart rate over 145 and to really power up. It was great going down, though, so long as it's paved. The design might seem good on steep trails, since you can flat-foot it easily, and it's impossible to endo. But with the front wheel way out in front, it's hard to weight it enough, and it's quick to wash out when you turn, and quick to lock up when you brake. I rode it on a steep, loose, rocky descent with the stock 32mm tires (admittedly NOT dirt tires, but comparable to tires I've ridden the same trails with on my normal bike) and it was a handful. Fatter tires would have helped, and it'll take up to a 26x1.9. Anyway, it's not designed as a trail bike, so no marks off it here.

We got both sizes to try, lots of people rode them, and everybody had fun. It's smart, and for certain kinds of riding, it's unbeatable. If you live where it's flat, and you're either too young to read this, or rather old and afraid of normal bikes, or you're somewhere in between and you want something different, you get one.

I've been meaning to swap the handlebars for another style that might make off-the-saddle climbing easier (less cramped), but in the meantime I've developed an odd-looking technique that makes pedaling while standing much easier. It's hard to describe, but it involves pointing my elbows forward (at least, that's how it feels).

I've ridden this bike a lot now, and I wonder, "Does anybody have more miles on one? Has anybody ridden it in the variety of conditions?" For all I know there's a wealthy and retired ophthalmologist touring the globe on one, but I'm curious to see how it sells.

I'd like to see a really cheap kid's version, too. I can't imagine a better design for children to learn on and have fun with. I'll bet somebody comes up with a kid's version. If I were rich, I'd have Curt or Joe build one. Lugged!—GP

There are two models, both with an assortment of modern mid-to-high end parts from Shimano, SRAM, and others. The cheaper model (V70, tested) costs \$695; the expensive one (V72) costs \$859. See www.visionbikes.com.

The stock tires are 26 x 1.25, but the frame will take up to 26 x 1.9. It has rack/fender mounts. The parts won't give a bike snob whiplash, but they work well and the bike is neat. Sold through dealers only.

Questions for Thoroughbred Designer Joel Smith

1. What made you think of this? Was your first inspiration to bridge the gap between normal bikes and recumbents, then sell them a recumbent later?

No, I tried to address the limitations of a traditional bike—the increased aerodynamic drag associated with sitting upright and the forward weight shift and poor braking balance from sitting so high. Getting on and off the bike with a high top tube and the inability to touch the ground when you stop also needed to be addressed, as they are with a recumbent. With a recumbent, we rotate the rider's position back about 70 degrees, but if we stop at about 20 degrees we still see most of the benefits.

2. Who do you think will buy a one?

Riders who find a traditional bike uncomfortable or not user-friendly. Sitting in an upright position, being able to touch the ground when they come to a stop, and more balanced braking should make it a more enjoyable experience for those who are getting into cycling or trying to stay in cycling. It is a terrific commuter, too. You sit upright and can look around. It's good for touring, too. I am always disappointed when I see people on a tour and all they are looking at is the white line on the road in front of them because they can't hold their head up any longer. They miss all the scenery they went out to see. We are also beginning to see enthusiast riders who already own several bikes adding a Thoroughbred bike to their stable of bikes because it's just fun to ride.

3. I haven't seen any ads for it yet. How will you market it? Will you narrow the focus to, for example, Old Folks Who Live In Florida, or will you include anybody who rides an upright and wants more comfort?

We aren't planning on marketing the bike too heavily in the first season. We want to start slowly and see what the reaction is from the dealers and the public. Getting early feedback from both the end customer and the dealer will give us the ability to improve both the functionality and the salability of the bike.

4. What's the geometry? Head and seat tube angles, fork rake, bb height....can you send a chart or a drawing of the bike with the normal basic figures shown?

The design is based around 26" wheels because of their versatility; both 559mm and 571mm will fit the frame. The front-end is fairly traditional touring bike geometry although the head tube is longer to put the rider in a more upright position without the need for a tall stem. The BB height is at road bike height. The obvious difference is in the seat tube location. It has been slid rearward about 215mm behind the BB. This gives a "virtual" seat tube angle of about 50 degrees depending on the height of the seat. The rear wheel is also

pushed back to keep a normal relationship with the seat tube. The seat tube length is optimized to work with a suspension seat post.

5. How many prototypes did you make before settling on this final geometry? Who rode the prototypes?

We built 4 different variations and made drawings for about 20 different configurations.

6. What's your favorite thing about the bike?

I like being able to put my feet down and reach the ground while I am still in the saddle. The balanced braking and improved aerodynamics are also very important to me.

7. Is there anything about the Tbred that you might change, or is there another variation in the works?

This configuration is in its earliest stages of development. It is a platform on which we can try many different variations. Different types and positions of handlebars and different component packages are the easiest to experiment with. The seat is a large area of experimentation. With the pedaling motion more forward, we have an opportunity to increase the size of the base thus distributing the weight over a larger area without interfering with the pedaling motion of the legs. A small backrest is also a possibility, giving the ability to push on the pedals with more force, without the need to pull back on the handlebars. On the frame itself, we will try different materials and small variations to the geometry.

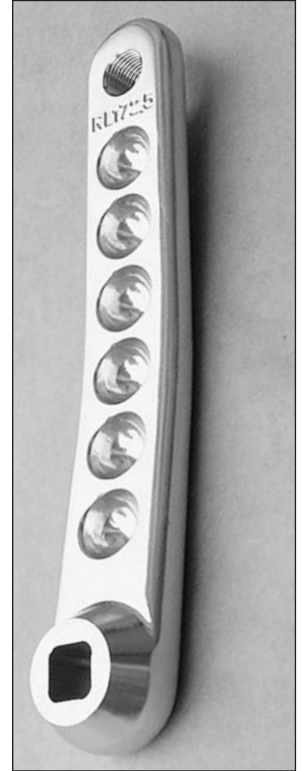
8. How have dealers received it?

Initial reaction from dealers has been great. We have had multiple instances in which a dealer bought one bike to take a look at and it sold within a day.

9. Do you expect it to be copied?

Yes, because it's a valid design, and that's what happens with valid designs.





A New Crank, Called Bike Drive, from Austria

Every few years an engineer from another field enters the world of bikes and sees a way to improve on a design that has worked well for a long time. Bike people usually get a good laugh out of it and dismiss the wacky widget without stooping to try it. I'm mostly speaking for myself here.

People who come up with things like this are always smarter than I am, and for all I know it was born out of results of extensive physiological testing conducted under the strictest supervision by the sharpest minds in the University of (quick—what's a famous town in Austria?)

A Giant-sponsored team rides it. A nineteen year-old won the world's hardest mountain bike race (the Alligator Cup) on the mountain bike version of it. Not to mention the line graphs showing differences in power between this and a normal crank, and the claim that it's the equivalent of losing 11 pounds of body weight.

The spring yields (compresses) to make pedaling easier between 12:00 (straight up) and about 3:00. It provides "greater impulse" between about 4:30 and 6:00. It evens out your pedaling and provides a 20 percent energy savings. That's right from the brochure.

I know it sounds unbelievable, and I can't test the numbers, but I can tell you for sure that it's fun to pedal. I realize that any bike is fun to pedal, but what I mean is

that this one is noticeably different, and fun for the difference, too. You can feel the spring compress, and it feels nice under your leg power. If you've got it in your head that the spring pushes you through the dead spots in your stroke, then you can, actually, feel it.

For the riding I do, I don't care about saving fractional amounts of energy or gaining unfeeling advantages. But I have about 5 bikes (the line blurs between what's a Rivendell test bike and my own sometimes), and I plan to to 48x38x26 or so, but I like having the springs on one bike. I know what you're thinking—he just likes being the only one in the state with an Austrian crank. There might be something to that, but let me tell you, it's a nicely made crank, Austrian or not.

This is an overall qualified positive review. The crank comes with a bottom bracket, a nice sealed bearing one, and based on what I got it for wholesale, I'd say you could expect to pay about \$280 retail for it, plus or minus maybe \$20. We don't have them and don't have plans to stock them, because it's not up our alley. But here's the website, and you can talk to Ernst Murnseer. He's a nice guy and speaks English fluently. Tell him you read about it in the Rivendell Reader, because I told him I'd put it in here. The website:

www.bikedrive.com



The fork rake looks nice, doesn't it? Nice and low and tight. The bars seem on the low side, but they must work for Chuck. Shortie mudguards!

Chuck's Mercian Superlight

First in a series of Chuck's Bikes

A New Feature

Friend, rider, Rivendell member and bike collector, Chuck Schmidt, has lots of interesting old bikes, and he's going to show and tell one in each of the next many issues. The point being to show many of the classic details from the past that have influenced modern bikes, and by the same token, to show how, by and large, the fine older bicycles beat the living pants off most 21st Century bikes when it comes to proportions, style, and outright beauty. I hope you like this section as much as I do. There'll be some neat things coming up in these pages. It's only right to point out that collector or no, Chuck rides these bikes. Every day, and far, and he has about 50 of them.

This 1960 English Mercian Superlight Vigorelli is the bike I usually ride to get my coffee and do errands around town. It's a fixed-gear bike with track dropouts and front brake and is designed for use on road or track. Fixed-gear bikes were used in England for time trials, grass track, hill climbs, pursuits and general riding and although sometimes referred to by the antiquated term path racer, they are now called road/track irons or road/track bikes.

The name Mercian refers to the people who lived in the ancient kingdom of Mercia whose capital was near modern-day Derby, England where Mercian Cycles is located. Mercian started in 1946 as a cycle shop and a short time later the owners, Barker and

Crowther, began building frames. In 1965 the bicycle/frame building shop was sold to one of the employees, William Betton, not only a frame builder but also a racer who held the South Pennine Road Club 12-hour record of 247 miles for many years (set with a fixed gear, undoubtedly on a Superlight). Mercian is still doing business to this day, in the same location, making production and custom frames.

The Superlight Vigorelli model was introduced in 1959 as a frame designed for time trials and pursuits. The '59 brochure states "All unnecessary ounces cut away and a new method of fitting seat stays to seat lugs, but leaving a perfectly rigid job that responds to every ounce of effort." The frame is constructed of



Someone put a lot of work into these, and should be proud. Notice the shading, with large, hand-drawn dots. More common on old cigar-boxes than on bicycles. Looks good!

Reynolds 531 double-butt tubing with ornate hand cut lugs that have been trimmed dramatically. Barely covering the tube joints, the lugs, which measure a scant 1/8 inch wide in places have been referred to by some as Bikini lugs!

The best example of the quest for lightness is the ornate seat lug which has been reduced to such an extent that as the lug wraps around the seat tube it disappears and continues on as an ornate lug outline done in paint. Superlight!

The "pencil" seat stays (they measure only 5/16" at the end) are attached directly to the back of the seat tube in a style now known as fastback and pioneered by Mercian among others. The fork ends have fender eyelets and the track dropouts are tapped for attaching fenders since this is a true dual purpose machine.

Equipped for the road it weighs just over 18 pounds, head and seat tube angles are 73 degrees parallel, seat tube 22" (c to t), top tube 22-1/2", fork rake 1 7/8", and a bottom bracket height of 10-5/8 inches.

Mercian always took pride in their stove enameled paint jobs and welcomed custom color requests by their customers. My bike was painted a truly unique color best described as a "pesto cream sauce" green with maroon lug lining and maroon and gold seat-tube bands. After forty plus years the paint still glows, but is slightly crazed, like a Ming Dynasty vase with a chip here and there; patina that actually looks quite charming to the eye.

The decal graphics have a very pleasing look reminiscent of old time cigar box lettering with ornate letters



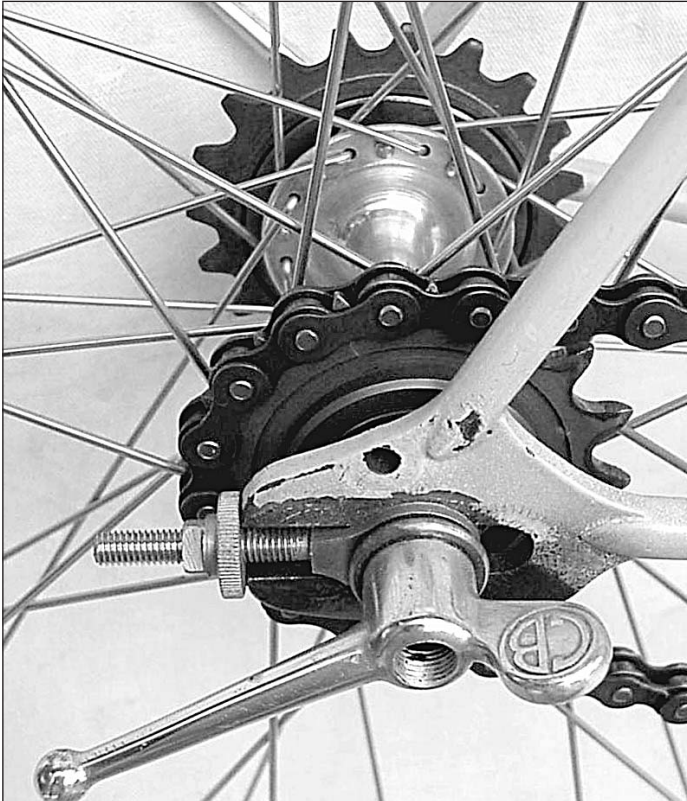
Nice pinstriping and lots of it are the hallmark of many fine English frames. Why get an English bike without it? Notice too, the tiny "bikini" style hand-cut lugs.



Not all English frames go this far, but many of the nicer older ones did...even though nobody looks down there. 'Cept Chuck!

that have a lithographic style of shading made up of easily discernible dots of color. The head tube decal is the predictable medley of stylized bike, Olympic rings and globe in a fancy shield shape. The seat tube decal is a design adapted from the 1955 Rome-Milan World Championships logo.

Like all fixed-gear bikes, the ride is a revelation that can only be explained by a ride on a fixed-gear bike; responsive and running with a silence broken only by the hum of the sew-ups on the road's surface.



This is a fixed gear bike, so it has a long, rear-opening track ends. The wingnut lets you snug it; the chain tension adjuster ("chain-tug" in modern BMX talk) goes all around the axle and keeps the wheel in place, because you can't easily get enough tension to do that with the wingnut alone. The chainwheel is 48t. The chain here is on a 16t fixed cog; the other cog is a 19t freewheel.

The feeling of being connected to the bike is almost primal in the way you govern your speed without touching the brake. A very direct and controlled feeling of being in command of the bike's every move.

Gearing is a 48-tooth chainring coupled to a 16 tooth track cog or an 19-tooth freewheel (fixed and free threaded flip-flop hub).

The Pasadena area where I live just northeast of Los Angeles is in the shadow of 5700 ft Mount Wilson, so a typical fixed gear ride would consist of short climbs along the foothills to the east and back through the San Gabriel Valley. Another great ride is down the San Gabriel River trail to Long Beach and back. Not a single cross street in forty-plus miles!

Besides the ride to get coffee every morning the Mercian usually gets ridden on the monthly Pasadena Rose Bowl vintage bike ride that winds down the Arroyo Seco, out through the San Gabriel Valley and back through the foothills of Sierra Madre and Altadena.



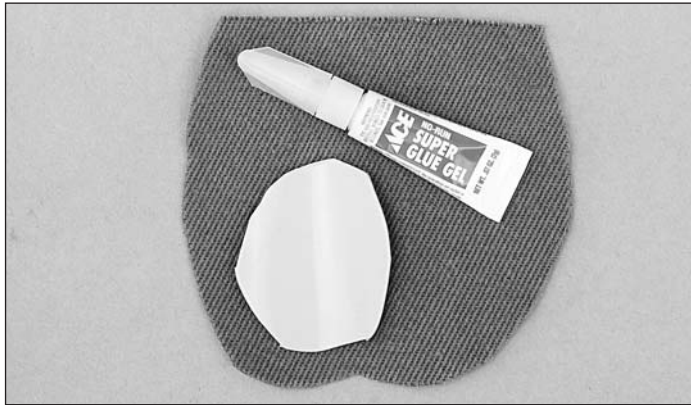
The seat lug looks like it's hand-cut from a tube or a scrap of steel. There's a "cheater" pin stripe there near the binder bolt. The painter (or striper) thought it would look good with the real one in front, and who's to argue? The binder bolt was brazed-on separately. Note the fastback seat stays, not at all typical of English road bikes, but this is a time-trial model, and in those days that was a way to reduce weight. It works!



The tape is GEM brand, made in England and sold from the late '40s through mid '60s. Modern riders of good stock turn up their noses at thin plastic tape, but back then—in the heyday of Bakelite and the post WWII boom, it was pretty slick stuff. Notice how it looks a whole lot like shellacked cotton tape? The tires are period correct replacements. The stem and bars and bar-mount cage are unquestionably original. But the straw? That's from Safeway. Note the "left handed" brake caliper, a Weinmann 500, Weinman's cheapest and lightest brake, and a common spec on superlight bikes. In the early '50s, it was a "pro" brake, and later, in the '70s and beyond, it was regarded as the cheapest of the cheap. But it was always the lightest, and Tom Ritchey raced with them.

Booting a Gash

GLASSCUTS aren't all that common, but ride enough and it'll happen. Sharp rocks can do it, too, as can flattening on a steep descent and riding on your rim and tire until you can stop. If you ride a lot, you should know how to fix a slash, a hole, or a chewed up sidewall. Here's one way that works.

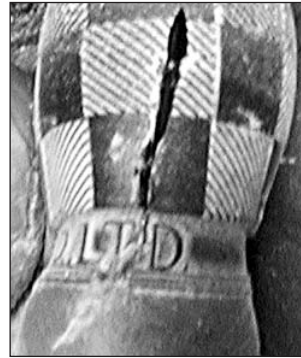


The Booter's Kit: A piece of fabric. This one is cotton duck, similar to that in our ACME Tool & Tube Tote; and a piece of a water bottle to super reinforce a bad cut; and some Super Glue gel to repair a cut sidewall. If you need the water bottle patch, sandwich it between the fabric so the edge doesn't cut the tube.

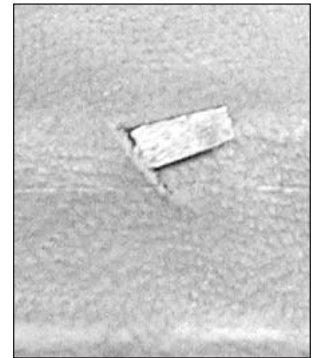
This is the same tire, not repaired (booted) and inflated to about 75 psi. A second later, wham! And then "Why didn't you tell us so we could have plugged our ears?!" (This does not reflect poorly on National Tire Co. Ltd, aka Panaracer, our tire make.)



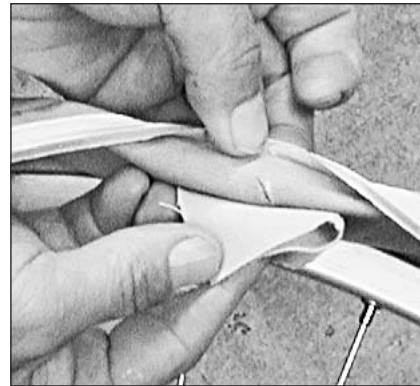
Here's that tire inflated to about 90 psi without the benefit of a glued cut. It's safe enough to ride home on, even if home is 70 miles away, but it's probably a good idea to ride it slightly underinflated, so you don't get this much bulging. The bulging itself isn't so bad, but it's nervous-making to know your tire's not all round, and to imagine the pressure finally getting the best of it, and down you go. That's why you should always over-boot and do it right.



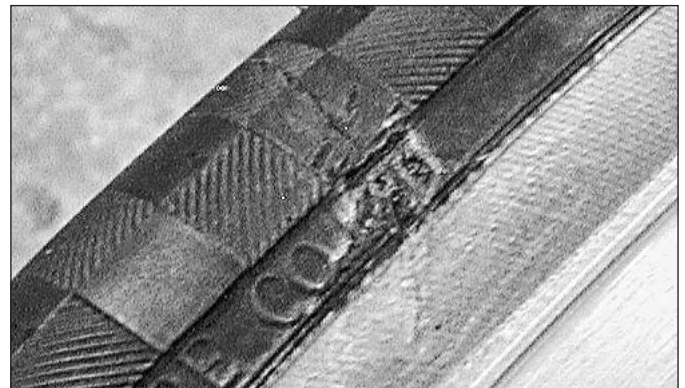
Left: A glass gash from the outside. The glass did not penetrate the kevlar belt in this Ruffy-Tuffy tire. (rubbed with talc for clarity)



Right: The sidewall cut from the inside. That's a screwdriver sticking through it. The tread took the brunt, but the glass was big enough to cut through even the tough sidewalls of a Ruffy-Tuffy.



Inserting the boot. Take whatever material you have (in this case cotton fabric from a Tool & Tube Tote, with an oval from a water bottle inside it) and lay it generously over the gash. It is best to first glue the gash together with Super Glue Gel, or something like that, if you have it with you. I did that.



The same tire, glued inside and out, and inflated to 100 psi. There's no bulging, and with two layers of thick cotton, a water bottle patch, and a glued casing, it's probably stronger than new. Certainly, any piece of road glass that tries to cut this tire in the same spot as before is in for a shocking disappointment.



Quickie Review of a Non-Brooks Saddle

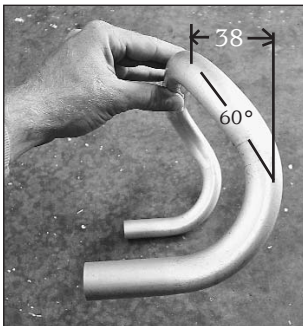
Avocet doesn't make dumb things, and even though this saddle isn't an obvious hunk of hide fastened to a frame with hand-hammered copper rivets, it's still a good one because the shape is smart. Look at it. It's wide in back to support your sit bones. It's flat back there, although neither of the photos above show that. And, the rear portion is higher than the middle, so you don't crush your nerves.

We're showing it here because once in a rare while we hear from somebody who can't live with a Brooks. Pity them, but this saddle's a good solution.

To my bottom, it is not as comfortable. It concentrates the pressure more, but not in a way I couldn't live with on an all-day ride, and maybe it's a matter of getting used to it. It's marketed as a women's model (the men's is narrower), but it works as well for men, and unlike most women's saddles, it isn't super snub-nosed.

Available with either a hollow CrMo steel frame or a Ti one. The steel one weighs 275g and costs about \$60. The Ti model weighs 255g and costs about \$80. Either way, it's a really well designed and nicely made leather-covered plastic saddle.

A Tale of Two Handlebars



Not Bad Bar Bend

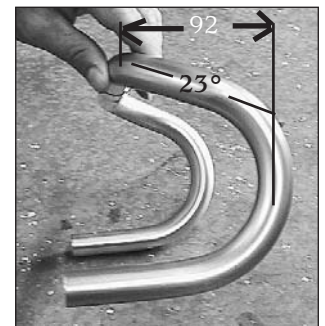
This is a high-end women's specific road bar. The women's specific part of it is the short reach—a normal drop bar's reach is between 82 and 100mm; normal ramp is 23° to 32°. On this bar, the goal was a short reach, so the little lady can reach the brake levers without leaning or reaching too far. But thirty-eight millimeters (our in-

house measuring) isn't enough for any drop handlebar, because the only way to achieve it without buckling the aluminum tube is by steepening the ramp. A ramp this steep is useless, though. When you try to rest your hand on the ramp, it slides down onto the lever hood lickety split.

Imagine the bend the bar would have to take if you threw in a 23-degree ramp and limited the reach to 38mm. The tube would buckle; it can't be done. Lots of women's-specific designs are wacky. We don't want to name names, but for goodness' sake, look out.

A Good Bar Bend

This is a much better bend. It happens to be the Nitto Dream bar, aka the Mod. 176, but the ramp and reach aren't unusual, just good. The ramp is a normal 23-degrees (so you can rotate the bar up 10-degrees and make it a mere 13-degrees). The reach is 92mm, about in the middle of a normal (not women's-specific) range of 82 to 100. In short, there's a balance to it, and your hands will be plenty comfortable resting behind the brake lever, right on the ramp.



The Noodle Bar has the same reach as this, but the ramp starts out at 15-degrees. Rotating that up 10-degrees flattens it out like mad. Near the back of this issue is a photo of Rambouillet rider Tim Bozorth with his Noodle bar. Look at how flat it is. There's no drawback, only goodness.

Handlebar makers should list the ramp slope of all their models, but they don't. It's not a good thing.

Travels with Luka, a Wire-Haired Fox Terrier



BRADLEY WALL STOPPED BY THE OTHER DAY ON his way back from an Alaska to Tierra del Fuego ride with his twin brother Carter, who stayed down in Chili, but will come back sometime this year. Without Carter to keep him company, Bradley decided to take his pup Luka, a gung-ho wire-haired fox terrier. Bradley's bike and gear looks the way you'd expect after a few years and so many miles on the road. Tent poles have lost their anodization; the panniers are patched. The frame shows large patches of shiny metal. And, as always happens with touring bikes, the stuff that works stays, the stuff that doesn't goes. A few parts wear out along the way and get replaced, and the whole bike ends up working great and looking like a gypsy's jalopy. Bradley's bike is a humble 1993 Bridgestone XO-2, modified slightly with Moustache H-bars, and assorted replacement parts. We gave him a new Brooks saddle, since the one he had looked about 30 years old, and he picked it up used and worn out to begin with.

All touring bikes end up with at least one bandana. Bradley's colorful handlebar wrap serves as padding, decoration, and a place for Luka to rest his paws. The 1-inch threaded headset is a Tange Falcon, same as we've used on the Atlantis and Rambouillet. Bradley says it's been trouble-free the whole time, and it still turns smoothly—a testimony to its simple design and excellent construction. The 28.6 down tube and 25.4 top tube are too skinny for a loaded world-tourer ... but that just goes to show you. The lugged joints are still going strong, too.



The signs of oldness and age, which aren't quite the same thing. The holes in the lower flap, useful for lacing sagging saddles together, aren't on any current Brooks models. See the saddlebag loop? Those on older saddles had rounded edges, like this one. The rounded edges were easier on leather saddlebag straps. This is what your Brooks will look like after 20 years of hot sun and no goop.

Bradley Answers a Few Questions about his Trip

Why such a long trip, and how did you plan for it? How much does it cost to do something like this?

Carter and I wanted to ride the longest stretch of road out there. We left with 18000 dollars between us, which we earned by working in bike shops and doing construction, and living cheaply. We'd lived with friends to help save and lived a very humble life saving money. I worked at a bike shop at 8 dollars an hour and Carter worked construction, and at the bike shop part time.

It started out as kind of a mile-collector trip, but things change for the better. We planned to be out for a year and half, and planned it according to the weather. At the end of July 1998, we took a ferry from Bellingham, WA to Skagway. We cycled through the Rockies through Banff and Jasper and the Continental divide Mountain bike route, down to the border of Mexico. Then we turned into Texas, maybe to get mentally up for Mexico. Everybody told us, "MEXICO? You're crazy!!!!"

I've heard those stories, too.

Yeah, we got so much negative feedback from the people. People told us every horror story from their friends or family or great uncle who had been to Mexico, though we never heard it first. The police will rob you ... the people are worse and just waiting for rich gringos to take advantage of ... the water comes straight from the sewer to the tap ... the roads are terrible. It sounded horrible. Now I just laugh at that, but at the time we were so scared!

But the day before we crossed the border a Mexican man invited us to stay at his house for the night. He and his family invited us to have dinner and relax, and he gave us an address of one relative who might put us up, about 2 days across the border. When we left for Mexico, we knew just a few words of Spanish, but had a much better attitude about it.

We cycled to Guadalajara, and from there we got on a plane to Peru. There we met up with Casey Miller, a rider from Minneapolis, who was riding a Rivendell, just like Carter. I heard later that his bike was stolen in Australia. Anyway, we were in a totally different world and instead of just riding through it not knowing the language, we decided to stop and talk with everyone, and try to learn Spanish and get an idea of what this



Bradley's riding shoes. A day after this photo, Bradley found out he had a broken toe. It didn't happen while riding, so don't go blaming the sandals. But can you guess which toe it is?



Detail of Bradley's bar wrap, which is a colorful and coarse woven cotton, and his old-style SunTour bar-end Power Ratchet shifter, the original bar-end shifter, and the one Freddie Hoffman (1.3 million lifetime miles and still going) uses on his bike, too.

Brother Carter also uses Power Ratchet bar-end shifters.

The monstrous bottle cage is something one of Bradley's friends made for him in South America. He didn't need to have the bottle full and with him on his trip over to Rivendell, so that's why it appears (and is) empty here. But presumably it comes in handy during the longer, hotter stretches. You'll note a similarity to Charlie Cunningham's cage, shown elsewhere in this issue. That one's made by Nitto.



How many times must your loaded bike swing out and fall over before you devise a parking brake for it? Bradley caught on quickly, and put these on both brakes. They're made from inner tubes.



country was like. We played soccer every afternoon with the the locals- and what an effect it had on our trip! They gave us food and a place to stay, and half the village came to see the gringos playing soccer!

So, no concern with keeping an itinerary?

No. Our plans changed along the way, as we got to know a different lifestyle. We didn't care about daily miles at that point, or even about southward progress. It's more relaxed and easy going down there, and we took that on, too.

And you were learning Spanish, which must have helped.

Yes, that made it even nicer, because we could have actual conversations, not just limited to "We come from the United States ..." and so on..

What gear did you bring?

Nothing special—all of it was bought used except the stove and tent and Carter's Rivendell. I bought the Bridgestone XO-2 used for \$150.

Can you be more specific? What did you pack, what are you carrying now? How much did your packs weigh? Did your past trips prepare you well, or did you wish you'd brought something else? What piece of gear did you especially like?

Basically the same as any tourist list—tent, stove, sleeping bags, tools, clothes, first-aid kit, a couple changes of cycling clothes and then a pair of nicer going out clothes. We brought Carradice ponchos, which made riding in the rain more enjoyable. Carter also made chaps from Filson tin cloth (waxed cotton) he found in the Filson dumpster in Seattle; and we made shoe covers from old inner tubes. It was nice, pulling off the



This picture out of sequence. Brad and Luka stopped by and we went for a ride up the mountain (53cm Atlantis). Both have perfect form. Luka came down in the pack. Note Luka's shadow in the wheel, and Brad's typical riding garb—sandals and trunks.



On Brad & Luka's last day here, I rode out with them about 12 miles on their way to Yosemite, and snapped this Actual, On The Road photo of Luka, the ever-smiling wire-haired fox terrier.

shoe covers after hours of riding and finding your shoes almost dry!

You carry a heavy thermos and a big bag of mate tea. That wouldn't make anybody's touring checklist, but do you find that, being on the road for such a long time, heavy civilized things are more important? Or—why do you do that?

I didn't start off with a thermos, but now it's something I won't go without, especially if it's cold out. It's so nice to have a warm drink a couple of hours after breakfast.

I'd like to see your actual, complete checklist. For an Alaska to Tierra del Fuego tour, I imagine it has to be pretty dialed in and complete, and it would be a good starting point for anybody planning a tour anywhere, I imagine.

The list:

Tools: Set of allens, 9-10 wrench, adjustable wrench, spoke wrench, extra bolts and nuts, extra spokes, old tire for patches, chain oil, grease, freewheel tool, chain tool, spare tire, saddle grease.

Cookery: Multi-fuel stove, 2 cook pots, spoon & cup, one water bottle, one fuel bottle, 1 quart thermos



It means Gates of Hell, but Luka, he's happy. This is in Baja.

Sleep and shelter: Tent, mattress, sleeping bag, bag liner.

Clothes: 2 pr swimming-style shorts for riding, cycling jerseys, long-sleeve thin wool sweater, nylon windbreaker, woolblend tights, dress shorts, hat, nylon pants, two pair sox, underwear, shell, mittens, poncho, two cotton shirts, homemade rubber shoe covers, sunglasses,

Bath: Toothpaste, brush, soap, clothing soap, deodorant, razor, scissors, sunblock, comb, little towel, sponge

Other: Zefal pump, 3-liter collapsable bag for water, first aid kit (bandages, tape, creams for cuts & bites, sunblock, lip balm, electrolyte replacement powder), sewing kit, thick paper journal and a nice pen, couple of books, radio-cassette player & cassettes, maps, photos, camera & film,

And for Luka: plastic milk crate, sleeping mat roof, dog dishes (one is a cooking pot), Luka's vaccination papers, dog food, plastic bottle (Luka's favorite toy).

How much weight, total?

The bikes weighed 75 pounds with everything on them; so about 50 pounds of gear. One thing I didn't leave with, but picked up in Argentina, is a thermos. What a nice thing to have on the road—no need to take the stove out just to heat up a cup of tea or coffee.

Did you and Carter get along the whole time?

Carter and I are twins, and we've always lived and traveled together. Our first trips on bicycle were from Texas to WA then to Alabama. After that we cycled from CA to Florida. We also took a hiking trip together from northern CA to Canada on the Pacific Crest trail. So we were the best companions ... though at times, Luka is better!

Did you get sick at all?

Yes, the first week in Peru. We were riding with Casey at the time, and we were all sick. I was in bed for two weeks; Carter and Casey, for a week maybe. Our stomachs weren't used to the street food. After a while our stomachs got used to all different foods—we stayed in people's homes and ate their food, and restaurant food, all kinds.

What would you do differently on another trip?

Well, I hope I can't answer that. I wish I was still in Latin America now. Maybe I would have gotten rid of Carter sooner for Luka!

Did you meet any bad people?

The creeps were very few and far between, but though the scariest time of my life was in Colombia, climbing this long mountain road at about 7:00 a.m. This car passed me slowly, then turned around, and right away I knew something ugly was going to happen. There weren't any cars at this time of the morning and I was told more than a few times that this area was a war zone between the Gorillas and the paramilitaries. Luka was running beside me, as she usually does in the climbs, and I stopped quick enough to tell her to jump in her box just as car pulled up next to me.

I rode harder just to get sweating and breathing harder. There were six of them. A guy on a cell phone asked me where I was coming from, He had a scar across his neck, no kidding! I told them I was cycling from Chile to Canada. Then the driver side pulled out a gun and told me to stop. He'd told me that a few moments before, but I kept riding. He asked me where I was going and what I was doing there. I was shaking so bad and thinking what are they going to do to me? They take hostages and hold them for weeks, months and some years! After I told them my story and that I was working along the way getting to know some countries and their cultures, they told me to relax a bit and later to leave. They



Lands End *this!* Carter and Brad at their destination, the tip of South America (Tierra del Fuego).



These are the good guys. Brad and the Colombia military. Everybody likes a bicycle tourist.

waited in their car and I rode off before they did.

Oh yeah, and some guys tried to rob Carter in a bakery in Peru. I turned to see why Carter was yelling so loud in front of all these people in the bakery.

Nothing happened, but the next day this woman who could have been my grandma spotted me in the street and questioned me why I didn't beat the heck out of the thieves? I could think of a few more times that we met creepy people, though as things went we were meeting the good people so willing to help us out. They treated us like kings or faraway living relatives who just got to town!

Where does Luka sleep at night?

She sleeps in the tent with me, and sometimes in my bag with me, on cold nights. When she's in my bag, she's not much of a watchdog, but she's a good one when she's not.

How much time does Luka spend in her basket, and how much on the top tube and bars?

She just learned how to ride on the bike, up front, but she'll spend five hours in her basket. If I'm staying in a city, I'll take all my bags off except for one, and she'll ride in that. But on the climbs, she'll jump out. On a normal day, she'll run 9 or 10 miles.

Does she ever get injured or sick?

Yes, once in Guatemala, she stepped on a piece of glass, and I didn't realize it, but it was jammed in one of her paw pads for two weeks.

How did you figure it out?

After a while I started looking at her paw. I happened to

be cycling with a veterinarian at the time, and we looked at her paw and found an area that was scabbed over, so we opened it up and found a small piece of glass. She'd been running on 3 legs for a while, as though it was normal for her.

Also, in Colombia, she ate a fish on the beach and got sick. In Panama, my vet friend gave Luka a full checkup, and she cured Luka.

The same vet?

No, a different one.

Two vets?

My Chilean friend flew from Ecuador to Panama City to wait for me, and then he found a job there at the clinic owned by the other vet. There are a lot of veterinarians down there, and I guess you notice

those things when you travel with a dog, I think Luka is healthier than I am.

Do you bring dog food for her, or does she eat people food?

I bring dog food, but she eats people food, too. I don't always have dog food, so she has to. I've eaten dog food, too. It's not that bad, you just have to put a little salt in it.



Brad talking with the locals in Mexico. That's Brad's friend's bike in the foreground; Brad's has Moustache H'bars and Luka's cave on the back.

Where did you do that?

In San Francisco.

What? Our San Francisco?

Yes, that one. There are no campsites there, so I snuck into a park, and I didn't have time to get any food.

What time of the day do you stop riding? Do you go by time, or destination, or campsite?

I try to go by campsite. I don't like to go by a watch or ... I just like to live hour by hour, and if I find a nice place to stop, I'll stop.

What makes a nice place?

It could be by a nice creek running through some redwoods, or a nice beach with nobody around, or a friendly family.

Do you camp at schools and cemeteries, or parks?

I've stayed just about any place you can name, Yes to all of those. In bathrooms, churches, schools, fire stations, city parks, monasteries, in broken down automobiles, in gas stations.

In broken down cars?

Well, it just happened because ... it was something to do and I didn't want to set the tent up. It was a van in Belize. It was next to some people, their house, and they said it would be fine. It wasn't theirs, it was owned by somebody who lived in another city, and they said they'd be back for it, so I just stayed in it.

Carter and I once stayed in a bathroom attic in a small city park in Wyoming. It was stormy that day, and it was a brand new bathroom. If you were to see it, you'd think, "Why set a tent up when this is here?" We also stayed in a bathroom in Argentina, because it had a heater, and we were joined by other campers, We had a small party in there.

What about the monastery, and for the benefit of, you know, our readers—what, precisely, IS a monastery, anyway?

It's a place where people go and study religion, and live a religious life. We talked with the caretaker and just slept on the floor of the church.

Tomorrow you leave here for Yosemite. It's about



Surgeon Brad and his first patient. Brad did some volunteer work in Mexico, under the supervision of a doctor, so as not to risk anybody's life. He has decided to investigate nursing as a career, after his next tour, and plans to take classes for it between now and then.

200 miles away, and it gets hilly near the end. Your bike weighs about 85 pounds, and you've got Luka, another 16 pounds you've told me. I imagine it'll take you 3-4 days to get there. Predict where you'll sleep those nights.

Maybe in city parks. I'd like to be next to a river, that would be nice.

If you find out that Yosemite doesn't allow unleashed dogs, then what? If you found out beforehand, would it change your plans?

Maybe when I enter I'd put a leash on her, but I'd take it off later. She's a well-behaved dog, so ...

People must wave and smile at you a lot, with Luka and all ...

Yes, and that's something really nice about carrying a dog. Some days I'm in a bad mood, or I'm depressed, and somebody will talk to me, or wave, or bark at Luka, and it'll kind of make my day nicer. In Ecuador and Peru, people would yell at me, "Venda me tu perro! And "Regalo me tu perro!" (sell me your dog, or give me your dog.)

A couple of times I offered, jokingly, to trade Luka for a sheep or a goat.

What do you do at night?

I write in my journal, and I like to read.

What do you read?

Right now I'm reading Les Miserables. I've read Isabel Allende's House of Spirits, and Eva Luna. She's a Chilean author. I read Gasbriel Garcia Marquez' One Hundred Years of Solitude, and In the Time of Chlorea (sp).

Do you read in Spanish?

Mostly newspapers and magazines. Novels are too complicated.

Back to your Yosemite trip. What do you want to do there? Have you been there before?

No, I've never been there. I want to see El Capitan and Tuolumne Meadows, and hike around for a couple of days.

What will you do with your bike?

If I have to, I'll just stash it in the trees or bushes somewhere. I've done that before. Before I started this trip, while I was working at a bike shop 4 days a week, I'd get a nice 3-day weekend, so I'd take off on my bicycle with my backpack and just some sleeping gear and some food. I'd ride to the Cascades, ditch my bike, and go hike for two days, and the bike would always be there when I got back; so I'll just try that again in Yosemite.

You and Carter rode the Continental Divide trail on the way. What was that like, and did the bikes do fine? What was the best or worst part. Would you do it again?

It was beautiful, it's my favorite touring in the U.S. It's 85 percent dirt roads, fire roads, there's very little traffic, I'd love to do it again. My favorite part was entering Colorado, in the first days of fall. We passed some beautiful aspens, changing colors. I think that was it.

How did the bikes hold up?

They held up great. We rode slicks—we've ridden slicks and sem-slicks the whole trip, and they've never been a problem. Anything from 1.25 to 1.95s. The bikes are so heavy, you don't lose traction because all that gear weighs so much, so the tires just dig in. I've heard you should ride a mountain bike with a shock, and use a trailer, but we didn't have any troubles with our bikes, and panniers ... and slicks.

Which tires, mostly?

I don't want to sound like a tire commercial, but we used Continentals, Ritchey's, Performance brand. In the states I'm not too particular, because I can always get a good quality tire.

After Yosemite, what?

I want to stay in the mountains, I'll ride up to Washington, ride the Olympic peninsula, and then to my parents' house. I haven't seen them for 4 years, and

they're really excited. I email them, and they always ask me. "When will you be home?" I don't know if I'll be able to settle down after this trip, though. I don't know if I'll be able to work a 40-hour week in a stationary life.

What kind of job will you get?

Probably a construction job, and part time at a bike shop. And I want to take some nursing classes.

Why nursing?

I've always wanted to work with people, maybe in hospital. People need help. When I was in Chile, I helped out at the veterinary clinic. I've stayed at a lot of Red Crosses—for two weeks in Tiajuana. I volunteered there. When Carter and I first entered Mexico, we stayed with a family in Guadalajara. Their son was studying to become a doctor, so on my return trip north, I stayed with them again, and he and the Red Cross invited me to stay there. They were interested in my travels.

What did you do there?

I helped the doctors and nurses, I stitched up a man whose face was severely cut. He was so wasted and drugged up, and he told me, "You have to start somewhere, you have to practice ..." He passed out, and when that happened, my friend the doctor asked me if I'd like to stitch him up. It wasn't as irresponsible as it may seem here. He guided me through it, telling me exactly where to stitch and how to stitch, and making sure that I was doing exactly as he'd have done it himself. I was really nervous. It took the doctor and me an hour to stitch his face, but it came out fine. That was my hands-on experience, and that's when I decided that I really could do it.

Do you have any other tours planned? And what about Carter? He's still living in Chile.

I'm going to Africa, Asia, and Europe in three years, if I can hold out that long.

Will Carter go?

I don't know. We haven't talked about it, but he likes Chile, and just renewed his work visa, so I don't know.

I've spoken with your mom, and she seems so supportive of all this. Is she? Does she worry? Where did you get the adventure thing? From her, or your dad? Did something happen as you were growing up? Did you travel a lot?

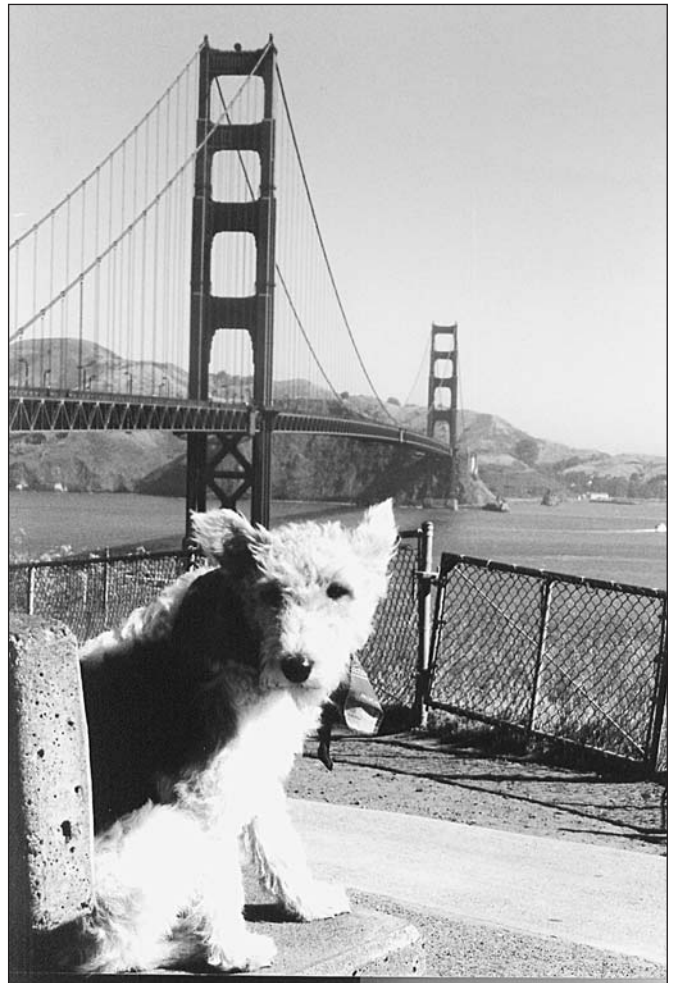
Both my parents have been really supportive, all along. I wouldn't say they worry. They're just like I am, they have a positive attitude. Sure, there are some bad things that go on, but most people are like you and me.

My dad always told us we could do anything we wanted to, if we put our minds to it. We grew up in Billings,



Going down that long, lonesome highway/Gonna ... live life my way. Travelling pooch Luka and a tumbleweed. This is in ... dang, I/Grant sent back the photo and the caption was on the back. Baja? Yes, I think so.

Montana, and we used to go on camping and fishing trips as a family, but that's nothing unusual, I guess. My dad was a traveling salesman, and we'd travel with him, so it may have come from that. **END**



We're not in Baja anymore. Luka and the Golden Gate Bridge, a few days before visiting us.

Observations and Gut Reactions

When Brad stopped by, my first reaction was *here, let me help you*. I think that's not uncommon, and Brad verified it. You tend to put yourself in his place and without considering how well and how long he's gotten by with no help, you assume he needs coddling. Even after hearing stories about mud-up-to-the-axles in Costa Rica, and his tent being almost swept away by a river way south of Costa Rica, you still think you can help. It's partly just wanting to help, and partly wanting to be a part of it, and if the way to do that is a home-cooked meal and a shower and frozen yogurt or whatever, that's just the way it is.

Then there's the envy and admiration part. Who among us wouldn't like to be able to say, "Yes, I rode my bicycle from Alaska to the tip of South America. I rode the Continental Divide trail. I rode as high as 15,000 feet. I rode with my twin brother. I left knowing no Spanish and became fully bilingual. I helped out in a hospital. I met wonderful people. Nothing fazes me. I'm as lean as a frog. I have a girlfriend in Chile. My wire-haired fox terrier loves me. After this, I'm going to Africa, Europe, and Asia. For now, this is working."

Brad and his Bike

Brad's bike, a 52cm 1993 XO-2, is a good bike, and it works for him, but was never intended to be a world-tourist bike. The tubing is standard-diameter (28.6mm downtube), and the walls are not thick. The lugs and fork crown are pressed steel and the fork blades are 1.0mm thick, which is a lot thinner than the 1.2mm walls we have on the Atlantis forks. It is a versatile bike for no loads and light loads and pavement and light trails, but Brad rides it with 60 pounds of gear and a 16 pound fox terrier, and medium-sized slicks on trails most folks wouldn't go near without 2-inch knobbies and the latest suspension.

I rode it about 4 miles loaded up, as I escorted Brad to the range country out of town, and let me tell you, that thing is a handful even on smooth pavement. The front and back parts of the bike move independently, and the flex is way more than I've ever experienced, and I've ridden light-framed road bikes off road with 30lbs of gear. I hate to say it, but it is a testimony to steel's fatigue resistance and toughness, that such a humble bike can handle such heavy loads on such lousy surfaces for such a long time.

Robyn's 49.5cm Rivendell



Above: The proportions and details are perfect. Below: The frame was designed without compromise to accept both Road-26 and Mtn-26 wheels. For the latter, Robyn will just lower the brake shoes in the slots. Right bottom: Nitto Noodle bars customized with pvc under the tape. And, if you look real closely, you can see the painted front dropout point, a nonfunctional detail that, to our knowledge, is ours alone.

Robyn is 22 years old, 5 feet, 1-1/2-inches tall, and athletic. She's raced a fair amount, does long rides, and had a custom bike that didn't fit her well. Like many small bikes, the seat tube was too steep, so her knee was well forward of the pedal, pulling her forward and weighting her hands more. The bars were 8cm lower than the saddle. She rode it and it hurt. This is her 49.5cm Rivendell. It has a 52cm top tube, parallel 72-degree angles, 4cm of rake. She can raise the bars above the saddle, even, to take weight off her arms. Her knee is now slightly behind the pedals, making it easy to maintain a good saddle position. The bb drop is 58cm, and with the 310mm radius wheels shown, her frame's bottom bracket is 25.2cm—a good height for her crank (a Ritchey double, 48x36, although 165s might be better). Shown here with her existing go-fast Mavic Helium wheels. With a 26x1.25 Pasela, it's ideal for touring and rough-road riding. Robyn will be riding this bike in 40 years, easy. We customized the bars for her. Robert did it with pvc tubing, shaved, cut, and taped into place. The bike is Coleman Green, the tape is grey. Look closely and you can see the creamed dropout point, which ... too bad there's no room for a close-up!



Upgrade This

by Peter Moore

... speaking as a guy who once lived in nothing but chinos and checked shirts, I can say I'm grateful for every nudge and nay a woman has given me about my wardrobe. I think of clothing as a metaphor for a man's life: He either constantly upgrades, or he doesn't. And the best relationships we have are the ones that help us upgrade our lives ... in the end, each of us shares the same goal: We all want to upgrade our lives. Well, everybody but the Amish.

David Zinczenko , Editor in Chief, Men's Health, April 2002

WHEN DID THE COMPUTER, OR TECHNOLOGY in general become the governing metaphor for human life? Or to ask the same question in another way, when did we fully commodify ourselves, see ourselves as something to be sold or marketed to a cold and indifferent world? When did we learn to look in the mirror and see only what strangers see? When did we stop believing that there was some core person with a stable identity, a consistent reference point from which to encounter, to interpret, the outside world?

My suggestion is that we can find some answers to this question by substituting "bike" for "self" in the commodification equation. If we look at nicer bikes from the late 70's through the late 80's, the lugged bicycle frame was an object of reverence, based on the presumption that it was a product of the framebuilder's art. The nirvana was a handbuilt custom frame, built to meet the at least somewhat economically disinterested but otherwise passionately engaged demands of the art of framebuilding, and not to the specifications of an accountant or the good folks in marketing. At the heart of this notion was the idea of the framebuilder's art being free from the more obvious concerns of commerce: a framebuilder did what he (or she, in the case of many of the Schwinn Paramounts built in the fifties through the seventies) had to do, and the cost was simply what it was. In buying such frames, you were supposed to think beyond terms such as "price points" and "amortization." You were supposed to in part justify your purchase based on art, craftsmanship, and other intangibles, on which you can't put a firm monetary value.

Because of this, companies used to boast of their framebuilding craftsmanship. The basic attitude was, "expensive, but worth it," and the underlying assumption was that you'd buy a nice frame and keep it for a long time, possibly upgrading the components that really mattered along the way. As long as the frame was well made, you'd taken care of what was really important. You could bolt on cheap or used parts and ride it; upgrade it as time went on; and twenty years later let your gangly sixteen year old ride it instead.

How this has changed! Now, we're expected to upgrade every few years, as improved materials and frames come along. Technology has taken the place of craftsmanship, replacing a relatively stable set of values (quality joining; quality tubing and lugs, thoughtful design, and so on) with another set that changes at an ever-accelerating pace, turning cycling into a commodity-and-technology race

that no one can win, at least for long. The frame has become as ephemeral as fashions in clothing: we upgrade when its design, its material, its technology becomes dated. The considerations of craftsmanship are long forgotten, for no one is ever meant to keep anything long enough for the true virtues of the framebuilder's art to become evident. Bikes are instead now solely designed to hit price points: a 105 level bike, an Ultegra bike, an XTR full suspension bike. The focus is on the parts, on the upgradeable and ephemeral pieces, not the heart, the core, the frame.

In the same period of years, we've done the same to ourselves, David Zinczenko's startling quotation above suggests. We're meant to be constantly "upgrading" our lives, whatever this means. Our relationships are valuable insofar as they help with such ongoing "upgrades"; and other business and self-improvement gurus likewise suggest that we're meant to be in a constant search of ways in which we can better "retool" ourselves, better "market" ourselves. Underlying all these terms such as "upgrade" and "retool" is a reflexive use of language from technology, computers, and business that suggests that any profound investment in a stable set of ever-deepening personal and physical skills, of any desire for a better self-understanding of one's own core values, thoughts, and ideals is archaic, primitive, somehow worthy of contempt, as are such willful Luddites as the Amish. What a pitiful prospect such language seems to hold out for us! We become commodified versions of ourselves, human TIG welded wonderbikes to be recycled and retooled every three years, or two in times of more rapid change.

I find such ideas repugnant. If I'm going to be a human, I'd like to be a timeless, lugged steel version of one: a dent here, where I once carelessly unloaded the bike; road rash on the left crankarm reminding me not to suddenly stop pedaling my fixed gear in wet corners; chips and scratches all over bearing witness to roads ridden, miles rolled through, years gone by. Not for me the plastic, pneumatic perfections of the Mens Health ripped waist, the "ten ways to make her beg for more," the impersonally upgraded wardrobe, the constant and relentless striving to put the best face forward in the Oakley-blue mirrors of strangers' eyes. I'd rather gradually earn a deep and quiet self-knowledge than change my CPU or purge my operating system every few years; I'd rather keep my hard-earned experience and hope that sometime before I die, it ripens, deepens, widens, and finally becomes something close to wisdom, gentleness, kindness.

Quickbeam

a new bike

We have 5,000 members, and have sold about 900 Rivendells, plus assorted Atlantises, Herons, and Rambouilletts. All fine lugged steel bikes. Joe and Curt make the Rivendells, it's their sole source of income, and right now—due to who knows what, but we aren't going to lay it ALL on 9/11 and the stock market—there aren't as many Rivendells in the build queue as we'd like. We're still invisible outside of Middle Earth. We don't advertise much, if at all. We're below the radar and can't afford to get above it. In any case, there aren't what you'd call, a sustainable number of Rivendell orders right now—"sustainable" being a number that'll allow Curt and Joe to continue making them full-time. We've got to keep them building full-time, for a lot of reasons.

One, they're people, and need employment.

Two, once they're out of builds, they aren't going to sit around with no money coming in waiting for an order—they'll do something else. Maybe Joe will work as a machinist. Maybe Curt will be a cook or a chef (he's done it before). If that happens, we aren't going to be able to call them up and ask if they still have their brazing kits (they'll have been sold), and can they interrupt their life to build a frame?

Three, I/Grant believe that Joe and Curt are unsurpassed as frame builders. Their frames are straight, strong, neat, perfect, and beautiful down to the tiniest detail. There may be a handful of builders alive today who are as good, but certainly for the types of frames we design, none are better. People who are this good at a craft that's being attacked on all fronts by material technology and big business economics need and deserve the support of folks who understand how rare they are and the challenges they face, and are in a position to help them out by ordering a bike. At some point, the term *patron of the arts* starts to make sense, but in this case, what you get out of it besides being a *patron*, is a bike that'll become your favorite the instant you sling a leg over it, and will see you to the end of your riding days.



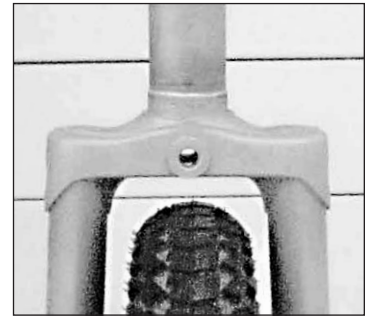
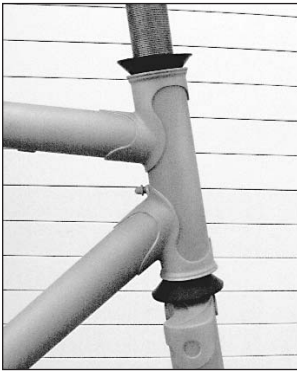
That's where we are now—we've got the materials and builders and time and interest, but we've just about tapped out our current membership, and too few people outside there know who we are.

Rivendell Bicycle Works *as a company* can do fine with fewer Rivendell orders, because we offer other things as well—things that have better margins and are a lot less hassle. If fewer orders didn't weigh so heavily on Curt and Joe, I'd be content with 20 or 30 per year, and we could take up the slack with other things. But as I've said, 20 to 30 isn't sustainable. It won't go to that. Once it goes below about 100, there's not enough for two builders. Who disappears? We don't want either to disappear.

So to keep these guys busy, we have to generate work right now. For Rivendells, we can cut the price some, but there's not much profit in them anyway, and it seems degrading to do that on such a fine frame. The idea that we'd have to chop the price, especially at a time when so many lesser frames sell for the same and in many cases much more, is depressing and disrespectful to the builders and frames. On principle, I refuse to do it.

But we'll do anything to keep Joe and Curt building. So we're thinking maybe if you order a complete bike, we'll give you a \$300 break on the parts. That means a complete Rivendell for about \$3,300—still enough to bother your spouse, but thousands less than many bikes.

A new Joe-and-Curt built frame— Quickbeam— may simultaneously keep our builders busy and help us here, and get you on a pretty neat bike.



From left to right: Head tube unpainted; One possibility for the rear dropout, although we'll likely make our own; Fork on cantilever version, showing tire clearance with 700x44. Sidepull version will clear a 700x38. These are pictures of the first prototype.

Quickbeam won't duplicate any bike we have now. It's a lugged steel single-speed frame with as many smart details as we can fit into it. It will be built just as well as a Rivendell, but will cost less because (1) You'll have the option of a cheaper (but still fine) paint job; (2) We'll use new lugs, fresh out of the oven by the time you're reading this; and they'll save about half an hour brazing time; (3) The bottle bosses won't have stars, and the dropout-tube junctions won't be the hard kind. They'll still look good, but there are ways of doing it easier (as on most high-end lugged steel frames), and that'll save money, too. (4) Curt and Joe will charge less; and finally (5), we're trimming our profit TO THE BONE.

The Quickbeam (named after a Tolkien character) won't be a down-n-dirty frame, full of shortcuts, and it won't be rushed. It'll come faster and cost less because it won't be custom, so Curt and Joe will be able to prepare the tubes in batches. They'll spend about half an hour less brazing and cleaning up the lug edges. They won't put on bottle boss stars, and they'll do the dropout-to-tube transitions a way that looks 80 percent as nice but takes a lot less time.

You'll have your choice of a JB paint job, or another one. Single-color or with an offset color head tube. Five color choices. No dimensional choices. The geometry will be "sport-toury" as opposed to racy or full-toury, and it'll ride wonderfully. It does ride wonderfully. We have two here now, so we're in a good position to say. We've made Rivendells with this same geometry, and we know exactly how to get the ride we want.

Even sizes, 54 through 68, including, for the first time, the dreaded 66. Rear spacing is 120mm. Track dropouts. Clearance for 700x38. You can get it built either for sidepulls (standard reach) or cantilevers. In both cases, it's fenderable, rackable, and comes with two bottles mounts and a pump peg. Unlike many single-speeder road frames, you'll be able to make full use of the slot without changing the brake pad/rim relationship. It's made with the same tubing as Rivendells, same lug quality (but different designs), same bb shell and crown, same fanatical build. Just a few costly details eliminated and some massaging here and there to get the price down.

We will stock unpainted frames. Delivery will be one

month from date of payment. Our full program is being developed as you read this, but in the meantime, we're here to answer any questions.

Yes, it will have a headbadge. What did you expect? We haven't gotten THAT desperate!

QUICKBEAM, Summary:

A Joe and Curt-built, Rivendell design and Rivendell quality frame for single-speed/fixed gear riding. Lugged, steel, same tubes as on Rivendells. A few frilly details cut, and priced to sell, not to rake it in. Even size, 54 through 68.

SIZING (by saddle height)

If you're comfortable with your saddle height, learn what it is. Measure from the center of the bottom bracket to the top of your saddle, parallel to the seat tube. Convert inches to centimeters by multiplying by 2.54. If you don't know your saddle height, measure your pubic bone height (in centimeters) and subtract 10. To measure your pubic bone height, stand barefoot with feet 10 inches apart. Put a metal tape over the cover of a thin hardback book (*The Cat in the Hat* is a good size), and pull the book up to your pubic bone. Hit the BONE. Pull HARDER THAN THAT. Pull till you're sure it's at the bone. Have a friend take the reading on the floor. Subtract 10, and that's your saddle height (minor fluctuations won't matter for sizing purposes, since seat posts slide up and down).

Saddle Height	Quickbeam size
68 to 70	54
70 to 73	56
73 to 76	58
75.5 to 78	60
78 to 80.5	62
80 to 82.5	64
82 to 85	66
85 to 89	68

I don't have skin cancer, but I know lots of people who have had cancers removed, and it just seems odd to promote cycling, encourage riding, do whatever it is we do in that regard, without even addressing the dangers of exposure. Don't gloss over this or avoid it because you think you know what it says and you don't want to hear it. It's a really important column, and it's not all bad news. Dr. Bernie here is a bicycle-riding dermatologist, he lives in Texas, and there's not a better guy out there to give some practical advice about what you can do to protect yourself. For our part, we aren't going to harp on this, but we've decided to offer some of the products Bernie mentions here, because they aren't all that easy to find—Grant

How to Beat the Sun

by Dr. Bernie Burton, MD

DR. ALBERT KLIEMAN, AN EXPERT on the skin and aging, says that if you never went out in the sun, "you would look like your armpit at the age of 90." There are at least three ways to take that—even without considering the hair—but you know what he meant. It's not just about looks, though. In a research project at Johns Hopkins University, a study showed the number one factor that related to physiologic age (how you feel) was how you perceive yourself.

When the Sun Shines on Your Skin ...

You skin dries out and loses its elasticity. Its natural healthy color fades to blotches. Wrinkles increase and get deeper. Your scalp and armpit hair thins, and your chin and lip (moustache) hair thickens.

The sun also causes actinic keratosis (AK), basal cell carcinomas, squamous cell carcinomas and malignant melanomas.

How to Beat the Sun

1. Limit your exposure to the sun in your first 18 years of life. Eighty percent of the sun exposure responsible for cancer and aging occurs by the time you are 18. Too late for you, maybe, but not your children.
2. Ride before 10 a.m. or after 3 p.m.
3. Wear SPF 30 or higher.
4. Cover up with clothes. Lightweight, long-sleeved shirts (often recommended in Riv propaganda) are a good idea. If you want to go all out, get a new fabric treatment just introduced by RIT, the dye people, called Rit Sun Guard. It gives any garment a SPF 30 rating, and will last about 25 washes. A light, long-sleeved shirt treated with Sunguard, and you're all set.
5. Wear a hat when you aren't riding.
6. Wear sunglasses to prevent wrinkles and cataracts.

7. Moisturize your skin; and when you wash, use a mild cleanser like Dove, Pure and Natural, or Cetaphil.

You Can, Actually, Reverse the Effects

1. Move to a warm climate. This assumes you're independently wealthy and have nothing and no friends or family to tie you down.
2. Avoid the sun. This assumes you want to stay inside all the time.
3. Moisturize properly. This you can manage, right?
4. Use retinoic acid. Retinoic acid, first available as the anti-acne drug retinoic acid (Retin-A) over 20 years ago, was developed by *the* Dr. ("Armpit") Kligman. In the field of aging skin, it is as close to a miracle drug as there is.

Retin-A reverses both sun-induced and non-sun-induced aging, and decreases the incidence of precancerous lesions. It's not a quack drug; it really works.

Retin-A binds to receptor molecules in the skin, thereby blocking enzyme metalloproteinase secretion, and that's the key. It exists in many forms, Retin-A, Renova, Avita, Differin and Tazorac. In general, the stronger and the more you use, the better.

Unfortunately, many people can't tolerate most of these formulations. The mildest to date are Avita and Renova 0.02. Start slowly, wash gently as before, and slowly increase the amount you are using on your face, arms, neck, chest, wherever you like.

Many other substances are sold as anti-aging products, and some (Retinol, for instance) sound like Retin-A. Most make you look younger by swelling your skin with water, as you might do with a wash cloth. Retinol-containing substances are sold as age reversing compounds, but since there are no retinoic alcohol receptors in the skin, they don't work the way Retin-A does.

How to Choose a Sunscreen

Use a sunscreen that's SPF 30 or higher. One of my patients with vitiligo (a total loss of pigment) spends a lot of time in the Texas sun, and has tried lots of different commonly available sunscreens, and the one that works for him—pigmentless and out in the Texas sun—is Ocean Potion 50. (www.opotion.com.) *(This so impressed me that we've started to carry it—because I couldn't find it anywhere around here.—GP)*

Guidance if You've Had Too Many Skin Cancers

Unfortunately, a number of us have already suffered from one (maybe too many) or more skin cancers. If you suffer from a recurrent skin cancer, a sclerosing basal cell, a poorly or moderately differentiated squamous cell carcinoma, or a cancer of the nose, ears, eyelids or mouth consider MOHS surgery for its removal. The MOHS technique will significantly decrease the chance of the lesion recurrence.

If you've had facial skin cancers and/or many actinic keratoses, consider a facial dermabrasion. Dr. John Yarbrough of New Orleans, Louisiana, has shown that cancers and actinic keratoses rarely reoccur after dermabrasion.

One last note—several studies have shown that these lesions are significantly decreased by decreasing dietary fat intake. A 10% fat diet (very hard to do) has shown 90% decreases in AK's in six months.

Last Words

It's normal to want to keep up your body as well as you keep up your bike. It's not just for shallow and vain people. It's about keeping your skin, the largest organ in your body, as healthy as it can be. Since you ride a bike, presumably you do this outside, so your needs are greater than those of a couch potato. Help yourself and protect your children.

What to Buy and Where to Buy it

The Best Sunscreen?

SPF 30 is much more effective than SPF 15, but are all brands equal? As Dr. Bernie said, his patient with vitiligo (a total loss of skin pigment) who spends a lot of time in the Texas sun recommends Ocean Potion 50. We're planning to stock it from now on, but you can also get it online (www.opotion.com).



Solumbra Clothing

From a company called Sun Precautions. There's a catalogue and a website (www.sunprecautions.com), and a few dealers here and there. Telephone for a catalogue: 1 800-882-7860. The company is in Everett, Washington. Sun Precautions was started by a guy who got skin cancer at the age of 26, and he probably figured out where he had to live to avoid the sun after that.

I lost the catalogue, couldn't find it in time, and it didn't seem worth it to send off for another one and delay the Reader another week or so. It was one of those "judgment calls." The catalogue was bluish with someone wearing a white outfit on the cover. A hat, too, and it said SOLUMBRA.

RIT Sun Guard

Sun Guard is a sun treatment for your clothes. You just put it in the washing machine with a load of clothes and it gives raises their sun protection factor to around 30, good for about 25 washes.

I/Grant bought two boxes at the local Albertsons. It probably makes the Solumbra clothing folks nervous, is my guess.



Retinoic Acid

Only by prescription in the U.S. Most dermatologists would be happy to give a prescription to anyone, but many insurance companies won't pay for it. Physicians who work for managed care health care providers may not be allowed to provide it, and some GPs and Internists might think of it as only vanity. You can buy it over the Internet, and pay more per tube with Dr visit included in price. In Mexico, you can get it over the counter.

Retinol (retinoic alcohol) sounds like retinoic acid, but it's not the same, and doesn't work the same.

For the next few issues, and who knows?, it may go on for years, Rivendell member, bicycler, and UC Berkeley senior science writer Michael Barnes will address an aspect of bicycle riding and turn it into a big ball of science that even C- science students can understand, or at least use. This is his first such column.

Force, Horsepower, Speed, Math, and Climbing

by Michael Barnes

How much energy does it take to ride a bicycle up hills, into headwinds, and against rolling resistance?

The answer relies on a spreadsheet model based on the book *Bicycle Science*, by Whitt and Wilson. You can download a copy of the spreadsheet model from www.ucop.edu/~mbarnes/bike.xls or from the Rivendell site at www.rivendellbicycles.com. Detailed instructions are included there, so I'll skip them for now.

In this spreadsheet, you punch in the combined weight of you and your bike, the slope, the speed, and the headwind. Then it tells you the amount of power in watts you are exerting to ride in those conditions. Using a few calculus tricks the model calculates how much an extra pound of weight will cost you in various speed measures at a given power output, and it gives you some additional speed and energy information too. Please, don't take my word for anything that follows. Download the model and prove it for yourself. It's fun! The model looks like this:

DATA

6.00% gradient (opp/adj)

170 weight of bike and rider (lb)

10.495 speed (mph)

0 headwind (mph)

RESULTS

250.00 power required in watts

-0.049 speed change in mph due to extra pound

0.47% percent speed loss due to extra pound

4.34 cost in feet/min per excess pound

1.62 seconds lost per mile per excess pound

SPEED INFO

343.03 seconds to go one mile at this speed

15.39 speed in feet/second

55.31 vertical climb rate (feet/min)

But first, some explanation about force, work and power, and how to measure them. Picture a weight of 550 pounds sitting on the ground. Gravity is imposing a force of 550 pounds on that weight. If you lift this weight, you are doing work. If you lift it exactly one foot, you have done 550 foot pounds of work. Likewise, if you lift a one-pound weight 550 feet, you will also be doing 550 foot pounds of work. To calculate foot pounds, you just multiply the weight by the vertical distance it is lifted.

If you lift 550 lbs one foot in one second, you are exerting power. That 550 foot pounds per second is better known as one horsepower (and one horsepower is roughly 750 watts). Imagine a bicycle-powered elevator weighting 550 lbs. If you can lift the elevator at a rate of one foot per second, you are exerting one horsepower. Got it? Power is the rate of work—it's about moving an object a given distance against a given force in a given time.

CLIMBING: How Much Does Weight Matter?

Let's see. Out in Rivendell country, the skyline is dominated by Mt. Diablo, with a summit of 3849 feet. The road up climbs 3260 feet in 11.2 miles. The bottom part of the road is a loop you can climb from either the north or the south to a ranger station at a saddle. On a clear Spring day just after a rainstorm this is heaven—the wildflowers are in bloom and you can see all the way to the Sierras. But from there the road to the top can be hellish (they don't call it Diablo for nothing), a short but steep climb of 1670 feet in 4.5 miles, for an average grade of seven percent, including a quarter-mile finish of 17 percent.

Let's say you've already climbed the six and a half or so miles and about 2000 feet up the northside to the ranger station, and you've got another 4.5 miles and 1,650 vertical feet to go. It's a warm day and you're pretty sure the drinking fountain at the top is working. You could stash your extra water bottle, your jacket and your food (at about one pound each) behind the nearest bush and save about three pounds. How much difference will three pounds make? In your 36 minute climb to the top of Diablo, you'll save 34 seconds. Is it worth it? You'll have to decide for yourself. But if you're hungry at the top, and freeze on the way back down, and find that somebody stole your gear ...

RR27 Quiz

Only a perfect score wins a prize. You needn't be present to win. Rivendell employees and relations can play, too. One entry per person. Answer using the form on p. 5.

1. Brad Wall's twin brother is _____.
2. Luka is not a greyhound. He is a wire-haired fox terr____r.
3. Brad's riding shoes are _____.
4. Is there photographic proof that Luka has seen a tumbleweed?
5. Vitiligo is a disease that causes loss of _____.
6. In knee-talk, IT stands for _____.
7. If your IT band is hurting and you still have a ways to go, _____ (raise/lower) the saddle and point your toe _____ (inward/outward).
8. Chondromalacia can be caused by a saddle that's too _____.
9. Charlie Cunningham's first bike was different from all of his other ones in two fundamental ways. It was steel, and it _____.
10. Jacquie Phelan's college?.
11. The Vision Thoroughbred's seat tube angle is about what?
12. **True or False.** The Thoroughbred is an ideal design for flattish and rolling paved roads, but is kind of hard to crank up steep hills.
13. Chuck's Mercian Superlight was new in what year, about?
14. **True or False.** A slashed sidewall can never be made as good as new.
15. A normal handlebar ramp is about how steep? We're not looking for a single, precise figure here, just a range. Dia-Compe just came out with a new road lever.
16. Considering that it's 2002, what is odd about the design?
17. Compared to all other in-production road levers, what is its unique feature?
18. What is its model number?
19. Considering that Campy and Shimano brakes have names such as Record, Ultegra, Dura-Ace, Chorus, and Athena, who puts more work into model names: Campy and Shimano, or Dia-Compe?
20. For maximum brake opening when installing or removing a wide-ish tire on narrow rim, it's best to adjust the caliper with the barrel adjuster _____ (up/down) and the quick-release _____ (open/closed).
21. Which modern fancy sidepull brake lacks a quick-release?
22. **True or False:** Retin-A is also sold as Retinol.
23. Our new frame production coordinator is named Mark Abel_.
24. The new road bike we hope to introduce in the Spring of next year is called the _____.
25. **True or False.** The new bike's frame will be modeled after the Rambouillet frame, with about the same geometry, clearances, and so forth; but in order to get the selling price down to about \$1300, it will be TIG-welded in an upscale bicycle factory in China, the same factory that makes bikes for many of the well-known Italian brands. We would like to have been able to make this bike in Japan, with lugs, but cost considerations forbade it, and we hope you'll understand, and not think we're selling out or caving in. We're just looking at ways to simplify the building while still bringing you a perfectly fine bike.
26. When mounting a tire, it is probably best to seat the tire around the valve stem (first/last). Although it don't make all THAT much difference, so long as you do it right.
27. What do Tim Bozorth and Brad and Carter wall have in common, geography-wise?
28. The new woolywarm website is _____.
29. **True or False.** On a lower head lug, it is generally _____ (desirable/undesirable) to have a point on the socket that contacts the underside of the down tube.
30. **True or False.** When pressing in a headset using All-Thread and hardware store stuff, it is best to use blocks made of soft pine, so you don't damage the cups.

ANSWER USING THE FORM ON PAGE 5.

Notes & Disjointed Ramblings about What's Going on Inside Here

(“here” being the offices of Rivendell Bicycle Works)

WoolyWarm should have its own www.woolywarm.com website by now, orderable and all. You can order the normal way, too, from rivendellbicycles.com. We wanted a separate site for it because in time, if all goes way better than it actually will, it could evolve into its own Little Co., and may branch out into not just cycling clothing, but sort of an All Wool Clothing For Any Sport sort of thing, and if that happens, it would be better for it to have its own site, so rowers and climbers wouldn't have to wade through derailleurs and handlebars. I'm nervous about how the “shrink to fit” sizing is going to work by mail. The sizes are perfect, but some people will be put off by that, or won't believe it, and they'll get the wrong size. I think once somebody figures out the size that works, no problem.

Our bag line is also undergoing a major change. The fabric is now a greenish khaki color, and some details are different, but most of last year's models (Boxy Bag, Hobo, Banana, Candy Bar) are set, and we're working on and should have by now the Cartwright Series of rear saddlebags—Hoss, Adam, and Little Joe, in decreasing order of size. In time we'll get the rear panniers back, and then a fanny pack and day pack; maybe a messenger bag (big demand for this).

The web is a great thing for us overall, but a disaster for me personally. I know people have the right to say whatever they want, but I sure don't like it when they say mean things about Rivendell being out of stock, and what is Rivendell, anyway—a “feel good” company or a business? Then others chime in, saying “yeah, I ordered X and they didn't have it, either, brother!” We have lots of balls in the air. Some would say too many, but I don't think so. Most of our menu

is custom made for us, or we're the only importers, and in almost all cases it's made by small manufacturers who have their own supply issues. That's exactly why you don't find it in bike shops nationwide. We recently got an increase in our line of credit, so we can do even bigger Nitto/MKS/Tire orders than before, and that will help. But please go easy on us. A lot of jobs are at stake here, and we're trying our best and making improvements all the time

Over in Japan right about now, there's a small movement, but seemingly an influential or at least well-connected one, to resupply manual and simple, traditional versions of many bike parts that are becoming harder to get. For instance, Sugino is making a version of the Rene Herse crank. It has the overall look of the original, with some modern tweaks to it. It's not what you'd call ready for prime time (165mm, 170mm arms only; 48x38x28 rings in a unique bolt pattern), but it wasn't designed for the American market, anyway, and that, sometimes, is a good thing right out of the gate. The fact that it's even happening is a good glimmer, I think. To address the same small market, Dia-Tech has made the 204Q brake lever. There's nothing fancy or high-brow about it, but the design is smart, and unique in today's world. It's a non-aero lever, for one thing. It'll be available with either black or brown (gum?) hoods. And built into the lever is a quick-release of the type you used to see on touring levers in the mid-'70s—the kind you flick to the side to let the lever open up more. The neat thing about that is that it allows you to use a sidepull brake on a relatively narrow rim with a relatively fat tire, and still have the calipers open wide enough to let out the tire fully inflated (or put it back in). That's always been

a bugaboo. Here's a tip: Adjust your brakes with the barrel adjuster all the way UP (opposite of normal) and the caliper quick release all the way DOWN (normal). When you want to take out your wheel, screw the barrel adjuster down, open up the caliper quick-release, and if that's still not enough (it probably will be), flick the 204Q's quick release to the side. You may not have to do all three, and you will find the combination you prefer, but it sure is nice to have this added boost in the brake lever itself

Some of you know that we're planning to make, for next Spring sometime, a complete road bike based on the same frame design as the Rambouillet, but retailing, complete, for about \$1300. We'll have a prototype in August, and will show it on our site. It's name is Romulus, and it'll be built with fine butted CrMo (two tubes heat-treated), the Rivendell investment cast bottom bracket shell and fork crown, and a new set of investment cast lugs (you've seen them by now). No saddle or pedals, all Nitto bar-stem-seat post, Silver Bar-End shifters, Shimano 105 derailleurs and hubs, Sugino crank, Shimano brakes, either Ruffy-Tuffy or Roll-y Pol-y tires, Japanese Araya rims. We'll sell it directly and though a small number of dealers (in some but not all cases, the same dealers as sell the Rambouillet and Atlantis). It will have a site of its own, too: Romulusbike.com.

The Reader is changing some, but I hope you think it's getting better. Starting with this issue, it will be available in a small number of bike shops, which is why we put a photograph on the cover this time. If we just had no photograph and a headline such as When Kids Tied Old Sneakers Together By the Shoelaces and Flung Them Up Onto Telephone

Wires or whatever, it might send a funny message and not hail the right audience. Also, there's a slight effort to branch out, at least in our reviews. You probably have noticed that already, in the review of the Vision Thoroughbred. Even though it's not a classic, or lugged, it's still a smart bike, and I predict it'll influence many others to come. So we'll cover a range of smart bike things, whether or not they tear at our personal wallets & heartstrings. I don't know how that will affect how willing dealers will be to sell a publication that sometimes or regularly talks about products or bikes that those shops don't sell. It's kind of a complicated thing, combining a bike-product company with a publication. The possibility of conflicts-of-interest are all over the place, so that's one thing we're wrestling here. There's no question that our focus and affections are for the Normal Stuff, however you like to categorize it

Mark Abele is working hard on membership, and one thing he wants to do, I know, is sort of enlist your help. If you're connected to a club or a Big Organized Bike Ride, and can arrange to circulate Readers or catalogues, send him an email: Mark@rivbike.com. There'll be something in it for you,



not a lot, but something, and if you're predisposed to helping anyway, this may work out for everybody. No pressure, but if you can, contact Mark

Since Andrew left, Mark's the contact between you and us, us and Joe and Curt and Joe Bell, and he'll be the one who sends you the forms and answers your questions, tells you what you owe and when your frame will be here. This has always been a challenging job, mainly because it's never been anybody's only job, and there are about a quintillion details to keep track of. Mark will do fine.

It is hard for me to think about Mark just as an employee here, since I first knew him as a customer, and then as a rider on the mountain, where he is unquestionably the fastest 43-year old ever to climb it. The 6.5 mile road to the halfway point climbs 2,000' and averages just under 7%. I'm not saying Mark is incapable of a luxury ride, or that he's obsessive; but he is defi-

nately fast, and has recently ridden something in the high 28s. You'll talk to him when you call in an order, too, and he can answer anything you throw him, bikewise. There may be a quirky question here and there that muffs him up ("My Raleigh track bike has a Zeus crown. Is there room on it to drill a hole for a front brake?"), but nothing even halfway normal will faze him.

Website News: The Gallery section of the website has recently been given a makeover, and it's easier to find now, too. We also now have a WoollyWarm website (www.woollywarm.com) that's separate from our normal site (but it links). It's the work of Henry "I-rode-PBP-unsupported-3-years-ago-in-less-than-50-hours-on-a-Rivendell with fenders, downtube friction shifters, and-heavy-touring-tires" Kingman. It's spartan by design, but we'll figure out ways to add color and complication as time passes, and meanwhile it's the easiest way to find out about what colors are available, what new styles might be coming, and so on.

Also on our main site is an Employment button. We're not hiring now, but are collecting resumes in the odd event that we do something right and business takes off later on.—GP

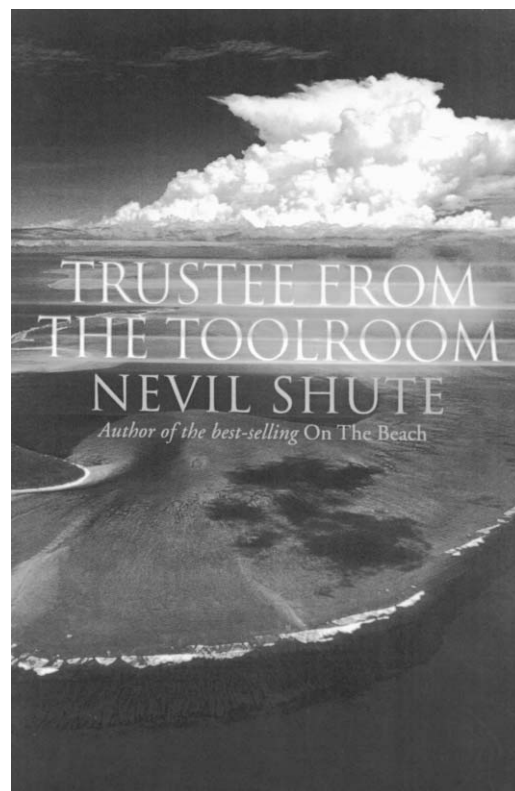
Non-Bike Book Review

Trustee from the Toolroom

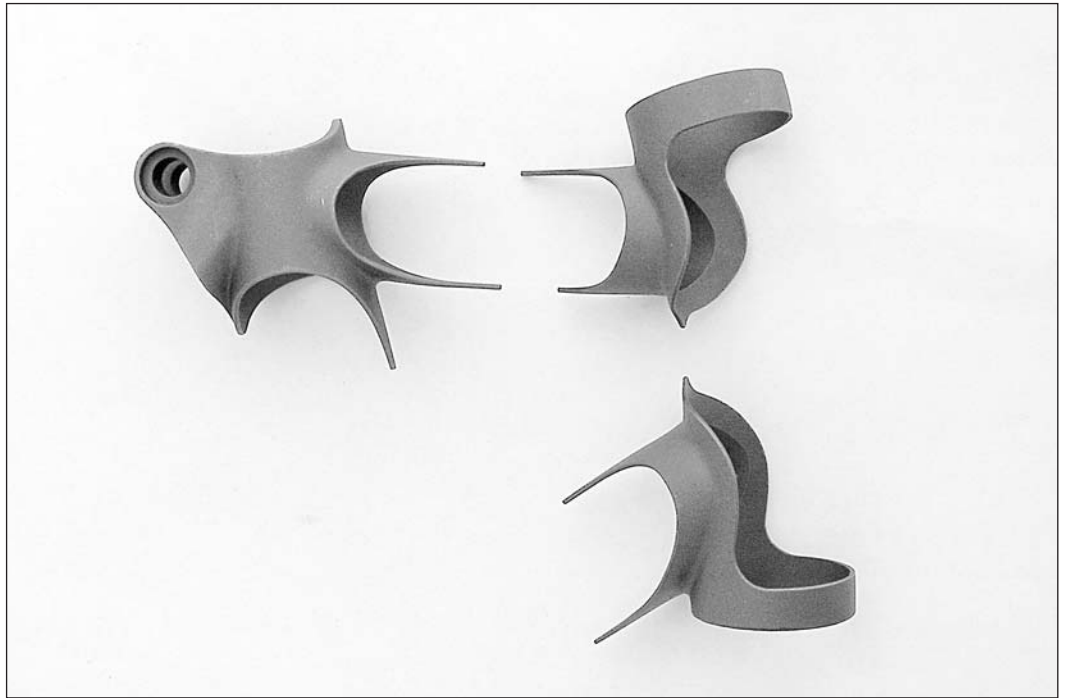
by Nevil Shute

If you bought the last book we reviewed, *Pied Piper*, then you might not need any convincing on this one, because it's by the same Nevil Shute, and the way it goes with Nevil Shute is that once you read one of his books, you want to read another. This one here is a really good book whether or not it's your first Nevil Shute. It's fiction, and it's about a guy who makes miniature models for a living, and a trip he takes to Tahiti. I'm trying hard not to give anything away, so if that doesn't sound so interesting, how's this: First, we have a moneyback guarantee. No bookstore in the world has that, I bet. Second, if you do read it and like it, you can count on being able to sell it to a used book store, because anybody who deals in used books knows Nevil Shute, or ought to, so you'll at least be able to get something back from it. Third, you'll be the odd duck if you read this and don't recommend it to a friend. Nevil Shute books aren't that easy to find, even at Amazon. We have 30 of them. They are not a cash cow here, but more like ... a service we offer to our subscribers (kind of thing). *Trustee From the Toolroom* is a good tip. If you read fiction, you will like this book.

#23-025: \$13



In every issue we look in detail at a lug, being that we like lugs so much. We cover a variety, from good to bad, old to new, ugly to pretty, ones we like and ones that aren't our cup of tea. "Lugs" also includes fork crowns and bottom bracket shells—in other words, any frame fitting that requires brazing, rather than welding. Because lugs are the best way to join tubes, after all, and even the weird ones deserve a good look. In each issue, we'll show you lugs that strike us as unique, special, or at least worth a good long look.



Here's the whole set. All the lugs match, with similar long points and curves, and the overall look is one that's modern, hip, racy ... but pretty good in spite of all that! The seat lug is really clever.

A Look at Lugs, Part 10

These are made by Long Shen, and are right out of the Long Shen catalogue. At a distance, they look like normal lugs, with long points top and bottom similar to of a popular early-'70s Prugnat lug set, but there's more here than just long points. Besides, the Prugnats were stamped and welded ("pressed"), and these are cast.

The most distinguishing lug in this set is the seat lug, and its most distinguishing feature is the cast-in sockets for the seat stays. On a painted bike, it's not obvious at first how, exactly, the seat stays attach. It wasn't to me, anyway, and I've seen plenty of bikes made with this style seat lug (usually Italian, often de Bernardi frames). On a painted bike, I don't think it's an attractive look, which means it's just not my preference, but when I look at these bare lugs, I just think "clever, cleverer, cleverest."

It's clever because it solves the problem—not a huge problem, obviously, but an issue, at least—of how to attach the seat stays. On all of our bikes we do it on the side of the seat lug, using a cast plug that fits into the end of the seat stay and gets brazed onto roughly the midpoint of the seat lug. You've got to line things up right and make sure the braze is good, because if it's not, shearing forces will take it right off. It's not a common thing, but I've seen it happen once in my life, years ago. The other common way is to braze the seat stays

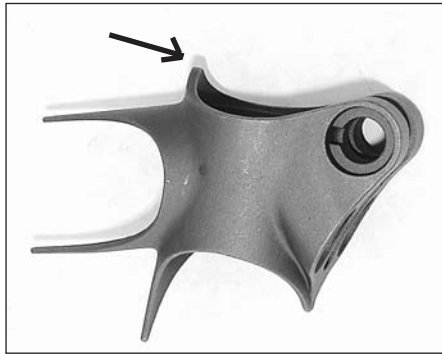
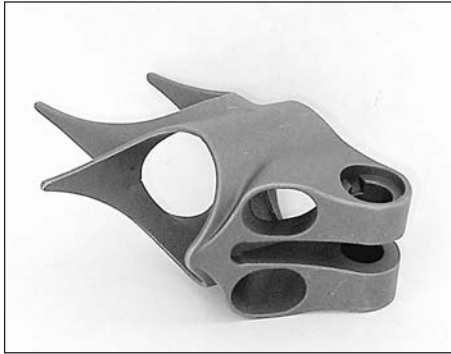
directly, without a plug, to the back side of the seat lug, or lower down on the seat tube. Chuck Schmidt's old Mercian, shown elsewhere in this issue, is made that way. There are other ways, but those are the most common.

The way it's done with these lugs is close to the direct-braze "fastback" method, but instead of brazing the seat stays directly, they fit into the cast-in sockets and get brazed up like any other frame joint. It has to be the most secure way of all.

It's cleverer still because the top of the seat stays don't need to be perfectly coped to nestle against the seat tube or lug. A half-backed cope is all that's needed, then just flux them up, insert them, and braze them in.

The third clever thing about this neat seat lug is that, as you'll see if you look closely, the sockets are ovalized some. This allows the seat stays to float and find the best angle to meet up with the rear dropouts at the other end. It's a labor-saving feature that works, and doesn't compromise anything for it.

Long Shen makes these. There are other similar lugs in the line that take larger diameter seat stays. The sockets on these here are sized for thin, road-style stays.



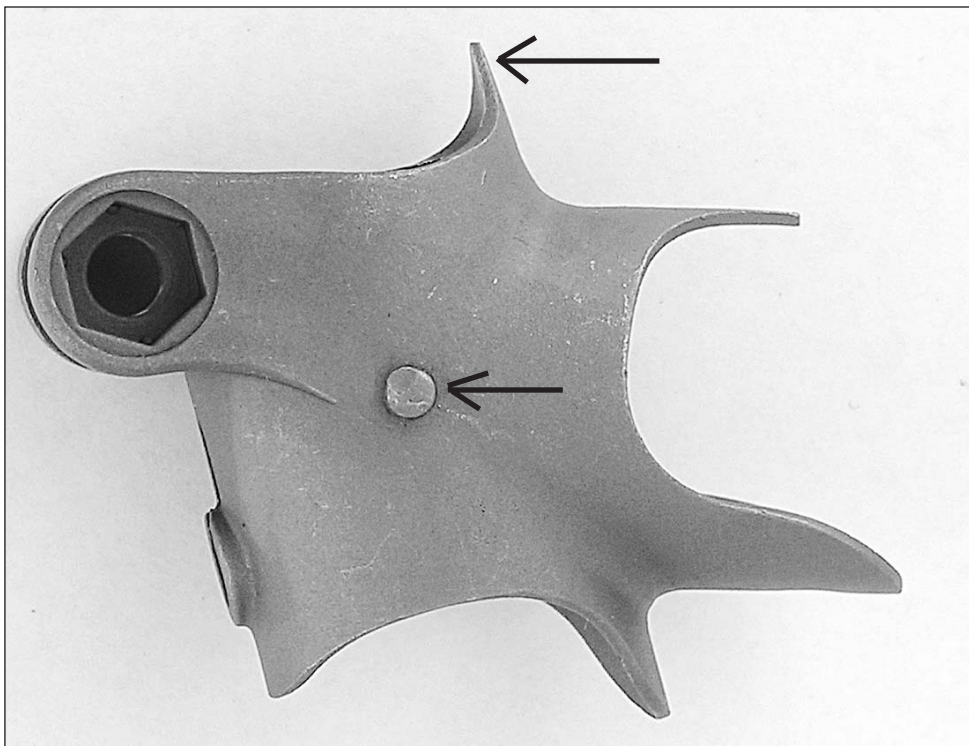
Above and Right: Directly above is a good view of the cast-in seat stay sockets. The seat stays fit right in there, with enough room to wiggle and find a good line to the dropouts. Top and right, a side view showing not just the long points, but the hidden sockets. You'll also see the "female" side of the seat binder area. This is a strong design that'll never get pinched from overuse or a ham-handed mechanic. But see the notch in the binder area (at about 9:00)? It's purpose is to stop a nut from spinning when you tighten the bold from the other side. You can get binder bolt/nut assemblies to fit this, but they aren't all over the place as they were in the '70s. Finally, see the front point? It's stubbiness is out of character with the lug's other points, but they do it that way to make shipped frames less likely to get damaged in shipping. Of course, a section of pipe, or good padding, would solve that.



LEFT: The top lug, sometimes called the upper head lug, holds the top tube to the head tube. This is a nice looking one, simple, with elegant points and a neat, round radius at the arrow there. The 74 on the rim is the angle it's cast to; the number helps a builder pick out the right lug, and its presence suggests this same style was made in other angles, too. The number gets ground off before painting.

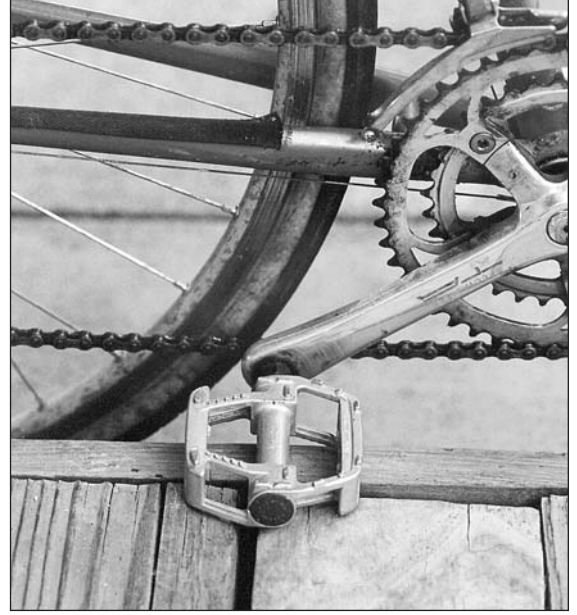


RIGHT: The 60 is the angle, again. Note the point on the downtube-side socket. Points there are not a fantastic idea, as they can lead to "can-opener" style fatigue failures.



Here's a sneak peek at a new seat lug we're developing for a bike due next Spring. We were going to show all the lugs from this set, but one of them isn't just perfect yet, so we're showing just the seat lug and trying to tie it into the story about the other lugs. because sometimes it's interesting to compare different lugs.

In this case, the female end of our seat binder uses a hex nut, available at any hardware store, and a matching M6 x 20mm bolt. (All of our current frames use this same bolt). The top front point (arrow) is thin, so it sits up nicely against the seat post, but is vulnerable in shipping (so we protect it with a pipe). The thing the lower arrow's pointing to is a raised post, about 2mm high. It's at the centerline intersection of the seat and top tubes, and fits into a corresponding hole in the backside of our new seat stay cap, which also is designed for the new bike, and provides a slight mechanical bond, but mainly serves as an aid to the builders, so they can always locate the plug perfectly. It wouldn't make sense if this lug were to be used with other caps, or vise versa, but since they're only going to be used together, it's a smart and better way to do it. Not by a mile, but by a little, for sure.



Two examples of how to balance your bike. Left, there's this rocky ledge, you see, and Andrew stopped to water up at a water faucet partway up the climb, and used it to balance his bike. A real actual example. Right, Grant shows another way. This one's on a wooden deck, much lower, and was a posed photo set up just right just in case the other didn't come out. The text below explains how to do it, and it works with all pedals, toe clips, pedal systems, anything.

Tricks of the Trade, Even Though It's Not Exactly a Trade, I (first in a series)

Your Crank As a Kickstand

You can go a lifetime and not learn this one, but its a cinch and makes perfect sense, and if you call yourself a cyclist, you might as well learn it.

Even if you don't have a kickstand on your bike, there are times when you'd rather not lay your bike down, and that's when this comes in handy. To make your crank and pedal serve as a kickstand, you do this:

1. Find a ledge of almost any height that your pedal can reach. For most of us, that means something between about 4-inches and about 15-inches. Most ledges in the world fall within this range. Curbs, benches, rocks of the right shape—ledges all the same, by any name.
2. If there's a slope to the ledge, aim the bike downhill. If there's no slope, don't worry about it.
3. Position the pedal closest to the ledge behind the bottom bracket, between about 5 o'clock and 1 o'clock.
4. Tilt your bike slightly so that it leans into the ledge, with the pedal resting on the ledge.

Leaning the bike this way makes the ledge push upward on the pedal, trying to drive it forward. But a ledge can't follow through with the pedal stroke, so the bike just stops there. There's got to be a better way to describe it,

and no doubt a physicist or an eighth grader could do better, but once you see it, you'll understand how it works, and at that point the explanation doesn't matter. What matters is it works, all the time. It's easy. It works on loaded and unloaded bikes, and in every country of the world.

There's also a variation of this using a pole or a parking meter, when you don't have a ledge handy. Same deal—you use the pedal against the pole, and position the bike in such a way that the bike's weight tries to pedal the bike forward, but the pole stops it. Practice a little with a crummy bike before trying it out on a good one, and don't expect it to hold your bike in a hurricane. But when all you've got is a ledge or a pole, here's how to make them work for you to best effect.

If you have a good tip and would like to share it with others, submit your idea to Grant (gep@rivbike.com) with TIP/Your Name in the subject title. Just describe it briefly, and if it makes the cut, it'll show up in a future Reader. Please understand this is not a "for pay" thing or a way to break into journalism. I'm just looking for more ideas. We've got a few here, ourselves—not having just fallen off the turnip truck, etc.

Give a Membership! (or renew yours)

We need more members, pretty simple. If you're already a member, you know it's a pretty good deal—\$15 for a year's worth (4 issues) of the Reader, and the catalogues, and a \$10 merchandise credit toward anything we have in the catalogue. Plus decent reading. It's not like you'll find an 8,400 word interview with Charlie Cunningham anywhere else, for instance.

Please think of people you know who might like in on all of this, and buy at least one of them a gift membership. The giftees needn't be shellac-and-twiners, or fans of leather saddles and steel toe clips to like our catalogue. We also sell erasers and soap, and you can't tell us your cycling friends don't make mistakes or need a washing now and then. And the *Reader's* meanest critic will admit it's among the top ten ad-free cycling publications currently in circulation.

When you send us \$15 for a gift membership (or a renewal), we'll send them or you at least 4 Readers in the next year, and at least 3 catalogues and four Flyers. Somewhere in all of that will be coupons worth at least \$75 on qualified purchases, and to top it all off, we'll credit your account \$10 for each gift membership or renewal you buy when you use this form. Photocopy it if you need more room. Thanks.

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