

A CITATION FROM THE CADENCE COPS (RR-6)

In today's Ann Landers column there's a letter from the mother of **two** young sons, one adopted. They were walking around a shopping mall when a stranger commented that the **two** boys don't look alike, and the 6-year old explained: "I'm adopted. That's when you have the same family but not the same face."

So ... the Olympic Superbikes won the wind-tunnel tests but apparently were difficult to control. Though I've not read any explanation of why that might be *so*, but I have my own theory. Right now it's called the StiltStep Factor, but by the next issue it may be something else. On another Olympic note, I can't imagine why anybody would cheer on the Dream Team playing against a country the size of Delaware. Which reminds me—is this the first Olympic coverage in **24** years that didn't show the John **3:16** signs in the audience? Maybe I just missed them. Either way, it's okay with me.

Despite the generally dismal tone of the Progress Report, life here is great. Spencer and Gary are wonderful to work with. Mary's paying the bills now, thank goodness. We've sold **179** frames by now—about **47** percent Road, **46** percent A/R, and the rest Mountains and customs. Coming up soon: Track and Cyclo-X frames. We can't diversify much beyond that, because what else is there? Tandems are hard, recumbents—we'll leave those to the people who already know about them.

The membership drive was a dud—just **175** new members, bringing our total up to **2,790** or something. I think it's hard to sell friends on this thing, *so* I was surprised that Steve K. sold **47** and won a free bike. How'd he do that? Anyway, we've got to get the membership up to **5,000**—I think that's the figure that'll let us breathe easier. If you haven't renewed and you've gotten all six **RR's** now is the time. Of our **2,790** members, fewer than **800** have renewed. If you don't plan to, that's okay, we won't come a-callin', but if you do plan to renew, now's a good time. Meghan's laying out this **RR**, but the plan is to bring all this in-house *so* we can have more control and be more timely with the mailings. **RR7** will be our first attempt (Mary will do it). Spencer's in school part time again—sculpting, graphic art, and fig. drwg, if he can get in. Peter may be here a little. He used to rep Mongoose, he's been a road rider for **17** years (mostly Tomassini, now Rivendell), and he knows bikes. —Grant

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THE RIVENDELL READER

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but that's just our preference.
Handwritten submissions are
fine, too.*

BY CHRIS LOWE

THE HISTORY OF 'REYNOLDS TUBING'

Reynolds began in 1841 when John Reynolds took up shop as a manufacturer of nails. The business prospered over the next 34 years at which time he retired and left the business to his sons Edwin and Alfred John. Sadly, Edwin died in 1881 leaving Alfred John Reynolds alone at the helm. By 1890 Alfred John's two sons, John Henry and Alfred Milward, joined the business.

As the century closed, the company had developed an excellent reputation in the nail business and Alfred M. Reynolds began to look at ways in which the company could expand. In 1895 he began examining a problem which cursed many frame builders of the day: how to join thin, lightweight tubes without weakening the joints at which they are connected. It was a question that would forever shape the future of not just the Reynolds company, but of all bicycle manufacturers Reynolds developed a way to increase the thickness of the walls at the ends of the tubes only, while not increasing the tubes outside diameter—a process we know as “butting” the tube, and it was a huge breakthrough. Until then, frame builders had to manually butt the tube by inserting a liner into the end of each tube to reinforce the joint or use heavy, thick tubing. In 1897 Alfred M. Reynolds and J.T. Hewitt, an employee of the company, took out a patent on their “butted” tubes.

A year later John Reynolds & Sons Limited decided to spin off the tubing business into its own separate company to be known as The Patent Butted Tube Company Limited headed by Alfred John Reynolds and his son, the inventive Alfred M. Reynolds. In 1902 they published their first catalog devoted to cycle tubing. The catalog boasted of a set of Reynolds butted tubing weighing only 4 1/2 pounds. Competition in the cycling industry was fierce at the time but Reynolds was generally acknowledged by the cycling press as being the best. As time progressed the company would also manufacture a range of handlebars (which at the time were made of steel).

In 1914 war erupted throughout Europe, and Reynolds received contracts from the government to manufacture tubing for military bicycles and motorcycles. In 1916 they received an important contract to manufacture tubing for use in aircraft. The contract was important as Reynolds would continue to be closely involved in the aerospace industry right up through to the present day. As war contracts continued, the company expanded to accommodate them, and in the autumn of 1917 relocated their headquarters to their present location: a large Tudor period house known as Hay Hall.

When the War ended, Reynolds had to find new markets, and it wasn't long before Reynolds began supplying tubing for use in the frames of autos which were becoming increasingly popular. As the world began to get back into order following the War, The Patent Butted Tube Company Limited made the decision in 1923 to change its name to the more readily identifiable “Reynolds Tube Company Limited”. A year later the newly renamed Reynolds put its experience in manufacturing aircraft tubing to use in the bicycle trade by introducing the “Reynolds H.M. Quality”. The H.M. stood for High Manganese and the tubing was a noticeable improvement over all existing tubesets. (Because of the high manganese content of this, and all other later tubes from Reynolds, it is inappropriate to refer to Reynolds tubing as chrome-moly; it is more properly manganese-moly.) This activity at Reynolds didn't go unnoticed in the business world and so it came as no surprise that in 1928 Reynolds was acquired by Tube Investments Limited, better known as T.I. Limited.

Reynolds began working in aluminum to meet the demands of the Royal Air Force. However, it has only been in the past couple years that Reynolds began to produce aluminum bicycle tubing (perhaps giving great weight to the argument that duminum is far from being an ideal material for bicycles!). A more immediate product of their aircraft endeavors was the introduction in 1935 of the legendary “Reynolds ,531” tubeset, one whose popularity has been sustained

ever since. Trivia: It is properly called ("five-three-one," not "five thirty-one"; the name being a rough approximation of the ratio of key alloying elements in the steel—5:3:1).

But 531 came about unintentionally. It was Chief Inspector and Metallurgist Max Bigford who spotted an aircraft tubing which he thought held the potential for making an excellent cycle tubeset and reworked the specifications along with Director Austyn Reynolds. So important was 531 that the Cyclist's Touring Club awarded Reynolds its plaque for the "most meritorious contribution to the sport of cycling."

In the late 1930's the activities of a certain ex-German Army soldier of questionable mental stability and ethics were drawing the attention of military planners in Great Britain. This led to the introduction in Britain of the Supermarine Spitfire fighter plane. The Spitfire was at the time a marvel of engineering and so it was only natural that Reynolds was called upon to supply tubing for its production. By the end of 1939 it appeared war with Germany was inevitable and Reynolds was forced, for the first time ever, to cease production of cycle tubing. As World War II progressed, Reynolds expanded its work force, opened new facilities, and maintained production around the clock. During the War Reynolds produced tubing for everything from the Spitfire to the PIAT (Britain's answer to the Bazooka) to flame thrower barrels. In all, Reynolds produced 77,000,000 feet (14,602 miles) of alloy tubing and 53,000,000 feet (10,038 miles) of steel tubing. All this was produced by a labor force that at War's height numbered less than 2,100 employees. Following the ending of the War Reynolds scaled back its production considerably and in 1947 it formed a separate company, "Reynolds Light Alloys", to make aluminum tubing.

In 1958 Charly Gaul of Luxembourg pedaled to victory (at a then record setting pace of 22.8 MPH) in the Tour de France astride a frame built from Reynolds 531, marking the beginning of what would soon become a near total domination of the Tour de France. Between 1958 and 1991 (the last year a Reynolds frame won the Tour) Reynolds tubing was used in the bikes of 26 Tour de France winners. Anquetil, Merckx, and Hinault all used Reynolds exclusively in their Tour victories (Indurain also used it in his first Tour win in 1991).

Reynolds 531 was so successful that it wasn't until 1976 that

Reynolds was able to improve on it with the introduction of Reynolds 753. 753 is a very unique, heat-treated tubing with an ultimate tensile strength of 179,200 psi (Compared with 121,000 psi for Columbus SLX). The heat treating process also means that great care must be taken in brazing the tubes so as not to overheat them which would result in a brittle and unridable frameset. To avoid this builders must braze with silver instead of the traditional brass. All this extra care means not just anyone can use 753. In fact, before being allowed to purchase 753 tubing from Reynolds a frame builder must first submit a sample of their work to be quality tested. If the builder makes the grade they become certified by Reynolds, a source of pride amongst many frame builders. In 1977, following the successful introduction of 753, Reynolds again changed its name to "T.I. Reynolds, Limited".

Reynolds tries to introduce
new products only when they
are truly innovative, and
more than 40 years passed
between the introduction of
531 and 753 tubing.

Because 753 requires such care, and is thus unsuitable for mass production, 531 tubing remains very popular. A sign of this continued popularity came in 1980 when Reynolds 531 was the recipient of the "Guidon D'Or" (Golden Handlebar), an award given for services to the sport of cycling. In order to understand the importance of this award consider the following: only three companies (Peugeot, BP France, and Pernod - all French) have received this award and only 4 times prior has it been awarded outside of France.

Since 1980 Reynolds has introduced a wide variety of tubing from 501, intended for entry level racing bikes, to the new 853 which is intended to give titanium and composites a run for the money. Reynolds has also introduced both oversized (731os) and internally rifled (708 classic) tubesets to meet the demands of heavier riders and sprinters. They have also expanded the use of 753 tubing to include tandems and mountain bikes. In addition to their two dozen plus steel offerings, Reynolds now offers butted titanium and aluminum tubing.

Reynolds tries to introduce new products only when they are truly innovative, and more than 40 years passed between the introduction of 531 and 753 tubing. Such products remain competitive decades after their introduction because of the intelligence of their design rather than the strength of their marketing. They are immune to fashions, fads, and labels (including "retro") and simply continue to be the best products available for a given purpose. **END**

WHERE WOULD IT STOP IF THERE WERE NO LIMITS?

IMAGINE IF BIKE COMPANIES HAD ONLY TO WRITE DOWN A WISH LIST OF FEATURES AND PUSH A BUTTON TO MAKE THE BIKE REAL, AND PROFITABLE. WHAT WOULD THE BIKE BE LIKE, AND WOULD YOU RIDE ONE?

I think we'd see a bike so light, efficient, and easy to ride that anybody could ride it 15 mph over any terrain, in complete comfort, sheltered from the bugs and weather. It would be so highly evolved that it didn't even contact the ground, so you could ride through fields of flowers in alpine meadows without doing any damage at all. It would have an expandable/collapsible rack 'n pannier system that could carry food for a week, and you've gotta like that.

This wonderbike would open the wilderness up to people who wouldn't otherwise go because they aren't fit enough, or haven't enough time to go there by muscle power, or haven't seen enough of nature to form sufficient appreciation of it to want to go there in the first place. They might go there on this bike, come to love nature, and devote a their lives to preserving it, and you've gotta like that, too.

You'd go to the deepest boonies on your bike, and you'd see people throwing frisbees, having picnics, listening to music, meditating, doing that slo-mo Tai-Chi stuff, Cecilia, reading the Trilogy, telecommuting, writing poetry, decompressing. It would be A Day on the Green, but no trail damage. There might be Supermodels on wonderbikes, and hey, just because they're supermodels doesn't make them airheads.

To be a real wonderbike it would have to cost \$12 to make (probably in Malaysia) and sell for \$100 retail, leaving plenty of room for profits all through the chain of distribution, with plenty left over for advertising and promotion. At that price you could afford a new one every year, a good thing, since the old one would biodegrade in a year. You've gotta like that.

Every technological feature that makes bikes more user-friendly, is almost universally welcomed and praised to high heaven. The media like this stuff because it's news, something to write about and collect advertising revenue

from. Bikesellers like it because it's something new to talk about and sell. Bike riders like it, because bike riders, and I'm one, like wavs. But where would bikemakers draw the line if they could draw it anywhere they wanted? Where would you?

If it were up to me, I'd draw it a different place for different bikes. Maybe it's a good thing it's not my call.

✚ FOR COMMUTE BIKES, I'd throw out the pencil and make the bike that'd replace the car. Gum lever. hoods and leather saddles out the window; if electric gef. bikes could replace cars, I'm all for them.

✚ FOR BIKES USED IN COMPETITION, I don't care—what ever people want to use—but I also believe all Olympic competitors should have available to them the same technology. Let there be a separate, objective, wind-tunnel competition for bicycle designers, but put the athletes on equal bikes, at least, so we know who the fastest really is. That is el point, no?

✚ FOR RECREATIONAL BIKES, I'm not sure what I think. I sort of think you should have to work to get to the back country, because if it's too easy, everybody will go there. The wilderness can only remain wild without people, and the harder it is to get there, the better protected it is. People can talk and write and legislate, and the land can't. If it could, how do you suppose it would vote on this bike?

To what extent is anybody's outdoor experience enhanced by technological advances in equipment? What does "enhanced" mean in that context? Is the whole point of technology to make it easier for naked apes to ride on rocks and cheat the wind? If you have any thoughts about this, write. Email to RivbiciQaol.com is good, and will definitely enhance my experience in putting together the next Rivendell Reader, but pencil on papyrus is fine, too. END

THE HAPPY HUMAN

IF YOU LIKE SOMETHING WITHOUT RESERVATION, TELL US AND WE'LL PRINT IT.

If you've found something you love unequivocally, write it up and send it in so the rest of us know about it, too. It needn't be a "Rivendellian" sort of thing, either. If you've discovered the best pedal in the world and it happens to be a new Thermoplastic clipless model with digital something-or-other, that's just fine, we'll put it in here. When possible and not obvious, try to list a source and approximate price. Send by fax 510 933-7305, email Rivbici@aol.com or send by regular mail.

THE VAR CHAIN REST

This little gem of Gallic engineering slips into your right rear dropout to replace your rear wheel for transport or cleaning (the chain can run freely through the handy groove).

Much more effective than a braze-on "chain hanger" (has anybody gotten these things to work?) more practical than Campy's ill-fated chain rest of the late 70's (remember? the one with the shift lever button and drilled and tapped dropout, that Tullio drew up on a cocktail napkin with shaky fingers and long, long, nails...) and much more elegant than a screwdriver through the frame. Whip one of these babies out and you can almost feel like James Bond. Procure one and you'll wonder how you lived without it. Perhaps it's not a life altering purchase-but perhaps it is. Who knows? Available at the type of bike shops that make lots of friends but little money, for about 10-15 bucks. Maybe through Rivendell?

—Tony DeAngelo

Tony, we'll investigate. Thanks. — G.

FILSON SHORT DUCKBILL CAP

(STYLE 29)

Waxed cotton, and perfect in every way. Exceedingly handsome, waterproof, crushable, smells good. The best thing about it is the fit: it fits me so well that it DOESN'T fit backwards. They must do something with fitting the leather headband to the shape of a head, whose fore is shaped different from its aft. Whatever they do, it's so perfect. Made to sit on heads. Goes well with B,17? Filson: 1 206 624 4437.

—Joe Appel

FORMBY'S TUNG OIL VARNISH

COR WOOD FINISHING

It's very difficult without benefit of a dust free shop and spray gun to get a nice lustrous wood finish (i.e., one that has some gleam in it) that doesn't look "painted." It's possible with this stuff. You need lots of good cabinet paper, cheesecloth, very fine steel wool, and a tack cloth. **And** patience. But the technique is much easier and more controllable than brushing on a finish or rubbing on a heavy coat of something like Danish oil. Do all the things you would normally do. Sand the wood like a maniac, with ever finer grades. Finish with 600 grit wet/dry paper. Stain as desired. Lightly steel wool the surface smooth again. Using a vacuum, a slightly damp sponge, and the tack cloth, get all debris off the surface. Moisten (not soak) a wad of the cheesecloth with the varnish. Rub into the wood. Use the varnish so sparingly that it's more like you've breathed on the wood than varnished it; Let dry. Repeat. Let dry. Repeat. **Do** this over and over, at least 6 times, but more is better. Steel wool the surface very lightly between rubbings if there are spots where the varnish has built up. Gradually and slowly the surface will take on a soft gleam. Eventually, when it's the way you want it, stop, let dry, and give the surface a coat of hard wax.

—Paul Berk

HIND "PRO TOUR" SHORTS

Every year one of the bike magazines publishes an article on how to avoid saddle sores, and every year I'm flabbergasted that they seem to be unaware that saddle sores can be banished completely. Hind "Pro Tour" shorts are the only bike shorts I've worn for the past five years or so and, because of them, I have not suffered one saddle sore in 20,000 to 25,000 miles of riding! That's not because I have a leather butt, either. I started wearing Hind shorts because I got sores all the time with other brands. The secret is that Pro Tours have lycra INSIDE as well as outside — the pad is sandwiched BETWEEN a somewhat

[HIND "PRO TOUR" SHORTS CONT.]

tougher outer layer and a somewhat softer inner one. This reduces friction between your skin and the padding better than synthetic—this pads or greasy—that lubricants. Plus, the non-absorbent lycra keeps the very absorbent pad material away from your skin, so small irritations aren't so quickly infected by bacterial bad guys either. Hind makes very high quality athletic clothing, but doesn't seem to advertise much in the bike mags or distribute through the usual bike channels (which is probably why they get ignored). Pro Tours (the only Hind model with the magic lycra liner, as far as I know) cost about \$40 and I've always been able to find them at sporting goods stores — the kind that sell Huffys.

ES: Here's another vote for Boeing T-9. I used to use it on sailboats; now I use it on bike chains. The best!

—Walt Dickie

CAMPY ERGO POWER BRAKER-SHIFTERS

KEN PUSHES THE LIMITS—TWICE!

Shift, on the fly and fast. If you've got old downtube shifters that work fine and you like them, there's no reason to fork over lots of money for these; but if you're in the mood or must upgrade, you can't go wrong with Campy Ergo Power. I've been doing a lot of fast group rides recently and it's great to be able to shift while my hands are on the drops. As with all the integrated braker/shifters, these don't tolerate incorrect cable tension, but if you have any mechanical aptitude at all, they won't be a problem. Compatibility isn't necessarily an issue—I'm using mine with an old SunTour 7-speed freewheel.

SHIMANO 737 SPD CLIPLESS MTN BIKE PEDALS

I'll go out on a limb and say these hold your feet better than clips and straps ever did. And they're easy to bail out of, even in a do-or-die situation. And they're tough: I've clobbered so many rocks with these that more than half the paint on the edge facing away from the bike is scraped off, and the metal is gouged and pitted. I'd heartily recommend these to anyone who rides in dirt, even to those happy with clips and straps.

—Ken Byron

ETHERWAVE THEREMIN. BY BIG BRIAR

EARTH TO BOB ... COME ON DOWN!

It is Professor Theremin's acmeophone. It is compact. It is solid state and it is a kit from the world's most experienced theremin manufacturer, Bob Moog. The instructions are written so an idiot can follow them (mine works). It sounds great and the sales and tech support people at Big Briar were helpful, even enthusiastic. \$229. 800 948-1990 (If you don't, or even if you do know what a theremin is, go see Theremin: An Electronic Odyssey. It is now out on video.

—Bob Chandler

We Need Your Help

If there's something you'd like to see covered, let us know. If there's a bike widget you like so much you just can't stand it, tell others. If you have something to get off your chest or just feel strongly enough about to write about, send it here and we'll probably print it. The Letters column is a free forum, and I want it to be interesting. Don't feel as though you have to respond to something in the last issue—you can write about anything you like and feel strongly about, and chances are we'll put it in that column. Frankly, we get a few compliments on the RR now and then, but you won't find those things in the letters column. We want to offer something to brand new cyclists, as well. If you are a new cyclist, please let us know how to improve the Reader. If you have a technical question that doesn't involve servicing SPD's or some kind of indexing compatibility issue, give us a shot at it and other readers a chance to learn at the same time. Finally, if you come upon a story or article you like a lot and think other members might like, send a copy of it here, along with the source, and we'll try to get reproduction rights. The Feel of Wood (RR5) and this issue's Titanic article came from members...

—Many deep and sincere thanks to Steven Sheffield for putting together our WWW thing: <http://www.veloworks.com/rivendell/>

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INTERVIEWED BY GARY BOULANGER

MEMBER PROFILE

GRAHAM BERGH; RESOURCE REVIVAL, INC.

After graduating from the University of Michigan in 1989, Graham Bergh moved to the Pacific Northwest and became an environmental consultant, then switched to recycling education for the city of Portland. In 1994 and at 29, he established Resource Revival, a small outfit that turns rims, tubes, ball bearings, chainrings into candlesticks, chairs, tables, picture frames, belts and suspenders.

WHAT PROMPTED YOU TO START RESOURCE REVIVAL?

I'm an environmentalist and I've always been sort of an entrepreneur at heart. I realized there was all this free material piling up, and at the time I wasn't thinking about the relationship to bikes. I was reading about milk jugs and other materials and thought if someone could come up with something to do with all this, they could make some money! Which in my case could really go a long way to help other environmental causes.

When I moved to Portland in 1990, I found out about a regional grant program for people with innovative recycling ideas. Eventually I applied for a grant, became a finalist, but didn't get the grant, so two years later and at the urging of friends, I started Resource Revival.

HOW DO YOU GET MATERIALS?

I collect materials from 50 bike shops, most of them on the West Coast. I get about 1,000 pounds each month. If a



Nick, who hails from LA, is a happy panter in his valve-stem-festooned collar. shown 1/8 actual sire.

shop has stuff, they can use my UPS shipping number, so it doesn't cost them anything to get it here. I also get materials from local non-profit organizations who get unrideable bikes donated to them.

DO YOU EVER GET PERFECTLY USABLE THINGS—INNER TUBES, FOR INSTANCE?

Yeah, too often. We check all the tubes and find about ten percent of them are perfect, so we ship them to non-profit groups. We aren't in the business of repairing inner tubes, but we don't make tube ties out of perfectly good ones. Reusing an inner tube as an inner tube is the best way. It can always be used as a tube tie later, but once it's a tube tie, it'll never be on the bike where it belongs.

WHO MAKES YOUR THINGS?

Some of the things are made by the Garten Foundation, a non-profit organization in Salem. They receive the boxes, then weigh, sort and disassemble everything. The rest, which is most of the stuff, is made by developmentally disabled adults. So making these products provides jobs for people who are unemployable by most standards.

Coincidentally, the Foundation focuses primarily on recycling projects, making them the largest recycler in the state of Oregon with a multi-million dollar contract. I'm sort of this little anomaly in a corner of one of their buildings doing my weird rubber recycling thing. But I'm growing, and the Foundation realizes that I'm going to be around for awhile. I'm giving them more work each month.

Part of my job is to pick up the products, bring them back to Portland for welding and shipping. My next big decision is whether I should go to a central location, start employing people and warehousing product, or keep on subcontracting.

I'm leaning toward keeping things as they are, since

they're doing good work, they need the work, there are few hassles, and I don't have to deal with the hassles of employing people myself.

WHAT'S YOUR BEST-SELLING ITEM?

Tube Ties. REI sells about 1,000 each month. Candlesticks are doing well, about 200-300 a month. Key rings sell well. Everything sells well when I exhibit at gift shows.

WHERE DO THE MAJORITY OF YOUR SALES COME FROM?

Five percent of sales are in the bike industry, 70 to 75 percent in the gift industry, and the remainder is through the 43 REI stores. I don't do any real advertising—mostly it's stuff like passing samples to shop employees and getting them excited about the stuff.

WHAT'S BEEN YOUR MOST SUCCESSFUL MARKETING TOOL?

The San Francisco and New York gift fairs, trade shows of the gift industry. Tremendous exposure for the work involved. We haven't seen many direct sales from bicycle consumer shows, but it's been good public relations.

ANY NEW PRODUCTS TO BE ADDED SOON?

I have tons of ideas. Originally I'd look at the material and figure out what I'd like to make out of it. Now, I look at what I'd like to make. I'm doing well enough with the current products, and I'm concerned that adding new things will give me too much inventory.

WHO DESIGNS YOUR CATALOG?

Miga Rossetti, a good friend of mine and a graphic designer. We barter. My welder's sister takes the photos. The photography is done by Susan Seubert, who's the sister of my welder. He works on her car, I give him work, and she takes pictures for us. Michael Halle took the photos for our first catalog. The dog in our catalog, Nick, has hit the big time. He now has an agent because he's appearing in a Pepsi commercial!

MICHAEL HALLE? WE KNOW A MICHAEL HALLE...

—From LA?

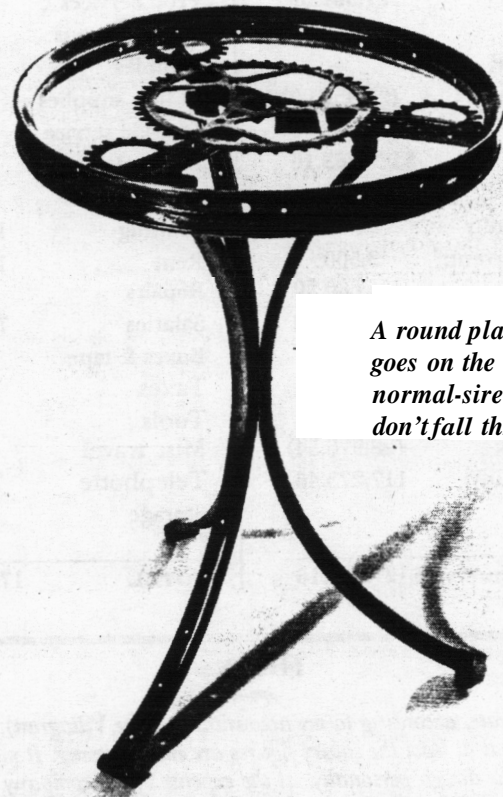
NO, BOSTON.

Well, this one's from LA. Nick is his landlord's dog.

LUCKY LANDLORD! WHERE DO YOU SEE RESOURCE REVIVAL IN THE NEXT FIVE YEARS, AND DO YOU SEE THIS AS YOUR LIFE'S WORK, OR IS IT JUST A FINE THING FOR NOW?

I've lived in my current place for five years, and it's time to decide where I go from here. I'm writing a job description for myself. I work 60-70 hours a week. By writing a job description, I may find that another person can come on board to handle the various responsibilities (handling shipping, entering orders, calling shops, etc.).

I love making things, and I committed to recycling, but I see recycling as a band-aid. I think the real answer is to consume less, so there's less to recycle. I'd love it if there were Resource Revivals scattered about the country, but I'd rather people weren't throwing things out in the first place.



A round plate of glass goes on the top, so normal-size objects don't fall through.

ANY PARTING WORDS?

People see cycling as a very clean sport, but there's a lot of waste and planned obsolescence. It's rare that a shop sends tubes that have been patched. And every year a new shifter or derailleur comes out, making consumers want to replace their existing components. People send me new stuff, but bike parts that are designed for bikes should be used on the bike. I'm taking used bike parts and using them for non-bike things. **END**

End of 1995 Financials

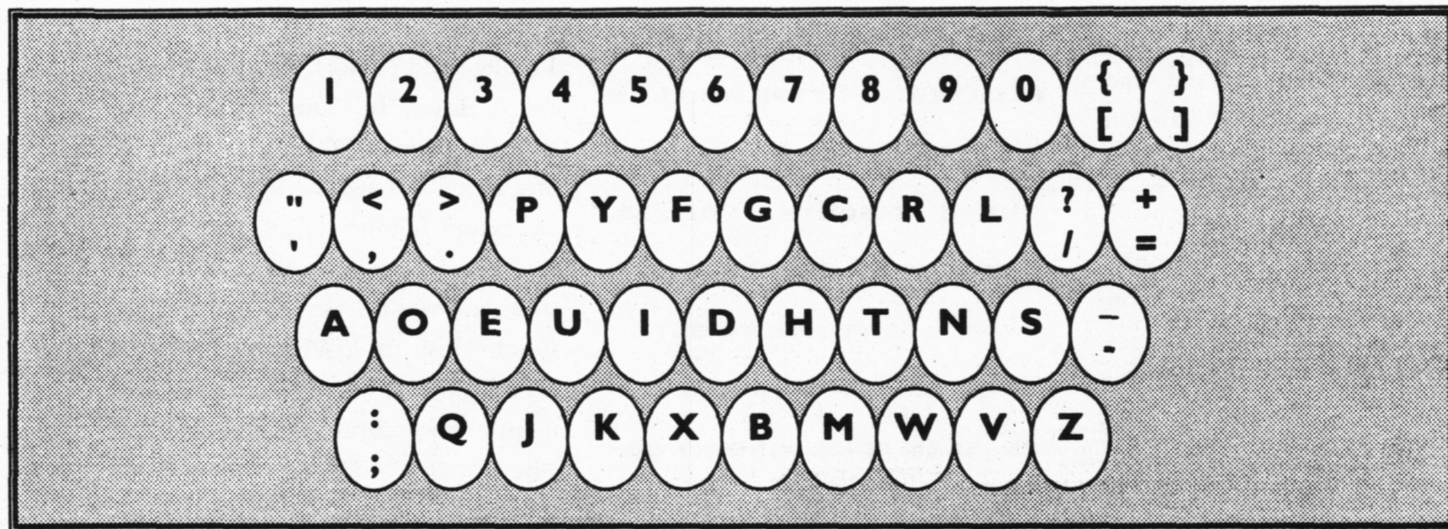
CURRENT ASSETS	OPERATING EXPENSES YTD		1ST QUARTER 1996		
Union Bank acct.: (5,939.00)	Advertising	<u>amount</u>	<u>%</u>	Sales	153,321.51
Mechanics Bank acct.: 890.78	Artwork	6,422.60	3.75	Refunds	(469.32)
Other Union acct.: 212.02	Auto and Truck	7,789.81	4.54	TOTAL SALES	\$152,852.19
Savings: 17,720.00	Bankcharges	6.68	0	COST OF GOODS SOLD	
Stockholders: 15,250.00	Plastcard disc.	302.78	0.18	Purchases	102,277.72
Inventory: 29.41 1.76	Dues, subscripts.	415.30	0.24	Subcontracts	259.00
TTL. CURRENT ASSETS: \$57,545.56	Deprec/Amort.	75.00	0.04	TOTAL COST OF GOODS	102,536.72
EQUIPMENT AND SOFTWARE				Gross Profit	\$50,315.47
Furniture and fixtures: 12,970.50	Equip. rental	26,834.00	15.65	Operating Expenses	5,267.90
Computers/software: 5,075.04	Freight	180.00	0.10	OTHER COST/(EXPENSES)	
Tooling Design Equip.: 79,324.06	Insurance	502.13	0.29	Interest expense	(342.46)
TOTAL: \$97,369.60	Life insurance	357.21	0.21	TOTAL OTHER EXPENSES	(342.46)
Less Accumulative	Prof. Services	331.50	0.19	NET INCOME (LOSS)	(16,294.89)
Depreciation/Amort.: (27,452.00)	Miscellaneous	2,211.48	1.3		
TOTAL ASSETS: \$127,463.16	Samples	1,173.67	0.68	<u>amount</u>	<u>%</u>
Liabilities and Equity	Office supplies	1,893.50	1.10	Advertising	1,915.78
Notes payable, current: 3,500	Outside service	4,044.22	2.35	Bank Service charges	82.34
Credit Cards: 6,689.70	Parts/mainten.	2,951.65	1.72	Credit Card discounts	3,532.85
TOTAL CURRENT LIABILITIES: 10,189.70	Payroll Taxes	323.51	0.19	Commissions	387.24
OWNER'S EQUITY	Printing	4,065.23	2.37	Dues & Subs	200
Common stock: 146,250.00	Rent	10,567.74	6.16	Deprec/Ammort	5,670.75
Retained earnings: (28,976.54)	Repairs	12,100.00	7.06	Employee Benefits	101.50
Total Owner's Equity: 117,273.46	Salaries	1,240.04	0.72	Meals/entertainment	543.86
	Boxes & tape	72,213.75	42.11	Equip rental	254.22
	Taxes	3,243.39	1.89	Freight	1,743.86
	Tools	1,843.04	1.07	Insurance	27.56
	Misc travel	239.07	0.14	Life Insurance	230.00
	Telephone	766.34	0.45	Professional services	258.96
	Storage	2,261.86	4.23	Miscellaneous	569.75
		2,123.00	1.24	Office expenses, supplies	314.80
TOTAL LIAB. & EQUITY: \$127,463.16	TOTAL	171,488.52	100.00	Payroll Taxes	4,162.85
				Postage	3,826.54
				Printing	340.39
				Promotion	1,300.00
				Rent	\$3,750.00
				Repairs/maintenance	222.50
				Salaries	32,258.00
				security	100.00
				Supplies	627.09
				Travel, meals, entertainment	1,248.26
				Telephone	1,505.92
				Utilities	224.85
				Warehouse and storage	868.00

NOTES

The figures are accurate, according to my accountant (Gene Villagran). I don't know how to interpret all of this, but at least the salary figures are embarrassing. It makes it look as though we're all raking in the dough personally, at the expense of the company. That's not really the case. I make less than I did at Bstone, and my living expenses have increased (one more baby, mortgage has gone up, home repairs). Spencer and Gary are underpaid as it is. We'll get a SEP ping this Fall/Winter, and that will help everyone. The meals and entertainment expenses look rather high, and that's strange. Given the choice, and I often am, I put things on personal bank cards rather than business, and I've already loaned Rivendell \$20K plus from my own credit cards. That may not be a good idea in general, but Rivendell has a low credit limit and I've got \$50,000 available on my various ~~ad~~ have a major debt every month for money I borrowed to start Rivendell, and we wouldn't be here if I didn't borrow it. Sales were slow the first quarter, but the second quarter, which we'll report on in the next issue mayk, were better. The figures show that we lost \$16K this first quarter, but we also paid back lots of debt, and I hope that's why. The Heron project may help us out. We have good credit, and I'm proud of that. I just wish I knew how to run a business.—Grant

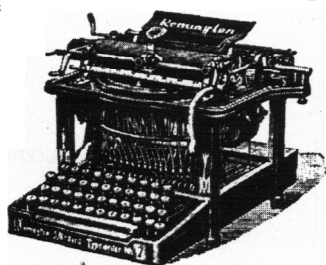
BY RIC COMAR

A BETTER KEYBOARD



The modern mechanical typewriter was invented by **C.J. Shoules**, and in **1872**, the first marketed one, called the Type-Writer had a keypad similar to the ones still used today. In typists circles it is called QWERTY, named for the first six letters on the **upper row**. From an ergonomic perspective, QWERTY is an inefficient design. But unlike most inefficient designs, QWERTY is inefficient on purpose.

As Shoules tried out various letter arrangements on his test-typists, and as those typist became faster and faster, he found that if more than one letter entered the strike zone, they would **jam** and have to be untangled by hand. To solve the problem, he put most of the commonly used letters or letter combinations into hard to reach locations. (Have you ever noticed the **120** year old marketing device on every QWERTY style keyboard? You can spell **TYPEWRITER** without ever leaving the top row. Beginner salesmen and demonstrators would only have to memorize, by rote, the strokes for the name of their commodity, and they could impressively zip out a lot of noise, with at least one recognizable word.)



By **1940** (or so...). A lot of people had looked at the QWERTY keyboard and speculated about fixing the inefficiency problem. The man who ultimately left the biggest mark was University of Washington professor August Dvorak. He thought about **stroking** patterns (drum your fingers on the table...for most people it is easier to drum **from** pinkie to thumb) hand biasing (beat out a rhythm on the table top with your hands...you will probably end up with an alternating pattern; right, left, right, left, left..whatever, we just tend to like alternating our hands) and letter and lettercombination usage. And he changed the arrangement dramatically.

The only test results I'm aware of came from Dvorak's **own** experiments, so they do lack a certain validation, but the army typists he was retraining became much faster and more accurate. The **DVORAK** system is also easier to learn (estimated learning time is **20** hours, 1/3 of the average time required to learn QWERTY), and is less strain on the typist.

I read about a test where a typist worked for an **8** hour day while the motion of his fingers was measured. The average

distance traveled by the typist's fingers in the eight hours was 16 miles. Doing the same work, for the same time with DVORAK resulted in the typist's fingers moving only a mille. So, DVORAK is faster, easier to learn, less strain on the typist, and more accurate.

The problem, of course, is that DVORAK required a special typewriter, and besides a few custom IBM Selectrics, I don't know of any commercial typewriters that were available with the DVORAK keyboard. (In 1972 the Adler Satellite was another-ed.)

Now let's jump to the present. Modern keyboards are mostly connected to computers and word processors' now. Fortunately, some of the designers of the modern home computer know about the Dvorak system, because 'at least the modern PC (Windows 3 and Windows 95) systems have the Dvorak system built in. I think Macs have it too, but I've not seen it. Anyhow, with a simple flip of an electronic switch, you can change the layout of your keyboard to Dvorak, and back again. There are even several companies that make simple overlays for keyboards to re-name the keys in the correct Dvorak sequence.

I've been intrigued by the Dvorak system since I first read about it in the mid '70s in the Whole Earth Catalogue. I couldn't afford a Selectric typewriter, so eventually I forgot about Dvorak, until one day, while browsing around on my computer, I discovered how to change from Standard US layout to the DVORAK (go to Keyboards in the control panel, and look for properties). Then, when I discovered that the typing program I had bought in an attempt to improve my touch-typing had the option of teaching DVORAK, I made the commitment. I used small adhesive tabs to permanently change my keyboard at home. I bought an overlay for work. I practiced with my program every day.

After about 8 weeks, I am still faster at QWERTY, but not by much. The biggest frustration has been with work. I keep rationalizing using the QWERTY system because I am still faster at it, and I owe it to work to be as fast as I can.

I've been unable to cut QWERTY out of my life, so it's like I am learning two languages. I am still a little slow at the new language, so it's hard to use when I really need to work, but it is beautiful to listen to. The patterns that emerge from DVORAK are simple and clean. No awkward pinkie reaches, except for the odd Q and X. At this point I am starting to hold my own, and while I was never a perfect touch-typist in QWERTY, I am in DVORAK I already see an improvement in my accuracy (I no longer type "the" for "teh"). My fingers feel more relaxed as I type and I am confident that within the next month, I will be faster at Dvorak, and will continue to get faster yet. My biggest problem is keeping my coworkers from killing me when I forget to switch the computer back to US-standard,

Should you try DVORAK? If you have a single keyboard you use all the time, like in a home office, go ahead. If you can give up on the old system, it is a quick process to learn DVORAK. If you work in a multi-user environment, then you will have a tougher path. I know I've made the right decision, but I doubt I'm part of a movement. **END**



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**MY FINGERS FEEL MORE
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US-STANDARD.**

THE TT/HH FACTOR

OR: WHY SMALL FRAMES WITH SHORT TOP TUBES
MAY NOT BE THE SOLUTION YOU'RE SEEKING.

T

OP TUBE LENGTH GETS INK BECAUSE SO MANY PEOPLE THINK IS THE KEY TO GETTING THE PROPER REACH TO THE BARS. BUT THE REACH TO THE BARS (RTB) IS AFFECTED BY LOTS OF THINGS, INCLUDING:

1. Seat tube angle. For any given top tube length, the steep- α the seat tube angle, the farther away from you the forward end of the top tube is. Imagine two frames, each with 56cm top tubes. One has a 42-degree seat tube angle; the other has a 90-degree seat tube angle. See? About 7 years ago I wrote a story in *Bicycle Guide* about this effect (*The Z Factor*. If I can't get permission to reprint it, I'll rewrite it for another *Reader*.)

2. Stem length. Obviously!

3. Bar reach (in the case of drop-style bars). This is how far forward the curves travel from the clamp. It matters only when you're on the hoods, but they're a popular hang-out. Common road bars vary in reach from 82mm to 100mm. 3ttt bars tend to be longer 'than others—up around 95mm. If you ride a 12 stem with Cinelli 66 bars, you'll probably like an 11 with 3ttt Merckx bends—because there's that much difference in the reach. Among the bars we sell, the Nitto Mod. 185 has a relatively short reach. .

4. Bar Height; AS you raise the bars, two things happen simultaneously. Since the head tube angle is less than 90-degrees, the bars come back toward you. And, as they become closer to level with the saddle, they also become easier to reach. (If your bike's head tube angle were 90 degrees, raising the bars would still bring them closer to you, until they were level with the saddle.)

To find out how bar height affects RTB, I put a 160-quill Nitto Young III stem onto a frame, and then measured the distance between the unchanging saddle nose to the center of the handlebars. I made a dot on the top of the stem as a reference point.

STEM INSERTION	SADDLE NOSE TO CLAMP CENTER
all the way	582mm
up 10mm	577mm
up 20mm	570mm
up 30mm	568mm
up 40mm	562mm
up 50mm	559mm

If you look at the chart you'll see that raising the stem 50mm (about 2 inches) brings it closer to you by 23mm (almost an inch). That's a lot, it makes a huge difference in your position on the bike, and it also means that as you raise your bars, you can probably use a longer stem. If your hands or back or neck or arms are sore or get tired early in the ride, chances are your bars are too low. Your bike is either too small for you, or the stem quill is too short. Never raise the stem above the Max Height line, but by all means get a longer quill or a steeper rise if the stem you have isn't perfect for you.

PROGRESS REPORT

IF YOU HAVEN'T READ THIS BEFORE: THE PROGRESS REPORT IS MY PERSONAL JOURNAL OF STARTING AND MAINTAINING THIS BUSINESS. I'M NOT A GOOD BUSINESSMAN, I GET FRUSTRATED, THINGS DON'T ALWAYS WORK OUT THE WAY I'D LIKE THEM TO, THERE ARE UGLY SURPRISES, AND SOMETIMES I JUST NEED TO VENT. YOU DON'T HAVE TO READ IT. BUT I HAVE TO WRITE IT. AND ENOUGH OF YOU HAVE TOLD ME YOU ENJOY READING IT (MANY OF YOU HAVE SMALL BUSINESSES OF YOUR OWN, AND CAN RELATE), THAT I'VE DECIDED TO KEEP IT PUBLIC. —GRANT

APRIL 1. According to the computer we've sold \$145,000 so far this year. It's funny—in the old days I'd read a figure like that and assume at least half of it was profit, then figure that the owner got at least half of that, and the next thing you know the owner's rich. How come I feel so poor, then? Spencer and Maggi and Gary aren't getting rich, either, so where's the money go? We aren't buying much these days. Oh—those debts. Well, we aren't paying them off so fat, either. Business is doing okay, we're generally happy, I don't know if we'll ever catch up to our Waterford bill, but—hold it, Spencer just said "We got chainring!" so here I go to see them. They're the Willows.

APRIL 2. We owe \$3,600 for lugs still, and I've got to buy at least most of them soon. We're running low on some models, particularly the A/R lugs, which Wford uses (and modifies slightly) for its 1900 model touring frame. Today Long Shen sent a bill for \$1200 for tooling for a new plug, along with a bill for \$400 for the first batch of them. They also said the new crown can't have the long tangs on the inside unless I want to spend another \$600 in tooling, and even then the price per piece will nearly double. The inner tangs aren't important, especially on a round blade crown, since their purpose is to increase lateral stiffness and round blades have plenty of that already. So I think we'll keep the tangs as they are and just go ahead. Maybe we can use these for the new frames, the frames we aren't speaking of yet. If that's the case, Ted may be able to pay for the tooling and crown, which would be a big help here.

We've got to hire some shippers. We're moving into the new place this week and next, and it's not worth it to have Spencer shipping at \$11 per hour, when he's much better off on the phone and invoicing. Nate recommended a friend, and then Zack and Carrie can do some this summer, too. I don't know how much business there will be and there's no sense hiring three people to do the job of one and then nobody learns it well. I've got to get insurance on the new place—the lease requires it, and I don't have it. The alarms go in tomorrow, we move the computers on the 12th. The phones are quiet now, it's 9 a.m. and we've got to get RR5 out.

APRIL 4. The affair Unabomber. Sales were \$900 today, but the actual deposit was just \$263.

The slowest day of the year by far, maybe the slowest day in the last seven months. We got the blueline for RR5 today. I made some changes, and it'll go out next Wednesday. I sure hope it brings some orders in—I hate this worrying staff. Rob and Spencer and I went on a good ride today (maybe we shouldn't have). I changed my message to say something like "I ride until 9:30, so I'm not here till then," but I don't know how long I can do that. I really miss riding, and it's not fair that I don't do it. Mary tells me to ride, but I can't pull away from the desk. I'm in terrible riding shape, and for the first time in 25 years I feel crummy on the bike, like every change of direction in my feet is a surprise—besides which I have no meat on my thighs. I miss the days of being able to push hard and feel the pain there. Now I can't even push hard, and it's depressing. I'll set a goal of being able to ride to the junction in 33 minutes. My road bike's in the new place, but I'll get it tonite.

APRIL 5. We had a Carradice order come in yesterday, with \$350 or so in freight due, and now the mailbox place says there's another one, for \$375. Bad timing," Maggi says, and that's the truth. We get RR5 on Monday and can start mailing that out, but postage for the mailing is another \$1,200 or so, since we're going first class this time—because Third Class mail doesn't work. So more bad timing. I had a talk with GH yesterday, and I told him I was worried about money, but sales seemed to be okay, and he said something like "I've been there, and you know what I did? I just stopped buying—anything—for a month. You'll be amazed at what that'll do for your bank account. So that's what we've got to do. We have tons of stuff, but I'm just afraid that if someone asks for something we don't have, they'll never buy from us again, and we'll get a reputation for being out of stock. Right now it doesn't even matter, we just have to quit buying and keep selling. The latest irresistible things are fenders from Japan, really nice aluminum ones, both smooth and "turtleback," which is hammered. They're nice and classy and frou-frou and they make bikes look better, but the Esge fenders we already have are plenty good and look good, too. The Japanese fenders cost a lot and the minimum purchase is \$1500 or so, and they'd probably arrive sometime in June. IFGH is going to get some. I may add a few to his order, but no way can I commit to that many now. We still owe

J&B tons of money, and I'm living in fear of the June-July-August bills as it is. The next mailing—that's what will save us.

I had a good short ride today, just an hour, but it was a good hour, on and off road, steep hills, road bike. Peter got his frame a couple of days ago. Spencer is trying to decide between the 700c road with 26 wheel and the 50 with 26 wheel, but will probably get the 52, although he likes them both a lot. We're reducing the number of colors from fourteen to ten. I'm trying to simplify things so I don't go mad, like the Unabomber. I just got the mail—three bills, one membership, no orders. That's it—we're going on a buying moratorium starting now. We've got less than \$3600 in the bank, and we need \$2100 for mailing the RR's, and we owe another \$400 or so before we even get the RR's, and next week is payroll week. Let's see how much money we can have in the bank in a month.

APRIL 8. We got our end of the year tax stuff, and we lost \$11K or so. I'll put the detail in a flyer I guess. I owe \$3K on my personal return, don't have a dollar to pay it, I'll have to get a loan. Bike Guide is going to review a road bike in the July issue (just found out today), and that may help matters. Bicycling has an All-Rounder, but we need to send them parts. RR5 will be delivered today and we just need to pay another \$1,200 upon delivery, then about \$3,000 in postage, but it's hard to complain about that. It's going to be a rough week, though, since we have payroll on Thurs, and we don't even have payroll in the bank, and we have to pay the printer. I don't feel like facing the issues of the day, so here I am venting in this place. We do have some good news—the new seat stay plugs are in and seem to be perfect. Well, they aren't all in—just the samples. So if we want them, and we do, then we have to pay a couple thousand. Then there's the new crown that is looking good but there's no money for. I think the buying moratorium will take care of a lot of this, but right now we need a few more Bullseye hubs. But that's it for two weeks, I think.

APRIL 9. Bad news, a favorite customer and long distance friend got a frame and the seat post slips and the bottle boss under the downtube is a 6mm hole, not a 5mm. This on the most expensive frame we've sold, and he has an event to ride in a week and a half. Damn! We'll try to get him another, but it'll be a miracle. I can imagine how it happened—but I don't want

to think about it. We'll fix it. We're developing a new frame order form, one which the buyer will get to fill out him-herself, and sign off on. Gary's idea, and a good one. There are too many opportunities for miscommunication, and we've already eaten too many. We have to be perfect, because these are not throwaway discardables. The littlest details are huge, and we have to get them right. We now have \$5K in the bank, but I'm not paying bills this week since it's a payroll week. Gary has offered to let us pay him for this week in two weeks, and that'll help. I'm the problem, payrollwise. We got back the stuff from the accountant today, showing that we lost \$11K last year. That's good!" people say, but it would be nice to make money this year. I know five years ago G lost \$12 million, and I can't believe they're doing that much better now. The idea is to make money and survive and have a ten year history ten years from now, not flash and die. What would I do? I can write catalogues, I could write columns in local cycling tabloid—if they'd go for it—but what would I write about? I want this to happen, to work. Maybe the membership contest will be successful, but I sort of think people have their own lives to live and aren't going to go around selling membership/subscriptions to their friends. If I had one wish, and it had to be a non-family related wish, and a non-world peace related wish, and a non-heal the sick related wish, it would be for the membership contest to work, so we could get 3,000 new members and \$45,000, I'm not money-driven, just survival-driven, and that takes money. Sometimes I get the feeling that people think we make money at night, when we're asleep. The minutes of the day either make money or lose it, and we have to make it or die. We don't have the cushion we used to have, we're always just above the coals and I'm getting tired of worrying so much. I see people on the street and think "You don't even WORK for a living! I don't know what you DO, but try making money come out of a telephone sometime!" That's bad.

TAX DAY. We're almost all moved in. No furniture, so I'm typing this on the floor, and the computers aren't working completely, and we have only one phone line, and I hope that's not working well because we've had just one call all day. We got a few orders, but nothing will ship out today. Nate-our-computer guy will be by again tomorrow. I hope, to make sure it's all working. We can't go any longer like this, that's for sure. It's raining, and I left my toolbox outside, and the tools got soaked. We need desks here, but they're so heavy. No refrigerator, no quick water, this place isn't real yet, but at least we're paying rent.

I just read the story Bob Cordon sent me, on the Titanic. I talked the the guy at Popular Science and he said to write him for reprint rights, so okay. Spencer's checking our messages and there seem to be a lot of them.

APRIL 20. The new office is not working right. The \$25,000 NetFrame file server I got from Bstone for almost nothing is broken, I've got a new version of Filemaker that's not working, there seems to be a problem with electricity, because sometimes (twice yesterday) one computer shut off spontaneously, and lights started flashing and the power surge thing started beeping. We're getting orders, but we're behind in processing them. We haven't paid a bill for ten days, I haven't been into email for that long at least and now I'm scared to even look at it. Today we were supposed to go to a bike fair/ride/exposition south of Sacramento, but that would mean renting a car, we're broke and I hate driving anyway, and I just need a break. So here it is Saturday, I came in early to work on the catalogue and RR6 and I can't open MS Word, so I can write this in Claris, as I'm doing, and convert it later. I like Clans better anyway—it's a low memory program, it's always easy, it's always there. I'm on a bad schedule for turning out five RR's this year. Sometimes, and more frequently lately, I think I should just do the whole thing in Clans. That would mean changing the layout, but I wonder if it would scare people away. Does it matter that much? Isn't any simple, clean presentation good enough? It's the Rivendell Reader, after all, not the Rivendell Picture Looker. We can still have artwork in it. Rob's doing a good job with it, a great job, actually, but if we're going to do five this year things have to happen faster and it seems that might be easier in Claris. I don't know.

The H bike project is moving slowly, but moving. We're waiting for some dropouts from Italy. Tecnociclo just came out with a new catalogue, and it seems heavily influenced by the Bstone cats. Mario came to my house, I gave him some, he liked them, and used at least three illustrations right out of them. That's fine, that's good. Damn, this is frustrating. I have to do real work, not this. I'll enter orders. Let's see if Filemaker is running, anyway. No, it's not.

APRIL 26. We've been in the new office a couple of weeks. The computers still have bugs, Nate will fix them, the next day more problems, what a drag, I hate it. Businesses have been run without computers before, but I'm kind of messy in the paper department, and I don't think I'm up to that.

No frames are being built this week, but at least 8 will be built next week. We'll barely make payroll, but Mary's been paying a lot of bills, so we're making progress. The new bikes are still coming along, the H bikes or whatever they'll be.

The stem lug casters are asking me "well, do we go ahead with these or not, and if so, please send us a few thousand dollars which is not really do-able AT THIS POINT IN TIME. The office is getting organized, but we miss having a kitchen, rice cooker, things like that.

Masa is here now for a few months helping out. He just quit Giant-Japan (after leaving Bstone), and will be here 90 days or until he's forced to go back. He'd rather live here than

in Japan, and that's pretty easy to understand, a2 whomever.

I'm trying to get RR6 together and the catalogue, too. Orders are not up as much as we'd hoped and expected, and there's no real room to taper off. I don't see how guys like Performance and Nashbar and LL Bean do this. Wheels are a problem. They're just too expensive to get made, and so much hassle. Nothing happens fast enough. I think I'd like to sell only front wheels, anyway.

APRIL 28. Sunday, and Jeff and I are here ready to go for a ride, waiting for someone else. I checked the monthly totals and invoices are up to only \$24,500, way down from the 50-35-45 of the first three months. And only 230 invoices, and we had 530 last month. I think we need to get the catalogue out, but I'd expected the parts listed in RR5 to help out more than they have. The catalogue is finished, just needs to be laid out and printed and mailed. I'm working on RR6, too, but if things don't pick up there won't be money to mail it. I hope the contest brings in lots of new members, but I realize nobody has time to pester their friends into joining/subscribing, so I think we'll get maybe 1,000 new members from it. I'd figured if 300 members signed up 10 new ones each, that'd be 3000 new people and immediately \$45,000 in cash to get us out of debt and happy. The fewer people sign up, the fewer prizes we're committed to, but I'm more concerned about the slow growth. This RR, number six, is supposed to be the last one for anybody who hasn't rejoined, so I'll put a word in here about rejoining.

The Heron project is coming along, Heron seems to be the name. They'll be good, but I'd feel much better about them if Rivendell weren't such a worry. Marc isn't sure he likes the name "Heron," and his files for this project are labeled "Quickbeam." I'd mentioned that name early on (Quickbeam comes from Tolkien's trilogy, like Rivendell), and Marc liked it, but Gary pointed out that it sounds like an Allsport bike, which is kind of irrefutable, so that won't work. Gary just found a heron reference in a book on Tullio Campagnolo: "(Fausto) Coppi pedals like a heron who flies freely over a serene rice field...". Since we do like rice, that just about settles it. I'll mention something in the next RR.

APRIL 29. I called Popular Science to ask if they'd received my request to reprint the article, and my contact there, B.T. said he hadn't. I mailed it a week ago at least, so he should have. He did ask if there was a subscription price, and if there is, we can't reprint it anyway. I said "well, there's a membership price, and with membership comes a subscription, but the membership has some other benefits also, and we circulate some for nothing, too." He asked "is Rivendell a non-profit organization?" and I said "we lost \$11K last year, but strictly, no." Two days to go this month, and I hope they're good ones. Gary just told me UPS rates on frames are almost tripling, and it's not just UPS.

it's everyone. We just printed the formerly new rates, now we'll have to manua-damn! The printer is nearby, I'll go see if he's already done it. Nope, got it in time.

Orders are slow, but we did just get another frame order, the second one of the day. That's good, but I hope it doesn't come to halt when the price goes up to \$1,050. I get nervous when the phones are so quiet.

MAY DAY. It is eerily quiet around here, and has been for a few days. It's not right—the phones should be ringing, the mailbox should be much fuller than it is. We can go twenty minutes without a phone call, and that's just spooky. I will never again complain of being overworked, too busy—. I finished the catalogue, that may help, but I'd have thought the Reader would do more than it has. I don't like this, it makes me panic. All we can do is sit and wait. At least I have something to write, but man, this is not good. Masa and Spencer are assembling shelves. Maggi did a big mailing to bike club members. Mary bought us a small refrigerator for \$159, so we can eat cereal and cold things. We've been ordering out for pizza and Chinese food lately, and it's getting expensive. It's been at least half an hour since the phone rang. We sold three frames yesterday—the last day before the price increase. My modem hasn't worked for two or three weeks, so I have a month's worth of email to respond to, and now would be a perfect time. A guy's coming by any time to fix it. Jeff and Sue are having another baby today, probably. They don't know the sex, but they obviously know sex. The guy who came here to fix my modem checked it all out and the good news is my modem's fine. The bad news is, there's a "dirty phone line" which isn't as good as it sounds. He said it may be a problem with wiring in this building, and if that turns out to be true, I need to talk to my landlord. In the meantime he reconnected some wires and now I can't use my fax, even. I'm not a wiring-kind of guy, I'm sure the solution is simple, but it's beyond me right now, and I'm frustrated.

Rob's coming over tomorrow and says he'll be finished with the catalogue in a few days. We're going to put in some coupons. We need another computer. We traded a Gateway to Waterford for a PowerMac, but we need another so I can work at home, too. I hate spending money on computers when there's fork crown and stem lug and seat stay plug tooling to buy. Man, I sure hope we get a lot of new members from this contest. The money will go fast but we'll spend it well.

MAY 4. We have \$1250 in the bank with payroll next week and bills due. The days are slow, we have to cut back hours or miss a payroll. We have to get the catalogue out as soon as possible, and Rob said he could finish laying it out this weekend. I'd like to get number 6 RR out this month, too—with a reminder that it's time to renew if you haven't already. Just renewals, if we can just get everyone to renew, we'll have a great month in June. I read somewhere that

magazines have to send at least four or five reminders to get people to renew, but we can't do that, and I don't want to pester, anyway. What if they don't renew? Will we not send? I guess we can't—or maybe the member benefits will be enough incentive. I can't see cutting people off the mailing list if they've paid once—it's so expensive to get new members, so we should at least keep the ones we have. Member and non-member prices may do it. Anyway, we need a good Monday, Tuesday, Wednesday next week. When do we pay rent again? I think we have to wait for a bill, but I hope it comes around the 15th.

.My dad offered to loan me three or four thousand dollars, but that's his retirement fund and there's not much of it, so I don't want to do it. Payroll next week, lots of hills between now and then, we need a good week. It's Saturday, I'm here waiting for the phone to ring (TC just ordered 3 boomerangs) and working on RR6. I don't know, man. I just want more members, the catalogue out, and an upward trend, no matter how slight. Anything up. Our J&B bill is down to \$6K or so, all of it due in June-July-August, and that seems do-able now. I have to look at it like that—we can either have money in the bank, or we can owe a lot more. I've thought all along that if this goes down el drain I don't want vendors saying "yeah, and he took me for \$5K—how much was he into YOU for?" It's frustrating, because I feel that someone could take this over right now and turn things around immediately, and by year's end we'd be out of debt and have \$20K in the bank. It's do-able, but I don't know how to do it. Stop buying more inventory, that would help. If we have to buy to replenish stock, buy a little bit at a time. We're doing that with Ritchey now, and Kucharik. Stop doing custom frames—that would help a lot. The whole frame program is costing us money, but it's also our reason for being here (a big part of it, at least), and in a few more months or years maybe it'll turn around. The Bike Guide review next month, and then Bicycling's A/R review. Are they going to like the bike? Should I be in constant contact with them? We just sent them a bike, and that's it.

It's a funny thing about these frames. They're steel, they're hand made by people, they're crafted individually, and you know?, they show the signs of it, too. I don't know what people expect. They don't look like they were popped out of a mold: if you put two 54s together, you'll see two different 54s. Maybe it takes a good eye to see it, but every frame is just a little different. The geometries are identical, the placements of the bridges and all that are, finally, standardized, but the lugs and crowns and plugs are filed individually, and you can tell, if you have several of them together.

MAY 8. We overdrew the account today, so I borrowed \$3K from my dad—who-doesn't-really-have-it-to-lend. I don't know when rent is due, but I guess I'll just wait for an invoice. Orders are trickling in, maybe nine a day, and small. Rob is here working on the catalogue. We've

got to get that out, but how can we afford to print and mail it? Our hope, maybe not our only hope, but our biggest hope, is that the membership contest will bring in a lot of money the first week in June. I envision working here alone for a couple of weeks, because we can't afford to pay anybody. I feel like screaming, but I think I'm supposed to be more stalwart than that. Damn, this is a bad day. I finally got into my email and we're mailing out more RR's and membership information, so maybe that'll help next week. We need money. Ted offered to buy some inventory and resell it to us, and I may need to take him up on that. I don't know if the offer's still good.

We got a purple A/R in today, and it looks great. We ought to do a flyer to help generate cash so we can pay for the catalogue printing. A four pager will cost .32 to mail, I could do it in a day, and I've got to do it tomorrow. I'm afraid it'll make the mailing of the catalogue leu dramatic, though, and that Scares me. Tough, no choice, we broke, have to do it, damnnnn. At least I don't have to suffer Pad Reubens's humiliation, at least I don't need gum surgery, at least I've got my physical health. We have \$200 credit at Island Cycle, too.

1030 p.m. I got tired of watching Richard Allen Davis confess so I came back here to work. We need a flyer with a coupon, I can do it tomorrow, after I finish editing the catalogue we can't afford to print, much leu mail. I'm surprised at how I'm taking this. I actually think we'll get through it. We'll have to cut back hours, but that's better than going down the tubes in a month. June should be better—the Bike Guide review, the membership contest, the catalogue out, a new Reader, too. We've just got to hang on to money until then. This is our first month and we're late with the rent. I expected a hill, but Mary said "You don't get bills for rent, you just pay it on time." Oh.

MAY 9. It's deadly slow around here and for the first time, really, since we started this. The phones were dead quiet for an hour and a half, and then it rang and it was Gary (not that there's anything wrong with that). I feel as though I'm staring some big monster in the mug. I think, I tell myself that all we need to do is a mailer, get the catalogue out, wait for the Bike Guide review, and just hunker down between now and then, but "hunker down" is the kind of phrase that really means nothing but just sounds good. Late this morning when Spencer and I were sitting here feeling gloomy (I was writing this, too), a fellow bounded up the stairs (there are stairs) and said "I have a subpoena for you" and handed it to me and left. I thought "oh, shoot, what now? who hates me?" or some variation of that, and said "I don't want it." He said "You have no choice" and started to leave. Then I saw it was for someone else in the complex here, and I said "I'm not your guy," and he said "why'd you let me make a burro out of myself?" or something like that. Anyway, that was the good news of the day—nobody wants me in jail or court.

I've always feared and wondered about being here, no way out, nothing happy on the horizon and worrying about money in a big way—what would I do, how would I take it, would it draw out the worst in me, would I turn into a mean guy, how would it affect my marriage, my being a dad, all of that. Mary quit her job last month to work here, so we don't even have any guaranteed income. She did a bank reconciliation today and said "we have \$500 in the bank before payroll, and that's after the \$3K your dad loaned us to cover the overdraft." That's also before Gary cashed his check, and it was a big check because he let us skip a payroll earlier, and we caught back up now. DC paid off his frame today—he owed \$830, and that'll go to rent. I laid out this flyer this morning, it looks like heck, but we need to get it out soon. I worry that we'll turn into a schlocky-tacky mail order place. It's tempting to cut prices to get orders, but the prices are already really fair, we can't afford to sell stuff for less, and what would the people who paid full price think? It would get to the point where nobody ever wanted to buy anything unless it was

I (and I speak for Spencer too) don't want to beg for orders. We have to earn them by doing things right, providing the right things to the right people at the right prices. I thought we were doing that, but things have sure dropped off. They dropped off as soon as we moved here. Now, when orders are at an all time low, we have higher overhead than ever. Not good! It makes it hard to love work, so I'm down to liking it now. I've got eleven months of rent ahead here, and I suppose that at very worst Spencer will lose hours and maybe go back to school and eventually get another job with more promise.

MAY 14.. \$580 today, pretty bad, but we got Brooks saddles in yesterday so we could charge the ones we were holding, and our batch of charges totaled \$1200 or so. We're closed this Friday, we have to be, and I hope it doesn't hurt too bad. Gary's coming out here, Ted is too, and we have some things to talk about. We'll ride this weekend, too.

We need money to print the catalogue, mail it, too. Every last hope we have is in the membership contest, the new mailer, and getting the catalogue out. I'm at the end of my rope. I don't know what I'd do if this didn't work, but I can't just move the family, and after a year and a half of this, I'm not fit to work for anyone else. I want to learn Quark so I can do the Readers myself. Nate's teaching me.

MAY 22.. We sent out a flyer a few days ago, some of them, anyway, and we'll send out more when we have the postage. Some response, that's good. Gary and Ted were out here this weekend, and we and Jeff had a good ride, Carradices packed full to the brim. We heard two wild pigs being hunted and later saw them gracing the front of a little four-wheel drive all-terrain thing. The guy who got them stabbed them (no guns allowed in the park), because they wreck the land, cause erosion, eat up all

the truffles. He had some dogs with him, and it works like this: Dogs grab the ears, other dogs preoccupy the pig, then the guy goes in just behind the front leg anti stabs the pig in the heart with a Buck Special (a big knife, the one with the blood groove, apologies to probably most people alive, but these are not native animals, they run amok, and besides, the meat feeds the homeless in Oakland).

Yesterday was okay, moneywise, but I'm not sure we can make payroll. I'm trying to get the catalogue finished, but as I'm rlliting it (with some help from PM), I find myself rewriting sections and messing with the layout—and when I do that, I dig a deep hole. It's a big catalogue, but it costs \$4.200 to print, and probably half that much at least to mail.

MAY 24.. It's been slow, but the flyer is out now and next week we ought to see some orders. We'd better see some. The catalogue is nearly finished, and we need to mail it out. I have a feeling I've said this before, but it is the only thing that matters now.

MAY 26. No mail response from our flyer, but maybe this coming week? It's kind of spooky, no response yet. We've gotten a few faxed orders, but it's not like I-the-Pessimist had expected. My big concern now is the catalogue. I've edited it and messed up the layout, and I'm afraid Rob'll be upset, and I know he doesn't have time to clean it up again, but we need to get it out. The local printer, just across the driveway, will probably print it, since he takes plastic.

My attentions are being diverted by other projects these days. The complete bike project could help us a lot, but I don't want it to interfere with or compete with the Heron project. Would a line of women's bikes sell? I wonder what Georgina Terry's reaction would be. I don't know her, but she seems nice and sincere about growing the women's market and making things better for women in general. How would she respond to another women-only line of bikes? Would I get yelled at for not being a woman? Would people see it as a less than sincere effort because I'm not one of them? Would there be Terry ads telling people to buy "the real thing," or "women's bikes designed by a woman," thereby repositioning us as imposters? We've designed some customs for women and I have a good feel for how to do it, I mean this is something I know. Not all women need a special frame, but some do and I know how to do it. I get my braces off tomorrow, I hope.

JULY 28. Dang. M wrote a column in a local cycling tabloid, accusing me and Rivendell of trying to divide cyclists into luggers and tiggers, sort of a "build bridges, not fences" kind of thing. He originally wrote it for the RR, I refused it, he sent it to a place that has 10x our circulation. Man, I just want to be left alone.

AUGUST 1. Last night someone broke the front door window. Some kids across the street are suspect, since they're always hanging out and

have already been found with property stolen from cars in the lot. I've got to get a metal door. There's no "bicycle" anywhere on our sign out front, ~~was~~ as nondescript as possible, I think they were just being creeps. Maybe a closed circuit TV would be a good idea, or maybe all the people in the complex will chip in for a guard. What a drag, and how depressing. Crap.

This RR is too late and unless we pay someone a lot of money, we'll lay it out ourselves and it may look like crud, but that's the only way to learn the layout program, short of tutoring, and we can't even afford that right now. The catalogue is at the printer and we should mail them next week. Peter's been helping organize, clean things up. Sales are down to about \$300 per day, and we need \$1,000 to make it. The catalogue, the catalogue.

AUGUST 9. The printer says we can save at least \$1,000 if we mail the catalogue and RR6 together, so we're trying to finish 6 in a couple of days. Mary can't work on it for a few days, so Peter's sister is taking over from page 10 on, and I've got to get all the word files in clean order for her. I lost a bunch of the progress report. I'd like illustrations for the stem height story. Jobst was going to send some photos, but that's not happening, but it's a small thing. We'll put a flyer in with this Reader, too—that'll help things.

The cyclo-x frame is finally being detailed, and we've decided to go with road tubing and an A/R rear end, for more fat knobby tire clearance. I think it'll be good, but I can't imagine that we'll sell more than a few. It's okay.

The Nitto order came in. We have enough to make payroll already. Mary says she's going to start putting money in a different account, too, for savings. We bought a mess of Sun Tour A5000 triple fronts really cheap last week. I like them.

AUG 12. We aren't making it, the family, financially. We refinanced, and now our payment is less but doesn't include property taxes, and they're coming up. What do I do? Give myself a raise the company can't afford? Give raises across the board (a short board, but still a board) and really strap Rivendell? Sell stock? My own, or new stock? Mary gave me the word today, and I just don't know. The Heron project could help, but it's not here yet, and who knows—it might hurt, too.

My grandmother died yesterday. I feel like I'm either retaining water or getting fat. I'm just worried, and I don't know what's next. There's not a lot of places to cut back, here or at home. We need a good Fall, a good A/R review in *Bicycling*, a good something else. More members. This isn't supposed to be a two-year gig (a2frogs). The door guy should be here tomorrow to put in a new door to replace the one that was smashed a couple weeks ago. Getting the catalogue out will help, but maybe we should need to sell some stock at \$1.50 per share, in I just opened the mail, and there are three frame checks totalling \$2,400! That's good, we'll make payroll.

LETTERS

ONE TOUGH DOUBLECENTURY

Every Spring, the popular cycling press resumes its ritual deification of the fixed-gear bike. “It will perfect your spin,” they say. And ~~so~~ it will, but there is more to the story. By “fixing” the drive train and rear wheel, you eliminate coasting. Coasting is your friend, and very often your salvation. What is the first thing you do when your bike makes a funny noise? When your tire blows out? When your leg cramps? When a pothole jumps in your path? When your pedal/toeclip releases unexpectedly? **You** coast, But on a fixed you can’t.

The popular press seems to believe that, during the one month a year you spend (part time) on a fixed wheel, you will be able to suppress that panic-triggered gene that says “stop pedaling.”

And, should you fail? I **was** personally quite shocked at the projectile force I was able to achieve during a moment’s indiscretion, considering that the rotation of the cranks would seem to maintain some sort of equilibrium, pushing and pulling me simultaneously. In the end, “pushing” won, hurling me over the bars, crushing my helmet, splintering my collarbone, while the pulling force scored only a broken ankle and, torn Achilles and medial collateral tendons. The morals: don’t stop pedaling; wear a helmet.

Two more thoughts on coasting. It ensures an easy transition between seated and standing pedaling, and leaning through corners with the inside pedal properly up.

Brakes. Fixed gear bikes need brakes. If you start with a track frame, there won’t be a way to mount one, probably. Buy a road fork ~~so~~ you can do it right, and don’t listen to those who say leg resistance is all the braking you need. If you’re like me, **you** haven’t developed whatever muscles are needed to make this happen.

Tires. Fixed gear bikes better have good tires, in good condition, because a blown tire on a fast downhill is terrifying on a fixed wheel. A gear of about 66 inches works well for most situations.

The good: Fixed bikes are fun, and can be efficient. Give me a track bike with a reasonable gear and I’ll race you and **your** Kestrel/Dura-Ace rocketship up any hill. The secret: Fixed gear bikes weigh about six pounds less than comparable derailleur bikes, **I** regularly finish the local double century, a moderately hilly one, faster on my fixed bike than **I** do on my road bike.

Fixed gear bikes are great if you understand their limitations and develop the skills required to ride them safely. But they should be taken seriously.

—UNK

MORE IS BETTER, CAN BE LIGHTER

After years of wondering, I finally did the math, and confirmed my suspicion that the 15-16-15 36-hole wheels I’m building now are lighter than the 14-15-14 32-hole wheels I used to build and that are the norm on high-end road bikes. Here’s the article I posted yesterday. 32 spokes are lighter than **36** only **if** they’re the same gauge. But most if not all of the 32-spoke rear wheels I’ve seen on current-model high-end road bikes are 14-15-14. A wheel built (correctly) with **36** 15-16-15 spokes will be stronger *and* lighter (but with slightly less favorable aerodynamics.)

(**For** the stronger part of the argument, see Jobst’s book. **For** the lighter part, consider: assuming the same length and materials, the weight of a spoke will **vary** with the square of the radius. 32 1.8mm spokes will weigh 81.43 * length * material-weight, while 36 1.6mm spokes will weigh 72.38 * length * material-weight. (Length and material-weight are the same for both.) **For** the larger diameter ends of the (swaged) spokes, the numbers are about the same. That you need four extra nipples shortens, but does not close, the gap — and you could increase it further by trading some **of** the extra strength you get from the extra spokes for a lighter rim. Somebody correct me if I’m wrong: the current trend toward smaller numbers of spokes is in search of aerodynamic advantage, not weight loss. If you’re doing riding where the (small) aero advan-

tage doesn't matter much, you're better **off** with the stronger, more durable wheels the come from larger numbers of [thinner] spokes.)

—Eric House

BASKET IS GOOD

I have a cheap wire basket mounted on my rear rack, held on with hose clamps. This system has worked great for me. **You** can just plop your stuff in there and go. I have a bag that fits perfectly that can also act as a courier bag allowing me to then use the basket for a bag of groceries or whatever. It's amazing what one can carry using a basket and bungee cords!

This system works especially well when you've got to do multiple trips and need to carry what's in the basket with you. Check out any campus and you'll see students' bikes with milk crates attached with bungee cords. I'm surprised this system hasn't caught on with manufacturers. I would be great if Blackburn, for example, would make a basket using aluminum tubing like its racks. The basket could be lower near the saddle and higher at the rear to fit better and look swoopy. My whole rack/basket ensemble removes in seconds by removing the 4 allen bolts holding the rack to the bike.

Maybe a Rivendell basket!

—Wayne

SILENT KETTLES

I noticed that you did not live up to your promise of **future** poems written by Spencer and Maggi. Well, I'm putting you **off** the hook.

Also, I have notice that someone there likes John McPhee (the writer). Mr. McPhee lives about five miles from me, and I've met him a couple of times through some friends. I could **try** to get an interview with him, but I cannot guarantee anything, as he is a private person and I'm not sure whether he'd sit down for an interview with me (I am 19 years old.) He is rather nice and accommodating. For instance, when I met him I asked how he writes and researches all the details of his stories. He was happy to tell me. Here it is: He first researches his stories with hundreds of interviews with participants and observers. He reads the local papers for articles about his subjects, where applicable, and he spends time in the area where his stories take place. Once he has all the information, he comes home to Princeton. In his office, he writes each singular fact down on a notecard, and each notecard finds a space on a hook

on each of the walls of his office. Then he sits **down** to write. For each sentence, he gets up, **walks** to the wall, and pulls down the notecard with the information he wants. In this way he physically maps out the direction his story will take, and that's why his stories are so richly detailed. Now, send me a list of questions you would like me to ask Mr. McPhee if you are interested in having me pursue and interview. I have read a great deal of Mr. McPhee's work but he's not my favorite type of writer, so I may neglect to ask some of the questions a McPhee aficionado might. Well, that's all for now. I **am** still pushing for a baseball cap, I think it could be very profitable. Now that the fork crowns are completed, please send me information on how much it would cost to buy just a road fork with cantilever posts for my cyclocross bike. Thanks again. Good luck.
(and here's my poem)

Stop all the clocks

Let the girls wear black gloves.

Today, tomorrow, eternity — of a single tear.

Kettles will not whistle.

Flowers will not bloom.

All will be mute

in the world

left without you.

—Ali Aslam

Ali, you are the most prolific poet of all the Rivendell members — and the most bold, as well. **Thanks. I think you must have had someone in mind when you wrote that poem, and I think you should give it to **her**. Clip this column.**

Wow—you know John McPhee! An interview would be nice, but I don't know how many of our members know who he is or would care. He is the best-of-his-type writer I know, and he's written three of my fifteen favorite books, but I don't know—maybe a more bicycle related person might be better. I'll think about this. I don't want people to start to wonder how committed we are to bikes (totally, plus soap).

We get a few requests for regular forks, mostly for mountain bikes and cyclocross conversions. I'd like to offer them, but we aren't going to build custom forks. A fork should be designed with the frame — if it isn't, the geometry gets whacked out and the next thing you know, your 73.5-degree head tube is 73.9!

SHIMANO SLIPS UP

This won't be news to some of you, but it amused me to no end. For fun I did a little switcheroo with gear-changing gear. Ever look at the way Shimano Ultegra bar-end shifters are mounted? They're exactly like downtube braze-on fittings. In my quest for inexpensive R&D test beds, I decided to mount my Superbe downtube levers (fabulousfriction - no clicks of any kind) on my XO-1's bar ends. Works like a charm and feels like a dream, tho' the levers are too long and skinny. That left my road bike without shifters, and all I had lying around were the Ultegra bar-end levers. No problem - just screwed them right on to the downtube bosses. Had to turn the right one 180 degrees to get the index clicks in the right place, and it would have been nice to have a cable adjusting barrel. Would you believe that you can use an Ultegra bar-end lever on a downtube attached to a Simplex drop para rear derailleur shifting a Sachs chain across a SunTour Winner 6 freewheel, and the indexing is dead on?

—Ted

BEERPROOF BAGS

The Carradice saddlebag is more waterproof (liquidproof) than you might think! I stopped by a brew pub on my way home tonight. This pub sells ale in quart mason jars to go. They have a seasonal variety that is soon to disappear and I figured my partner and I could share one over dinner. I pointedly asked the person manning the taps if he thought the jars would withstand the remaining 14 miles of my commute over Seattle city streets. He said, "Oh sure, you know people pressure can stuff in these, we'll just screw the lids on tight." So I bought a quart and became the Beta test site. Well, I got home & found .25 quart in the jar, and pert near the remainder rested comfortably in my Carradice saddle bag. No trace of moisture on the outside, but an ale drenched tool bag floating in a puddle. I sure am glad tonight was the night I left clean clothes at work.

—David Crispin

FOREST DWELLER LIKES SOAP, WANTS RACKS

Earlier this week I received a package, confused, yes I was extremely so. I couldn't remember having any back orders, so I wanly opened the package and WOW! what a smell. Being a forest dwelling creature, I can appreciate the perfume. Unfortunately most of my friends can not, but they have no taste for the finer things in life, as they are into synthetic odors. Poor children, they don't know

what they're missing. Anyway, a couple of questions: 1) Are the racks in yet, and if so, what shape are they? 2) (This question was of no general interest, had more to do with the packing slip and what appeared to be—oh, forget it—ed.): With the wonderful soap that you sent, the packaging slip appeared as if it should have had something else stapled to it. All I got was details of the new hub and front mech; maybe it was details of more things to add to my order that I'll fax in a few days.

—Andy Holmes

Andy, we have more samples of the Nitro racks. They're tubular steel, either 7mm or 10mm outside diameter, protected with electrodeless nickel, same as a Ritchey stem. The standard configurations, vln is what we have in our hands now, don't quite work with our bikes (unless we file some things, move other things, and use Mafac brakes). We've sent Nitto drawings and a fork and requests, and hope to have samples by the time you read this. We hope to be selling racks—small fronts, regular fronts and rears, low-riders, and a fancy modular rack—by July.

TRYING TO KEEP THE CUSTOMER SATISFIED

I want to tell you that I got the Brooks B.17 saddle. I was a little anxious at first as the saddle looks and sounds (when rapped with a knuckle) like wood. I didn't think it was going to be the most comfortable saddle I have ever sat on. In fact I was thinking that I had made a rather expensive mistake. I was wrong. It is the most comfortable saddle I have ever sat on. None other is even close.

My only complaint would be that the sweet spot seems to be small. Any shift forward or aft lessens my comfort considerably. Does Brooks make a saddle that might be a little narrower in the rear and some what longer? I have heard that the Team Professional model is as I described. I also heard that it is not "Pre softened". I'm sure that the B.17 must have been "Pre softened". Do you know where I can find a Professional model in that "Honey brown" color in a "Pre softened" condition? I would like to put one on my tandem.

—Larry Fasnacht

Larry, the B17 is not pre-softened, it's just shaped right and comfortable right off the bat. If a saddle sits around a long time it gets hard as wood, but we get fresh saddles and they are softer naturally. Brooks does sell pre-softened saddles, but it's not our standard. By the way, pre-softening was Daniel Rebour's contribution to the Ideale saddle. Brooks pre-softened saddles are relatively recent, evolutionarily speaking. The Pro is 10mm nar-

rower than the B.Z 7, but I think they're the same length.—G

THE RETAIL BLUES

I don't know if this will make you feel any better, but my life is much like what you described in your recent Progress Report. We just finished our first 12 months with the bike shop. We didn't quite make \$100K in sales (which is more of an emotional goal than anything else), and we lost money. I've been late with payments to suppliers, and I've had to dig farther than I've wanted to into savings. I'm glad to see that I'm not alone, and maybe the thought will help you as well. A couple of weeks ago, I had a discussion with Raleigh's credit manager who is actually very nice. She wanted to know why I was about \$8K past due. I explained that Raleigh requires me to buy more bikes than I want in the pre-season and then requires me to pay for them before the season even begins. Of course, I could get better dating if I agree to buy even more bikes.

Not that all of my financial difficulties are somebody else's fault. Bought a couple of Waterford frames to hang from the ceiling and to build up when I get the chance. I carry Torelli road bikes. I've got a few fancy wheels hanging up next to the Waterfords and an old Lemond road bike that I just HAD to take in on trade. This weekend I heard that the nearest Bianchi dealer has moved farther away. That got me thinking about picking up Bianchi as a new line, but I know that it's more of an emotional thought than a rational one.

I'm sure that I could make more money if I stuck with the sub-\$500 bikes like most of my competitors, but that wouldn't really be any fun and I'm doing this BECAUSE it's fun. My customers have been great and don't wave the latest Nashbar catalog in my face all that often. They feel comfortable enough with me to come show off some neat new bike that they bought SOMEWHERE ELSE. While I hate to lose the sale, I'm glad that they like me enough to include me in the joy of their I'm happy that we've survived the winter. The weather has been rough, and every day that I wake up to snow or freezing rain is difficult because I know that nobody will be in the shop. Now, it's much warmer, and people come in even when it's raining. I don't know how you feel about Rivendell, but I think that Tullio's Big Dog Cyclery is going to make it in the long run. I'm just worried about how much time and money it'll take before we turn the corner. Good luck!

—Todd

G—You have savings?!

IRKED AND GOOD

Re: Cigarettes in China. I suppose we'd raise an eyebrow if the targeted market segment was young men, or young people in general, but I get the feeling that the fact that the targeted people are women/girls is particularly irksome. If my intuition is correct, I think it exposes a double standard that ultimately leads to more harm than good. re: Schwinn pieces. Good concept, well written, simply awesome. I will reread them.

—Felix Y.

A HAPPY CAVEMAN ONCE AGAIN

I started cycling in the spring of 1994 after I moved to this rural area with open roads, challenging hills and generally favorable motorists. The motivation began one somewhat tipsy evening, when a friend suggested we ride around the local Finger Lake, Cayuga. The trip is about 90 miles, and at the time seemed sufficiently impossible for me that it was the perfect challenge.

I dusted off my old mountain bike and tinkered with it to make it roadworthy. I went riding with a friend, and I was absolutely dazzled by her bike computer. I had to have one; I had to know my speed, distance travelled, average and maximum speeds. These statistics seemed indispensable for the enjoyment of any ride.

Eventually, I bought a road bike, having learned that it was the best for riding on the roads, and I moved the computer over. I was annoyed at having to dig up a new set of cable ties for the transfer, but having those all important ride stats was still first and foremost in my mind.

The big day came soon enough, and I calculated that I could make the ride 100 miles if I started from my apartment (somewhat off the loop).

My first century and first ride around the lake, all in one. The ride was gruelling, due to heavy rain throughout the second half and a good case of the bonk at about the 75 mile mark. I eventually got my energy back, and had a pretty good rhythm for the home stretch.

I got home, checked the stats, and lo and behold, I had only travelled 98.6 miles. It was pouring rain, so I just went inside. Later, it started nagging at me. I hadn't completed the century. I consoled myself with the belief that 1.4 miles is within the error range of the computer, and that any reasonable person would say that I had completed the century. Perhaps I've been a scientist for too long, but I still couldn't escape the fact that I hadn't done the century. Lost in all this was that I had made it around the lake.

Last year, I was riding down one of my favorite descents. While awimp when it comes to descents, I deliberately avoided even thinking about the brakes on this one occasion. I checked my maximum speed later, and it read 49.7. Foiled by 0.3. I couldn't really say that I had gone 50 mph. What a terrible disappointment—never mind that it was one of my most thrilling descents, and gave me the confidence to let go of the brakes and to trust the bike. One of my favorite training loops is 38.3 miles long. I've gone around the block a few times to make it 40, I hate to admit. I had since purchased a computer with a cadence kit, and that's what made me realize how crazy this was getting. I've become a slave to a piece of plastic, silicon and metal. A soulless little contraption that does nothing to enhance your appreciation of the ride, in fact, it detracts from it. When I get home, and it reads 39.2 miles, I have this urge to ride around the block to make it 40.

I'm not installing the computer on my new bike. I am going to ride for the enjoyment of riding. I don't want my handlebars cluttered. I don't want wires running all over my frame. I don't want to feel I haven't accomplished something if the LEDs haven't rolled over.

I don't want to be bothered with details like distance and speed. When people ask how far I went, I'll tell them where I went instead.

—Michael Dolenga

HELIKES TONY GWYNN, TOO

The only way I can force myself to play that bastardized creation known as slow-pitch is to field with my Nokona and whack that oversized ball with my Tony Gwynn signature Louisville Slugger. I never thought of myself as a retro-grouch (first heard the term 8 months ago) until recently and now I'm seeing it in everything I identify with (Nokon, wool Bball jerseys, carbon steel/wood handled cutlery, etc). In September of '95 I decided to get back into road bike riding. The last time I had ridden was in Late '86, and I sold off my Italian machinery shortly thereafter and bought a Scout 4x4. I commuted on an old mountain bike. When the bug struck me to get another road bike I told my fiance Maggie (now my wife) that all I wanted was a good old Italian frame with Campy NR/SR components and tubulars—just like I used to race. Little did I know that I was entering a world of expensive, disposable bikes with no soul on one side and hoarders of NOS on the other. All I wanted was an everyday race bike I could work on. I missed out on the Bstone thing—it was

just getting rolling when I stopped racing, but in December 1995 I found out about Rivendell and saw an old Bstone catalog. I couldn't believe it: People into the same things as me. I've used Nokonas for years, I play tennis with my trusty Vitus Gerulitus model Snauwert, I love microbrew, (rockclimbing on real rocks), tube stereos, and forged carbon cutlery. I'm not going to apologize. Fork crowns do matter, orange is a great color for bikes, and I like strapping my foot into a pedal. There is a place in this world for quality, handcrafted products that are not made for an art fair but for real people.

Man, all I wanted was a simple bike and it's turned into an epic journey—but the people I've met who understand are the best. I see it as fate and destiny that I got back into cycling when I did because 1) I was able to gather up a bike, spare parts, tools, and miscellaneous cool things that will be really difficult to find soon, and 2) I injured my knee on the job and my desire to get back on the bike is fueling my recovery. Frames. In an earlier issue you wondered if there would be interest in less expensive Tig-welded frames. I can't believe I'm saying this, but YES. It would have to have a cool fork crown, though. I need a beater, a training bike, and a commuter. The Rivendells seem too nice to take fire-roading in November. Is the cruiser idea still alive? Freewheels. I prefer a 14-26 7-speed. Can these be ordered from Sachs? If there was enough interest, could Rivendell get Sachs to make a batch?

—Alan C.

Alan, Riv, Wford, and Rona have been working on a way to make good \$650 frames. Nothing is settled, but the way it's shaping up is Brand: ~~Heon~~ Frame material: Reynolds 531 Type of construction: Lugged, silver brazed. Models: Road, road touring, all-rounder style, and cyclo-cross (maybe road and touring at first). Rivendell's role is to design and market and sell them, and the designs are finished and good. Waterford makes them. Rona (Ted Durant's company) funds the project and tackles the administrative duties. Freewheels: Nobody makes a 14-26 7-speed, darn. Sachs can't do that, not enough market, too much money. I haven't actually asked, but Sachs people are members, they'll read this, and if I'm wrong, please correct me.

===== ROW, ROW, ROW YOUR BOAT =====

A guy on the crew that I coach at the University of Chicago has gotten very curious about cycling and wants to buy a road bike. He's been asking questions about aluminum and carbon fiber, *so*, feeling obliged to rub his nose gently in the traditional way of looking at things, I had him look up the Riv page on the Web and read some of your tracts on frame design and materials. He wrote back to me that he'd found the stuff interesting but thought it was "like political propaganda."

GRANT, THIS IS WHAT I WROTE BACK TO HIM, IN CASE YOU'RE INTERESTED IN HOW I DEFEND THE RIV IDEAL WHEN IT'S CHALLENGED BY AN ADMIRER OF NOVELTY.

Rick:

I guess Grant Petersen is a propagandist. During my racing years sheer pragmatism led me to embrace some of the innovations that he likes to badmouth, but I used them with some distaste, and only after the guys that I was trying to catch started using them. I'm essentially in his camp. I don't think technological "advances" in sport are necessarily good. When equipment gets "better" (more gears, lower coefficient of drag, lighter frame, stiffer hull, what have you) it also gets more expensive, almost invariably; and the "progress" doesn't make the competitions more exciting, it just makes the bills bigger. Times get faster, bars get raised higher, javelins fly farther, but the competition itself doesn't get any better—the 1956 Olympic men's eight-oared rowing final wasn't any less exciting than the 1996 one—and the fundamental problem of sport stays the same: to prepare better than the other guy so you can beat him with whatever are the prevailing tools of the day. All the progress just makes everything more expensive (and uglier, in the case of rowing), so third-world countries and third-world programs (like the U of C Crew) have a harder time fielding viable teams.

End of sermon.

—Howard

As much as I believe what I said in my letter to Rick, I have no answer to the problem. Given the natural human drive to improve things, it would be silly to condemn frame-builders and vaulting-pole makers and boatbuilders for trying to outdo each other. The question is, can we find a way to reconcile that one-upping instinct with the need for some sane limits on equipment costs in sports?

The international governing body of competitive rowing, the Fédération Internationale des Sociétés d'Aviron (FISA), has done some smart things like setting minimum boat weights for **all** standard boat classes, and stipulating that in the eight-oared sweep class—where the boats are the biggest, about 60 feet long—the only boats allowed in international competition after this year will be "sectionals," made to be broken in half for transport in regular air-freight containers. The latter rule takes a potential advantage away from countries whose national programs may be rich enough to charter entire planes to fly stiffer, lighter one-piece eights across oceans for big races.

FISA has the right idea. But its rulemakers are lucky enough to be managing a sport in which competitive athletes, coaches, and team directors make up the entire market for the equipment. There are no shell-and-oar retailers to speak of—you order the stuff from the people who make it—and the only glossy rowing magazine in the United States is the one put out by the national governing body. Suppose, in contrast, that the UCI and all the national governing bodies in cycling banned aero bars, monocoque wheels, and rear hubs with more than **8** speeds. What would happen? If there were no one but bike racers buying bikes, Campagnolo and Shimano probably wouldn't much mind a ban on gazillion-speed rear hubs. But the main market for cycling equipment is the recreational market, a vast one in which there are no rulemaking bodies (except the U.S. Department of Transportation, or Consumer Product Safety Commission, or Food and Drug Administration, or whatever it is that puts those quick-release-negaters on fork tips and requires helmets and such) and in which sales are driven by the rampant, near-erotic hunger for novelty that the glossy bikezines and the trade shows do *so* much to promote. In cycling there's an entire industry based on the U-Need-It marketing of new stuff; if the new stuff got banned from racing then the marketers would be hamstrung, because big-time racing is an important weapon in their U-Need-It campaigns. R&D would slow, advertising budgets fall, magazines disappear. People would compare their old bikes to the new bikes and not see much difference. Shops would fail—so I fear, anyway. And as much as I'd welcome some restraints on the cycling arms race, I don't want to see a single bike shop fail. If you know what to do about this, please write.

BY EARLE YOUNG

JOBST OVERVIEW



he first glimpse of Jobst Brandt's house leaves no doubt that he is serious about bicycles. Bicycles, parts, tools and posters dominate the small stucco house near downtown Palo Alto.

Jobst comes to the door in a plaid shirt and casual slacks, still wearing his bicycle shoes. He is well over six feet tall, and slender from riding thousands of miles a year for nearly 40 years. Bushy eyebrows make his eyes look even more deepset and give him a hawk-like demeanor.

When Jobst gets started on a subject, he's into it for the distance. His passion makes it quite a ride. Asked about his annual summer rides in Europe, Jobst tells a richly illustrated tale of touring in the Alps.

Each summer, Jobst rides the famous high passes of the Alps — Stelvio, Galibier, Furka. Jobst has albums full of pictures, but the best of them got made into covers and posters for the Palo Alto Bicycle Shop catalog. His pictures show narrow roads winding up long passes in desolate mountains. While he does have some hair-raising tales of brutal climbs, frightening descents, dark tunnels and miserable weather, Jobst doesn't dwell on the hardships.

Rather, he tells of the Hotel des Glaciers on the Lauteret Pass. Since 1959, Jobst has stayed in this family run hotel that was destroyed by the Germans during World War II. In rebuilding, the family got as far as the first level, and have a fabulous stairway that ends in the ceiling. But the hotel is also a school for waiters, and offers top notch service despite its remoteness.

Or he'll talk about the Siebers of Chiasso, who made tires for him after his melted off his rims. "I know Cinelli," Jobst quotes Sieber. "His wife used to work here." That's where Cino Cinelli met his wife years ago. Jobst met the Cinellis through his bicycle that he bought at the Cupertino Bike Shop.

And Jobst tells a couple of Cinelli stories:

As an engineer who was having bicycles built for him, Jobst wanted to do something about bent and broken rear axles. He traced the problem to horizontal drop-outs,

which do not fully support the end of the axle, so he designed an had made two sets of vertical dropouts that he had seen at the Olympics on ease German bikes, and that would morefilly support the ends of the axle. Two of the dropouts went on his next frame and two went into a drawer in Cinelli's desk. Some time later, Brandt went back to Cinelli's workshop and found that one of the tight dropouts was gone. Nobody knew where. And then less than a year later, Campagnolo introduced vertical dropouts.

Brandt takes this apparent theft in stride, pointing out that the Campy vertical dropouts weren't thick enough, and it was common to weld washers to them to make wheel changes from other frames convenient.

And later, in the '70s, Cinelli bicycles were featured in a sexy pictorial made in Oscar Wastyn's Chicago bike shop in Our magazine. Jobst still has a copy of the magazine, and a note from Cinelli thanking him for sending a copy to him.

Brandt willingly shares his knowledge with anyone who can use it. Our mid-evening conversation is interrupted by Bud Hoffacker of Avocet, and Jobst carefully explains how to calculate a grade in percentage.

His knowledge is respected enough that he testifies as an expert witness in tort cases involving bicycles. As lucrative as it is, this is one place Brandt does not enjoy applying his knowledge. He describes a couple of cases where bicyclists had sued manufacturers because of accidents blamed on product failures. He states that all cases with which he has been involved turned out to be rider error, and despite that, most are settled out of court with a payment to the cyclist.

Jobst blames the lawyers. They settle so that they can go to the next guy and say, "see, even if you lose you win." Jobst makes his money, but it clearly distresses him to see the industry burdened with unjustified damage claims. Get him started on something else that makes him angry say, for instance, bullshit in the Internet newsgroups, and he really goes off.

"Some people today don't believe there are facts," he said. "They think there are only opinions, some with more support than others."

When he confronts that attitude, Jobst can be short and sharp in his criticisms, and what often follows such an exchange is a barrage of abuse aimed at Jobst for being intolerant. But he is intolerant of ignorance and works hard to banish it.

When Jobst makes an assertion about bicycle engineering, he can back it up with solid research, more often first hand than from other source materials.

For example, one thread in the rec.bicycles.tech newsgroup carried the claim that certain aerodynamic wheels would actually work like sails and provide some rotation in a cross wind.

While it is an appealing thought, Jobst immediately had doubts. Sails provide forward motion through asymmetry, creating an airfoil. It seemed unlikely that the symmetric shape of tri-spoke wheels would generate the same effect. But before he posted his doubts in the newsgroup, Jobst tested the theory by mounting the wheel in a fork on a broomstick held out the window of a moving car, and changed the angle at which the wind hit it. He found that there was no angle at which the wind would rotate the wheel even if it were already spinning.

And this is just a small example of the lengths to which Jobst will go to research a problem. A better example is his book, [The Bicycle Wheel](#).

Brandt is a research engineer with Hewlett-Packard Labs, and he used some of the company's computing power to model a bicycle wheel in use and failure. Using the model, he explores the theory behind what makes a good wheel. He then gives explicit directions on how to race, tighten and true a wheel. The thin volume is so well written and illustrated that it is almost threatening to those of use who like to pretend that wheelbuilding is an arcane art, perfected by the few. It is now in its third English edition and he recently translated into German.

The production of Avocet's bald tires is another example of Jobst's research. Working with Avocet, Jobst built a device to test rolling resistance of tires and the lean angle at which they lose traction.

When the curves were plotted out, they showed that good tires had less rolling resistance than cheap tires, and that good clincher tires actually had less rolling resistance than tubulars. But there was something about the shape of the curves that was a little amiss. The tires with the highest rolling resistance also showed the largest reduction of rolling resistance as tire pressure increased. As the tires got better, the curves got flatter. But the curve for tubulars started higher than the curve for good clinchers, but it was flatter. Hmmm...Could it be that tubulars themselves actually

had lower rolling resistance, but there was some other factor that increased it? And here, Jobst's engineering met his 30-odd years of bicycle experience. Old-time track riders used a hard glue on their tubulars, with the only explanation being that it gave less rolling resistance. And a careful look at the base tape of a road tubular confirmed what the graphs and traditions suggested — that the glue, pressure sensitive and soft enough to allow the tire to be changed on the road, was the reason for the higher rolling resistance. A silver gray staining in the glue along the edge was aluminum dust generated by motion between rim and tire. Another thing this same set of curves showed is that tire width has less effect on rolling resistance than tire quality.

Tire width turns out to be another one of Jobst's hot buttons. "Road frames don't deserve to come back," is his dismissive answer to an opening parry about a small resurgence in road riding. And then he jumps all over modern frame designers for their tighter than tight clearances.,

"On the old bikes, if you broke a spoke, you'd open up the quick release on the brake and you could ride home. Now," he snorts, "if you break a spoke, you can't even ride the bike."

He goes on to explain the derivation of the tight frames.

The fastest riders are the four-man team time trial, so those bikes must be the fastest bikes. Their frames are short and the clearances tight, so that must be what makes them fast. Never mind that the idea is to get four riders as close together as possible. Besides, if anything went wrong, like a flat or a broken spoke, that rider drops out.

Vertical dropouts, his answer to bent axles, has now become the enabler for even shorter frames. Frames with no hope of accepting the fatter tires Jobst loves so much.

There's an old tire advertising picture that Jobst uses to illustrate his fat tire arguments ... it shows him leaning at the limit of traction into a corner on a fast descent.

"We can't use that picture any more. It's politically incorrect," he says unapologetic about his bare head.

He tells of riding the same road with a group of riders on skinny tires. The fastest line through that curve crosses the centerline with its bottle dots. The skinny tire riders have to worry about snake bites from the dots, but Jobst just rolls over them on his cushy big tires, holding the fast line.

Jobst makes a lot of sense about a lot of things. So much sense about so many things, it doesn't occur to you until later to ask him just what he is doing leading a group of riders across the centerline, and without a helmet.

== JOBST INTERVIEW ==

T

HERE ARE PEOPLE WHO RIDE BICYCLES AND THEN THERE ARE BICYCLE PEOPLE, AND **JOBST BRANDT** IS AS MUCH THE LATTER AS ANYONE, MAYBE MORE.

IN 1978 HE WROTE THE **HIGHLY** REGARDED AND **RARELY CONTESTED** **THE BICYCLE WHEEL**. IF YOU LIKE WHEELS, WANT TO UNDERSTAND THEM, AND CERTAINLY IF YOU WANT TO BUILD THEM, YOU MIGHT AS WELL GET THIS BOOK, BECAUSE IT'S PRETTY MUCH THE LAST AND LOUDEST WORD ON THE TOPIC. THE FIRST TIME I SPOKE TO **JOBST** WAS IN 1992, WHEN I WAS THROWING AROUND IDEAS FOR THE 1993 **BSTONE CATALOGUE**, AND I THOUGHT HE MIGHT WRITE SOMETHING FOR IT. I GOT HIS NUMBER, CALLED HIM AT WORK, AND AS SOON AS I INTRODUCED MYSELF HE SAID "I'M BUSY—NO TIME TO TALK NOW." HE PROCEEDED TO TALK FOR NO LESS THAN 40 MINUTES—WITH ALMOST NO PROMPTING ON MY PART—ON TOPICS RANGING FROM SNAKEBITE FLAT (A TERM HE COINED) TO VERTICAL DROPOUTS (A STYLE HE INVENTED) TO WHY **SEDIS'S CHEAP CHAINS** WERE BETTER THAN THE \$100 **CAMPY-ROHLOFFS** OF THE TIME (A CONTENTION BE MADE). IT WAS ONE OF THOSE MONOLOGUES THAT SHOULD HAVE BEEN RECORDED, AND I'VE WANTED TO INTERVIEW HIM EVER SINCE. I'M NOT AN EXPERIENCED INTERVIEWER, BUT HERE IT IS. —GRANT

RR: When did you start riding a bike? Zmean, when did it become clear to you that bikes were going to figure big in your life?

JB: I didn't. I just always rode a bicycle and don't think of myself as a dedicated bicyclist, bicycling is like my shoes, I travel on them and go hiking. My bicycle is one of my other means of transportation, as is my car.

RR: That's great, but you are a "dedicated cyclist" whether you think of yourself in that way or not. Zmean, by any reasonable standard, you are. So what Zwant to know, and what Zsuspect our readers want to know, is what year did you start riding, say, a good bike hard?

JB: I rode a bicycle to school and at that time rode everywhere within about a five mile radius of home go on my fat tired clunker. Later in college I motorcycled but because my motorcycle ran only now and then between major mechanical work, I rode a 3-speed Schwinn much of the time, sometimes riding over the coast range to the beach.

I met some bikies who rode good bikes and asked them if they ever rode up Page Mill Road, a steep route over the hill. I rode with them and found that my 3-speed went faster than their Cinellis, so I started riding to Santa Cruz, about 100 miles south. This riding brought me a following of people who wanted to see someone ride a Sspeed on long rides. I realized that I needed a better bike and got a Cinelli and started investigating where the interesting places to ride were.

After graduating from engineering school I served in the **Corps** of Combat Engineers in Europe and took my bike along and rode around Europe. After two years service, I got out and took a job at Porsche **KG** and designed racing cars, enjoying the countryside by bicycle. After six years in Europe, I returned to California but kept the contacts with people and places in Europe by going back for a ride most summers.

RR: Zhear you don't wear a helmet and don't take kindly to those who scold you (or anybody) for that. What is your position on helmets?

JB: I think they are a good thing, judging from the statistics I have seen, although in all my years of riding, none of my associates has suffered a head injury except one who was struck by a car in a way that a helmet would not have helped. My problem with helmets is the religious fervor that comes with them. The acrid invective turned toward those who don't wear them indicates there is something

else involved in their use. I see the rude insults passed on the net to people who don't wear one and I see it on the road where helmet wearing riders yell rudely across intersections at non users, making a self righteous public spectacle. It is this religious fundamentalism that needs discussion and understanding.

RR: *George Bernard Shaw said "themost outspoken proponents of any cause are its most recent converts," or something like that, and it seems to be the case with helmets. Once someone cracks theirs, they want everyone to wear one, and they revel in telling you what would have happened if they hadn't. I've done it myself. Z don't wear a helmet up long, hot climbs, but Z wear it going dorm. It's in my Carradice going up. Let's talk about Avocet—since in the late '70s and '80s you seemed to design for them, or advise them. Do you still?*

JB: No, not since it transferred to new ownership of which the Hoffackers (Avocet's founders) are now minority members. The hardware of old is all gone and isn't worth worrying about.

RR: *Z wasn't worrying...just wondering.*

JB: Well, it was low end Omega stuff that I wouldn't put on my bicycle. I designed the speedometers, wheel testing machine, patented the cumulative altimeter function that is the backbone of the AVO50 and Vertech watch, and technical features of other products. I have a new speedometer design that I am sure will be the standard of the future, just as the Avocet form and layout is the standard today with two buttons and two line display.

RR: *Tom Ritchey once said "Jobs is the only guy Z listen to." Do you still talk to Tom, does he still consult you?*

JB: I think he said that because I am not from the mainstream bicycle cult and in this way he did not compromise himself to fall among the ordinary. He listens to everything that the bicycle industry does and picks the stuff he thinks has merit. If you read his home page, he rewrites MTB history by saying that Joe Breeze brought over a

clunker fat tired bike that inspired the invention of the MTB by Ritchey, when in fact Joe built a light tubed fat tired bike that all of us knew and saw when he built it a about six months before. Joe Breeze built the first high performance fat tired bike!

RR: *Z don't care which of the Three Musketeers did the deed, because it wasn't a spontaneous spark, anyway; they were all sort of blowing on the embers, and it don't matter who blew the hardest.*

JB: I disagree. The idea and the interest came from Joe Breeze. There were no two or three or any other group who worked on this. Joe looked high and wide for someone to recognize his "new bike" and it was Fisher, Otis Guy, and finally Ritchey, when he saw it, that said lets do something with it. Joe built the first one on his own.

RR: *Back to Tom Ritchey: Are you the guy behind "vector analysis"?*

JB: No! Vector analysis is a bunch of jive. You can find directional tires in motorcycling of the 1950's. There is no such thing in motorcycling today because it has no merit. Tread designs are mainly fashion. There are basic concepts that make a difference, like side stiffness to keep from waling the tire off the road in a curve and continuity so the rolling losses of bumping from knob to knob aren't excessive.

RR: *Motorcycle tires for road use may not have tread, but my nephew races motocross on knobbies, and Z don't think he's the only one. But for bicycle riding, Z agree—especially on skinnier tires. But Z think Tom is a smart guy, anyway, and I know he's conscientious. And he is one of very few people Z listen to.*

JB: He also knows how to market things.

RR: *You say that as if marketing itself is evil ...*

JB: That's your interpretation, what I mean is that although there's no merit in all those angles he visualizes, it's a great gimmick to differentiate your tire from the next one.

▲
TREAD DESIGNS ARE
MAINLY FASHION.

THERE ARE BASIC
CONCEPTS THAT
MAKE A DIFFERENCE,
LIKE STIFFNESS TO
KEEP FROM WALING
THE TIRE OFF THE
ROAD IN A CURVE...

What I think is overlooked is Toms ability to make a highly durable light weight steel frame. In my eyes there is no better steel frame builder in the world than Tom. His understanding of the braze joint and his facility with the torch is amazing to watch in comparison to other frame builders. His lugless braze joints require practically no finishing after the torch. The frame he built for me was the lightest one and was extremely durable until I wrecked it after many years.

RR: Still, I think you'd agree there could be worse kings of the mountain than Tom. Is the mountain bike the bike of the future? It seems to be the bike of the present. ...

JB: I believe the MTB will fade to a marginal position in bicycling some day. Most of the MTB's I see are not ridden anywhere where they have an advantage. Tourists who never ride in mud ride thousands of miles on knobby tires and in a riding position that is inefficient for road riding. However, it is the poseurs who have seriously damaged the road bike, with their attention to unobtainium 27-speed gearing and disk wheels, neither of which has anything to do with bicycle riding. We have practically no racers today—the ancients like Bostick are still leading the pack, and there are almost no junior racers at events in this area (Westcoast).

RR: I don't think the mountain bike will fade, and just for the record I'm not hoping it does or doesn't. Mountain bikes are like anything else. They started with a small, hard core group making stuff for its own pleasure. Then friends join in. It starts to occupy a lot of time, and when friends of friends start wanting in, a cottage industry is born. The widget becomes popular for a number of reasons, fashion being just one of them, fun being another, and then it gets the attention of other people on the periphery with similar tastes and dispositions. What industry exists is thriving and healthy and healthily growing at this point. There is more demand than there is supply, and evolution takes place slowly, as it should, as more and more people use the stuff. In a few years, the hard- and semi-hard core market is pretty well saturated, but by that time some of these small businesses have grown pretty big

and have an empire to maintain. It's like a twenty-story hotel of cards, each card representing a product, and there are so many products that several of them are always falling down, not paying their way anymore, so they have to keep putting up new ones. And the big companies have to attract the soft-cores, and they do that with fireworks, sirens, and belly dancers. After a while it's the loudest noise and the most skin that reaches the most people, and that's where bikes are today. But anyway, you once told me you liked long chainstays, and as you know, chainstays have gotten shorter over the years....

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**IT IS THE POSEURS
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▼

JB: Yes, there is no reason for these short frames that can't get the rear wheel out without vertical dropouts. As I have often stated, the fastest (moving) bikes in the world are the 4man TTT bikes, and they are also the shortest. Therefore, {people think} short bikes are fast and we must all ride TTT bikes or something to that effect. I got longer chainstays when I had problems doing wheelies when climbing steep hills seated. I also like mud clearance under the brakes, and that's why I ride Campagnolo Records standard reach brakes. These short bicycles don't handle well as any reasonable investigation will show because the wheelbase is so short and because the rider is sitting almost entirely over the rear wheel. Excuses such as "quick steering" and "responsive" are used to cover the quirky handling of these bicycles.

RR: I think it's a macho thing, too—where the coolest guys are the ones who can tame the squirreliest bikes, and the next thing you know all the cowboys want to ride wild stallions instead of thoroughbreds. Anyway, the Palo Alto Bike shop used to have posters of you riding your road bike in the Alps. Gavia Pass in Italy, at least. But that poster was Bill Robertson, I think, so you must have taken the photo. Anyway, I hear you do that every year. The "Jobstrides" are half-way famous.

JB: I still ride those trips, both in the Sierra over the passes around Markleeville and south, as well as a tour in the Alps. I'll send you a recent ride report to give you the gist of it. I appear in some of those photos as does Bill

Robertson, Jim Westby, Peter Johnson, and Rick Lyman.

RR: *What about long group rides, Tours de Places, STP, things like that?*

JB: I don't like organized tours. I like a pickup group but prefer only a twosome for longer trips. Three never works well, one rider is always left out, either too fast or too slow. You see what became of my Sierra tours with the bikies of the 50's and 60's.. the Death Ride (A n organized tour, always hilly, often in California, sag-supported, about 100 miles a day for two weeks. I've always wanted to do it-ed.) That is the last thing I want to be part of. I enjoy riding, but these people go out there to get merit badges for suffering. If you doubt it, read their ride reports on wreck.bike.rides where they tell of their hardships, mechanical problems, and dehydration. Oh camelback, or is it car back?

RR: *Well, not everyone's a Jobst, and don't take that the wrong way. Anyway, on these rides of yours, which are, largely on unpaved roads -what tires do you ride? And how much weight do you carry?*

JB: "Largely unpaved" misrepresents the nature of it a bit.

RR: *I'm just going by the photos I've seen and a few conversations I've had with people who've been on them. Let's just say you don't turn around when the asphalt ends.*

JB: Right. My Sunday rides often make the connection through the coast range mountains to the beach through roads or trails not often traveled. To the newcomer, to ride a road bicycle on these paths is overwhelming, and that is all that remains when it is later told. The same goes for "death rides"- the rider was unprepared and remembers only that fact.

I ride smooth tires all year around on all sorts of roads, trails, and rocks. Tread is for tractors and cyclocross where riding in mud is the issue. I have ridden in enough snow

and ice and found that tread doesn't help in most cases where I ride. I don't go out looking for mud. It's too hard to ride 100 miles in the mud. I ride with minimal baggage, carried in a solidly affixed saddlebag. I use a Carradice Nelson bag, less than 10 lbs for long tours.

RR: *Not the Longflap model?*

JB: No. The Longflap is a poor compromise. Get a bigger bag but not a double cover. If I need a larger bag, I'll use one but to have extra straps and a double cover that doesn't make a closed bag when used, doesn't make sense to me.

RR: *It adds an ounce and increases the capacity by at least 15 percent, and I've often been saved by the Longflap, when I go to the store or post office and have to fit an big awkward box in a pouch that's already full, so I'll stick with the Longflap. Your needs are different, though. You don't ride with a Brooks saddle, so how do you attach your Carradice? Did someone make you a deelybob?*

JB: I designed a bag frame that screws onto the saddle frame. It has a pull pin that makes it a quick release bag that I can easily detach from the bicycle. The device offered by Carradice is a fatigue

failure waiting for a test.

RR: *It looks clunky, but we've not had any fail, and we've sold plenty.*

JB: A friend bought one that is an elegant aluminum frame but it attaches with only a small steel strap to the saddle and this cracked on the first ride over the Sierra.

RR: *The current model is steel and heavy. If your friend told Carradice what happened, they might have improved it. Maybe he did, and that's what happened, I don't know. Anyway, Nitto is working on one for us now. I'd like to see your design—maybe they could copy it. Now that you've mentioned your design, if I print this interview the way it's going, and I intend to, we'll get calls from riders wanting to know if we can get your rack.*

So—I know you reoff to the Alps for a month, leaving in a few days, but maybe when you get back you'll send us a drawing or a sample to copy. We can't pay you much for it - a hundred dollars is about it—but we could call it Jobst 5 Widget (or something) and, well, Z guess mostly it would be a contribution to the saddlebag cause. Peter Johnson has one, Z think.

JB: Peter's the one who who perfected and built these devices. I had some parts made in the shop here but Peter was the inventor of the bag attachment.

RR: Peter it is then. What about pedals? What do you ride?

JB: SPD, because I want to walk in them on good floors and I want a two sided pedal that doesn't require any tricks to get in. Just stomp on it. I use Shimano 525's (below Deore XT grade-ed.) They work.

RR: No doubt, but Z still won't go near them. What if someone steals your shoes from one of those fancy hotels? "I've got Jobst Brandt's shoes!"

JB: I don't get it. My shoes are on my feet. The pedals are on the bike. That's about like "What if someone steals your bike?" while you're riding it. I can walk in SPD's on good floors. With old toe clips and straps, I was not welcome on hotel floors in Europe and I wore airline slippers. What a drag. I wasn't about to drag along an extra pair of shoes. Now one pair fits all.

RR: You mean with the shoes you rode with the toe clips and stmps, not the clips and straps themselves, I assume. Anyway, it was a badjoke that didn't come across on email, but let's not dwell on it.

Shifting-I have no ideo what you ride, but I'd like to know what it is, and why. ErgoPower? STI? Campy downtubers?

JB: I use downtube shifters (seldom) and use a 6-speed FW because 5-speeds are dead.

RR: If 5 speeds were still available, would you ride them? And what do you mean "seldom"? Do you mean you seldom shift?

JB: I mean I'm not preoccupied with always being in the optimum gear or following some unwritten precepts on cadence and the like. I ride a gear that's about right and leave it at that. I'm not moved by the admonitions that I will soon ruin my knees because I am not turning 120rpm. I've ridden too far to believe that. The range of gears hasn't changed much in the last 50 years, only the number of gears in that range. I don't believe that they are useful, necessary, or any good for the design of the rear wheel. Five or six is plenty, nine is gratuitous hardware and multiple redundancy.

RR: As is the last eight words of that sentence! You wrote a pretty good book on wheels. I've been trying to get it from Avocet, but there are some hangups. Is Avocet the only source?

JB: Anyone who can't get the book from mail order, their local bike shop or the library has got to be doing several thing wrong.

RR: Zn general, maybe. But I was referring to my inability to get through to the credit department, so Z can order it wholesale and sell it through Rivendell, because we have the book listed in our new catalogue. Call me a

capitalist, but I'm not interested in buying it retail then reselling it for the same price.

JB: I didn't understand what you meant. I thought you wanted to find a copy for yourself.

RR: No, I've had a copy since it came out.

JB: Okay, then try Avocet again, I think they are reorganized now and should respond to your inquiry. The Bicycle Wheel is available in most bicycle shops in the US.

RR: That I doubt, but we'll have it in any case. Thanks for your time, Jobst, and have a good ride.

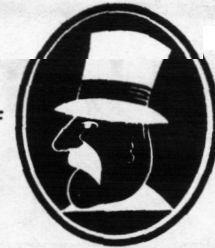
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**I RIDE A GEAR THAT'S
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TURNING 120 RPM...**

▼



Contest



For twenty years I've had a minor but nagging obsession with the challenge of writing something without using the letter **E**. In the *Dstone* days I almost wrote an *E*-free one that, but I chickened out, and maybe that's a good thing. I've come close to writing an *E*-less editorial in the *RR*, but I'm too afraid, still, that someone out there might not get it and would think this was a badly written publication. So the best way to get this out of my system at no risk, and have somefun with it, is to have a contest. The challenge: Rewrite the first verse of Edgar Allen Poe's *The Raven* without using an **E**. To show you that such a thing can be done, I've rewritten the first verse of *America the Beautiful* without that letter:



O AMAZINGLY GOOD-LOOKING FOR SPACIOUS HIGH AIR, FOR BUG-TRAPPING SAP-COLOR ROLLING CONTOURS OF GRAIN;
FOR PLUM-COLOR MOUNTAINS SO BIG AND SORT OF ROYAL, NOT AS LOW AS ITS FRUITFUL PLAIN;
BIG COUNTRY SOUTH OF CANADA, BIG COUNTRY SOUTH OF CANADA, GOD SLOUGHS HIS SKILL AND COORDINATION ON YOU
AND CROWN THY GOOD WITH A CLASS OF SIMILAR INDIVIDUALS WHO STAY, WITHOUT WAR AND AS A GROUP
FROM HUMONGOUS MASS OF SALTY LIQUID TO SHINING SIMILAR SALTY BODY OF LIQUID.



FIRST VERSE OF POE'S *THE RAVEN*:

Once upon a midnight dreary, while I pondered, weak and weary
Over many a quaint and curious volume of forgotten lore, —
While I nodded, nearly napping, suddenly there came a tapping,
As of someone gently rapping, rapping at my chamber door.
"Tissome visitor," I muttered, "tapping at my chamber door;
Only this, and nothing more."

RULES:

SUBMIT YOUR ENTRY BY ANY METHOD YOU LIKE, BUT GET IT HERE BY OCTOBER 1. WE'LL REPRINT SEVERAL IN THE NEXT *RR*, AND MAGGI WILL PICK THE WINNERS.

FIRST PRIZE IS A \$100 GIFT CERTIFICATE; SECOND, \$50 G.C. , THIRD, \$30 G.C.

CONTEST

BY ROBERT GANNON

WHAT REALLY SANK THE TITANIC

WHY DID THE "UNSINKABLE" SHIP GO DOWN ONLY THREE HOURS AFTER HITTING AN ICEBERG?

A NEW SCIENTIFIC INVESTIGATION ANSWERS AN 80-YEAR-OLD MYSTERY.

LAST AUGUST, IN A CANADIAN DEPARTMENT OF DEFENSE LABORATORY UNDER THE McDONALD BRIDGE IN HALIFAX, I HELD IN MY HAND A DISCUS-SIZE PIECE OF THE HULL OF THE TITANIC. IT HAD BEEN PLUCKED FROM THE BOTTOM OF THE SEA SOME 500 MILES SOUTHEAST OF THE LAB. NOW A SMALL TEAM OF RESEARCHERS WAS ABOUT TO CUT OFF A SECTION OF IT, A SECTION THEY WOULD TRY TO SMASH. THE RESULT, EVERYONE HOPED, WOULD HELP ANSWER A QUESTION THAT HAD BEEN HOVERING FOR 80 YEARS WHEN THE TITANIC STRUCK THAT ICEBERG ON HER MAIDEN VOYAGE IN 1912, WHY DID SHE SINK SO FAST? EVERYONE BY NOW KNOWS THE TITANIC'S STORY: THE LARGEST SHIP IN THE WORLD, BUILT BY A WORK FORCE OF 17,000, THE ULTIMATE IN TURN-OF-THE-CENTURY DESIGN AND TECHNOLOGY. FIRST-CLASS SUITES RAN TO MORE THAN \$55,000 IN TODAY'S DOLLARS, AND WHEN SHE SAILED ON HER MAIDEN VOYAGE FROM SOUTHAMPTON, ENGLAND, EN ROUTE TO NEW YORK, SHE HELD AMONG HER 2,227 PASSENGERS THE CREAM OF INDUSTRIAL SOCIETY, INCLUDING FOR INSTANCE, COLONEL JOHN JACOB ASTOR, MACY'S FOUNDER AND U.S. CONGRESSMAN ISIDOR STRAUS, AND THOMAS ANDREWS, THE SHIP'S BUILDER.

THE SHIP WAS LUXURIOUS AND IT WAS SAFE - VIRTUALLY UNSINKABLE - FOR IT WAS BUILT OF EASILY SEALED-OFF COMPARTMENTS. IF, FOR SOME UNIMAGINABLE REASON, THE HULL WERE PUNCTURED, ONLY THE COMPARTMENT ACTUALLY RUP- TURED WOULD FLOOD. IN A WORST-CASE SITUATION - TWO SHIPS RAMMING EACH OTHER, FOR EXAMPLE - BUILDERS FIGURED THAT THE TITANIC WOULD TAKE FROM ONE TO THREE DAYS TO SINK, TIME FOR NEARBY SHIPS TO HELP.

———— BUT THINGS DIDN'T WORK OUT THAT WAY. ————

On that April evening at about 7:30, at the first ominous hint of disaster. Into the earphones of the wireless operator on duty came a message from the steamer California, an hour or so away: Three Large Bergs Five Miles Southward From Us. But the Titanic continued to rush

through the deepening darkness. High in the crow's nest, two lookouts shivered as they peered ahead into the gloom. The temperature was one degree above freezing. Had there been a moon, they would have seen ice floes already off to the sides. Had there been a wind, foam from waves breaking against the ice would have shown up misty-white in the starlight. But the sky was dark, the sea dead flat. Just after 11:30, the Titanic was 95 miles south of the Grand Banks of Newfoundland. Lookout Frederick Fleet, squinting into the dark, noticed the horizon directly ahead becoming less clear, slightly hazy. The stars began to wink out. And then he began to make out a black mountain. "Iceberg dead ahead!" he shouted, and quickly rang the wheelhouse.

The officer in charge immediately signaled "full speed astern" to the engine room, and directed the wheelman to turn hard to port.

The crow's-nest lookouts braced themselves for a collision. But slowly the ship began to turn. The iceberg passed the bow and moved along the starboard side.

A wall of ice, as one report put it, "like a windjammer with sails the color of wet canvas," moved past the railing as chunks from it fell onto the deck. Some passengers grabbed pieces to cool their drinks. Those who looked out their portholes were baffled by the dark mass gliding by.

The ice struck with not much more than a jar - certainly not hard enough for worry - and in seconds it had disappeared into the darkness astern. But down in a sweltering boiler room near the bow, a geyser of water was drenching stokers as they leapt through a quickly closing watertight door. In the next compartment too, water was gushing through the hull.

When Titanic builder Andrews assessed the damage - the iceberg had pierced the first six watertight compartments - he realized the seriousness of the great ship's condition. Grimly, he gave Captain Edward Smith the bad news. Smith reluctantly agreed to evacuate the Titanic, for

both men foresaw the awful drama to come: When the ruptured compartments filled with sea water, the extra weight would make the ship pitch forward. Though the cubicles were called "watertight," in fact they weren't. Their tops were open, their walls extending only a few feet above the waterline. Because of the Titanic's nose-down tilt, as each compartment filled, it would spill over to the next. They were watertight only horizontally. Nobody expected the water to rise above the waterline.

As open portholes disappeared beneath the surface, water flooded through them, adding to the deluge, and the pitch worsened. The propellers lifted free, and from inside the ship came a sound like breaking china. Then, great rumblings - perhaps the shifting of the five grand pianos or hundreds of trunks. And suddenly, with a screech of tearing metal, the forward funnel buckled over into the ocean.

The first lifeboat had touched the sea at 12:45. But all the lifeboats combined could accommodate little more than half of the passengers. At just before 2:00 in the morning, with the ship upended to about 45 degrees and the bow no longer visible, those in the lifeboats heard a deep rumbling. The stem began to settle, but then it tilted up again, the forward part slipping downward, pulled down, postmortem speculation went, by the water-filled bow.

At 2:20, the Titanic slipped beneath the surface, carrying with her more than 1,500 passengers. The largest movable object ever built, designed to take at least three days to sink in case of the worst-imaginable catastrophe, settled to her grave in less than three hours.

The reason, engineers guessed over the years, was that nobody foresaw the massive sideswiping damage a piece of ice the size of a high-rise could do. The berg must have pushed in the ten-by 30 foot steel plates, they speculated, popping the rivets and pulling them apart at the seams to let the water gush through.

But the math didn't add up. Not when those likely gaps at the edges of the plates were correlated with reports of damage noted by seamen before the ship went down. And not with the speed of sinking. The submergence equation needed some other unknown.

For nearly three-quarters of a century, that's all anyone knew - until oceanographer Bob Ballard, in September 1985, found the wreck of the Titanic at a depth of 12,612 feet. He was surprised to discover that the ship lay in two

sections - stem and bow - separated by a wide field of debris. His remote cameras tried to spy the gash left by the iceberg - but that part of the bow was buried in an 85-foot-deep mud bank, plowed up as the Titanic hit bottom.

Si more years passed, and in 1991 the first (and so far only) purely scientific team visited the site; other groups have been primarily exploratory. Leading the scientists was Steve Blasco, a 48-year-old ocean-floor geologist from Canada's Department of Natural Resources. Gray-bearded, skin weathered by salt spray, he looks every bit the seasoned sailor - he even walks like one - and he loves the sea.

Blasco's team was part of what was called the Imax dive, because the expedition's principal purpose was to generate a 70-mm-format film for the six-story screens of Imax theaters. The research and film-making dives were made in a pair of Soviet Mir submersibles capable of staying down 20 hours, using 110,000-lumen lamps originally developed for filming *The Abyss*.

While the Imax photographers shot their \$&million film, Blasco and his people pursued the science. "We don't know much about this depth, this continental rise," says Blasco, "neither the geology nor the biology. And we certainly don't know anything about the interaction of a ship and the ocean floor that deep." Most ships sink in water that is shallow; those that don't are rarely found.

The Titanic was brand-new when she sank. That makes her a singular measuring device, a "historic marker," Blasco calls her, a notch in time revealing the rate of natural activity - what has happened on the ocean floor over the 80 years until her discovery, and what will happen in the future.

In the tomb that was once a ship, all that remain are china teacups and brass latches, porcelain toilets, and perhaps teeth - nearly all else has been devoured: wooden decks, the rich Victorian woodwork, human beings, their clothing - all except for shoes protected from scavengers by their tannin. (Some 150 items retrieved by the French sub Nautilie went on display at London's National Maritime Museum in October 1994.)

Protected too is the ship's steel; corrosion, to everyone's surprise, is nearly absent (a fact of interest to companies working with pipelines or cables).

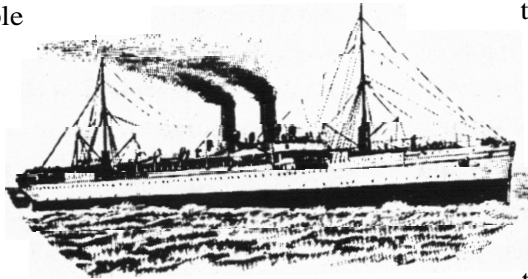
On the last dive of the trip, one of the Mirs came across a chunk of metal that looked like a part of the hull. The scientists had agreed beforehand that they would bring up no

human artifacts; they felt that the site should be consecrated as a burial ground, and that **retrieval** of personal items would smack of grave robbing. But for strictly **scientific purposes, they did want to bring up a sample of the hull.**

And there it **was**, resting on a ripple of ocean-floor silt as though placed there the previous month: a **Frisbee-size** chunk an inch thick, with three rivet holes, each an inch and a quarter across. Back aboard the mother ship, with surface grime carefully squirted **off** the piece with a

high-pressure water jet, researchers were surprised **to** see remnants of the original paint.

By now, that piece of steel should have corroded **near-**ly **to** oblivion. But when a metallurgist saw it later, he **had**



spotchy-brown, with an underlying smear of lead oxide, now pinkish-orange.

One edge is ruler-straight and shiny where a strip of metal has been sliced **off**. A few test pieces, cigarette-size "coupons," have been fashioned from the strip. Some have already been destroyed in preliminary testing in another government laboratory in Ottawa. The last piece will soon be mounted in a device that will conduct what is called a Charpy test. In the lab are Blasco and another of the Imax team, Duncan Ferguson, a

34-year-old mechanical engineer. The metallurgist in charge is Ken Karis Allen, 35, a government specialist in cracks and corrosion. He's energetic, quick moving, almost taut, and when he speaks of his

Even if the builders had known the steel was brittle, they still wouldn't have

an immediate explanation: "Of course: there's no oxygen **down** there." Then Blasco pointed out that fish were swimming about, and the metallurgist stopped talking.

So how could there have been **so** little corrosion? "It somehow involves temperature and pressure," says Blasco, "That's not a very good explanation, but it's all we have for now."

Of even more interest to those intrigued by the question of the ship's unseemly rapid sinking **was** the condition of the edges of the hull piece: jagged, almost shattered. And the metal itself showed no evidence of bending. High-quality ship steel, metallurgists know, has a lot more give, more ductility, than most people imagine, and probably wouldn't break. Yet the edges **of** this sample looked almost as though they were made **of** broken china.

Three years later, now, in the Halifax testing lab, I pick up that hunk of the Titanic from a work table. It's been sitting among broken gears, split I-beams, and ruptured flanges from other ships, representing various naval problems, and it **looks** like junk. I remind myself that it's the only one of its kind in the world. The 80-year-old paint is

Charpy machine, he does **so** with fondness.

A Charpy tests brittleness, he explains, nonchalantly pushing the machine's huge pendulum. Testing is simple: **As** a coupon is held tightly against a steel holder, the pendulum - 67 pounds and 2-1/2 feet long - swings down and thumps against the sample, sometimes breaking it. The pendulum's point of contact is instrumented, with a read-out of forces electronically recorded in millisecond detail.

Karis Allen will test **two** coupons: one, a sample of a standard, good quality steel used in modern ships; the other, the slice from the Titanic. "If things **go** as I foresee," he says, "the first piece will go 'thud.' The second will tinkle."

Both coupons are resting in a bath of alcohol at -1 degree **C** - to simulate the water temperature of **80** years ago. Karis Allen must rush the test piece from the bath to the holder in five seconds.

He hauls the weight up and **locks** it in place. "OK?" he asks, and **looks** around the room. "Here goes."

With a pair of stainless steel tongs, he lifts the first coupon from the bath and whisks it to the holder, reaches

quickly to the red release handle, and yanks. The pendulum swings down and thuds to a halt. The test piece has been bent into a "V."

Now he repeats the procedure with the Titanic sample.

This time there is no thump. The pendulum strikes the piece with a sharp "ping," barely slows, and continues up on its swing while the sample, broken in two, sails across the room to smack a metal wastebasket.

Tracings on the computer screen confirm what the metallurgists suspected and now have seen: the Titanic's hull steel is brittle. When it met the iceberg, the hull plates didn't simply bend in. They fractured.

The steel is embrittled not from sitting on the ocean floor for most of a century. It was that way when it came from the steel plant, and it became even more brittle slicing through that 29 degrees F water. "To make present-day high-quality steel that brittle," says Karis Allen, "I'd have to

Ferguson (the only mechanical engineer to be part of any of the six Titanic expeditions) has studied the sequence, too, concentrating on events beneath the surface.

Combine those scenarios with half a dozen others (along with the eyewitness accounts of the sinking), and you have this likely sequence.

11:35 p.m., April 14, 1912. Up in the crow's nest, the lookouts spot the iceberg a quarter-mile ahead - and that's too bad. Had they not alerted the bridge, the ship would not have attempted a turn; it would have rammed the iceberg head on. Damage would have been limited mostly to two or three compartments; it would have caused almost no pitch, certainly not enough to pull the compartments below the waterline. Many injuries would have resulted - after all, the ship would have crashed into the 200,000-ton ice mountain traveling at 26 mph, and crew members were sleeping in the forepeak. But the,

worried. The ship's design, they believed, would guard against calamities.

lower its temperature to -60 or -70 degrees C."

"Back then nobody understood the concept of brittle fracture," adds Ferguson. "They tested the steel for tensile strength [the maximum stress a material can withstand before it breaks], and if it passed, that was that." What they didn't know then was that high sulfur content makes for brittleness, and Titanic steel was high even for the times. "It's full of sulfide occlusions called 'stringers,' and it would never get out of the yard today. It wouldn't even make good rebar, which is pretty lousy steel." Blasco breaks in: "Shipbuilding technology had outstripped metallurgy technology." He sounds as though he's had that thought before.

Even if the builders had known the steel was brittle, they still wouldn't have worried. The ship's design, they believed, would guard against calamities. But of course they were wrong.

William Garzke, a senior naval architect with the New York firm of Gibbs & Cox, has taken all the data gathered on the sinking, and using forensic procedures has developed a scenario of what happened on that night in 1912.

Titanic wouldn't have sunk.

11:40. The ship sideswipes the ice. Where the one-inch-thick hull made of modern, relatively ductile steel, certainly it would have bent, stretched, and broken in plastic deformation, popping loose rivets, pulling apart at the seams, cracking the caulking and allowing water to pour in. But because of the steel's ductility, it would have absorbed massive amounts of energy. The ship might have quickly slowed, or even bounced away.

Some of that does happen. But the ice also crashes right through the plating as it grinds along the side, striking at an angle perfect for the most destruction, tearing the plates, cracking and splitting the hull below and above the waterline like a 300-foot zipper.

Cracks in the brittle steel now propagate rapidly. They run like lightning strokes to the plate edges, stopping only where the plates are riveted together.

(In post-disaster hearings, the few survivors who saw the water enter didn't report it squirting in through the seams. They described it as a water wall. Some of the 10x30-foot plates, in fact, may have been wholly cracked

off. But that evidence lies buried in ocean-floor mud. Had the builders guarded against steel embrittlement, the vessel most likely would have stayed afloat long enough for other ships in the vicinity to arrive for rescue.)

Midnight. Those first *six* compartments are filling; water is beginning to slosh over.

12:40 a.m. Water aboard now equals 453 cubic meters - enough to fill 2,000+ bathtubs.

1:20. The bow dips; water **floods** through anchor-chain holes. Absent those watertight compartments, incoming water would have been spreading out, and the ship would be settling on an even keel - and probably still be afloat for another *six* hours.

2:00. The bow continues to submerge; three mammoth propellers lift free; the stack topples.

2:10. The Titanic tilts to 45+ degrees or more. The bending moment on the midships is immense, for a portion of the ship the size of a 25-story building hangs unsupported. Stress reaches nearly 15 tons per square inch.

Suddenly, at a point at or just beneath the surface, the topside pulls apart, while the hull girder near the ship's center **fails**. The keel bends; the bottom plating buckles.

As the frigid seawater floods into the ship's bowels, says Garzke, there is "a spectacular failure, with the steel of the upper structure fragmenting all over the place." The deep rumbling heard by those in lifeboats is probably not caused by falling equipment, but fracturing steel.

2:12. The stern angles high above the water; the bow, dangling beneath, fills with water, grows heavier and heavier until it reaches some 16,000 tons of in-water weight, and +. +. .

2:18. The bow rips loose. Free from that weight the stern rises sharply (at least one lifeboat passenger **says** "Look - it's coming back!"), holds **an** almost vertical position, and then, as it fills, fades downward again.

2:20. Almost gently, the stem slides beneath the surface. The bow, meanwhile, has been coasting down at a maximum of about 13 mph (a figure based both on Ferguson's hydrodynamic calculations and those of soils

engineer Bill Roggensack of Canada's Centre for Frontier Engineering Research, working with data from bottom sediment plowed up along a 35-foot-high path by the bow.)

Beginning perhaps 100 feet below the surface, sections of the stern still holding air succumb to water pressure. The spaces implode, scattering tons of material through the water.

2:29. The bow strikes the bottom, 12,612 feet **down**, angling downward and plowing into the mud.

2:56. The stem, having fallen nearly vertically at about four mph, crashes - nearly 36+ minutes after submerging - two-fifths of a mile from the bow.

It hits rudder first. The impact rips the propeller shaftings from the hull, leaving the propellers on the seabed as the keel sinks in. Two deck cranes break **loose** from their mountings, thrown backward and peeling back the poop deck. They come to rest 40+ feet aft of the stem. Debris will rain down for hours.

The many lessons learned from the Titanic changed the way maritime companies thought about lifeboats, communications, and ship design. But one lesson was not well learned - that construction technology shouldn't be allowed to outrun materials science. Just because something can be built doesn't mean it should be.

That **is** what the Canadians mean when they call the Titanic "the 1912 Challenger," after the ill-fated space shuttle. Both disasters resulted from a failure to understand how a material - whether brittle steel plate or brittle rubber **seal** - would behave. **END**

The photo of the ship on previous page is not the Titanic. It is generic, license-free clip art from one of the Dover books.

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BY STEPHEN CAIRNS

THE TRIALS OF BB

When the question of great female cyclists comes up, so do the names of people like Jeannie Longo, Sue Novara, and Juli Furtado. The one woman who should be at the top of everyone's list however, is Beryl Burton, or BB as she's called by most. Throughout Europe her silhouette, the low saddle and right hand always higher on the drops than the left, is as recognizable as her staggering accomplishments. She won more national time trial events than anyone, male or female, in history, and she established or beat nearly every record she chose to challenge. Burton was one of the most accomplished cyclists in the world, and she died on a training run near her home on May 5 of this year. She was only 59.

Beryl Burton first became interested in cycling when Charly, her workmate and future husband, suggested the sport as way to rebuild her strength after a bout of rheumatic fever. On a borrowed bike, BB took part in her first 10 mile time trial with some underwhelming results.

In her second 10 however, she took second place, giving her the confidence to pursue the sport. She joined Charly's club, the Morley C.C., and remained a member for the rest of her life. She considered it a good trait to stay loyal, especially to a club that had several female members and did everything they could to help her burgeoning amateur athletics.

Just 21 years old when she began to compete regularly

(1958), Beryl didn't just show up on the scene - she exploded, winning the 25.50, and 100 mile national time trial championships. She became an instant sensation among club riders and race fans for her winning ways, warm personality, and her tell it like it is attitude - a trait not always appreciated by her competitors, who got upset

by Burton's frank comments on what she considered to be a lack of qualified competition.



In England, time trialing has reached a level of popularity that no other country has matched. Word of club trials in America rarely makes it past the pages of the group's mimeographed newsletter, but in Britain club trials are national news. It all began in the late 1800s, when pedestrians and equestrians angered by the "furious riding" of cyclists, successfully petitioned the British government to ban all road racing. Frederick Thomas Bidlake, of the North Road Cycling Club, had the slightly sneaky idea of dressing racers inconspicuously and timing them individually over a set distance - the winner being the person with the

best time. On October 5th, 1895, Bidlake organized the first ever time trial, a 50 mile event that was won by Gordon Minns with a time of 2 hours, 56' 26". Frederick Thomas Bidlake and time trials definitely played a part in saving road racing from disappearing, but when the prohibition was lifted the time testing remained. The first international time trial took place in Stockholm during the 1912 Olympics. The 320 km course was covered in 10 hours, 42' 39" by the South African Rudy Lewis, a full ten minutes

faster than Britain's Fred Grubb and the American Carl Schutte. The English pinnacle of what some call "clock-bashing" is the British Best All Rounder title, originally instituted in 1930 by H.H. England and Cycling magazine, awarded to the cyclist who could soundly beat their competitors in the various time trial events. When the Road Time Trial Council took over the contest in 1949, a women's division was created with 25, 50, and 100 mile distances. England's love for the time trial was just fine with Burton who preferred these events, seeing them as a totally honest form of racing where the fastest and strongest wins - a fact not always true in road racing where team tactics and politics can play a large role.

In 1959, BB earned the B.B.A.R. title and retained the crown for a stunning 25 consecutive years. During this time she launched upon a series of record breaking rides. She became the first woman to break the 25 mph barrier, and in 1976 she set the 25 mile women's time trial record of 53' 21" that still stands. In 1968 she conquered the sub-four hour century, another intact record, at 3 hours, 55'05". 1962 was the first year that a women's division was added to the National Cyclo-Cross Championships and BB easily won. From 1960 to 1967, Beryl also took seven golds at World Championship competitions, five for the 3,000 meter pursuit and two for the road race, including her double golds at the '60 World's in Leipzig.


Her palmares were as long as her record breaking rides. She received the M.B.E. in 1964, the O.B.E. in '68, was the British Cycling Federation's Personality of the Year, and received the Val Waterhouse road and track trophies - just to name a few. She was a natural born cyclist, but Burton, believed that this ability alone couldn't replace hard work. During the competition season she raced every weekend, on two weekdays, and kept up a rigorous training schedule. After a hard day's work in the rhubarb fields, where she was employed for the better part of her life, she would cycle home, prepare dinner for Charly and their daughter,

and then go out training. During the off-season, they would go on hard-riding cycle tours where even the easy-going Cyclist's Touring Club members were a little shocked at her full fenders, mudflaps, and large saddlebag - but Beryl found it of great benefit to train on a heavy bike and then switch to her lightweight racing machine in the spring. At times BB and Charly would go out of town for dinner and, on their return, Beryl would climb aboard her bicycle and ride the remaining 50 miles of the trip. Burton had strengthened her body, increased her endurance, and perfected her riding form: her back flat, shoulders square,

no fidgeting about in the saddle, and the intense concentration that allows a cyclist to steadily ride incredible distances at the brink of their capabilities. BB had, what the writer Jean Durry would call, the "elegance of style and high output."

Never pleased with just winning a race, BB needed to "master herself" in each event, to break an existing record or better her own times, for her to be happy. In 1967 came one of Burton's most talked about wins, during the Otley Cycling Club's 12-hour race. Her previous record for this distance was 250.37 miles, Owen Blower held the men's record at 271.80. The great hope for a new men's record was Mike McNamara, and there was a two minute gap from when he started, the last of the men to go off the line, and BB, the first of the

women. Beryl had, as usual, quickly found her cadence and settled into her saddle for twelve hours of riding. She lost a minute when she pulled to the side of the road to go to the bathroom behind a bush and douse her head with water, but then she promptly found McNamara in her sights. When Burton began the trial, she hadn't intended on catching McNamara, but with the opportunity in front of her it was a challenge she couldn't resist. As she pedaled up on McNamara, BB recalled, "I remembered I had some glucose sweets in my pocket. I offered him one which he happily accepted, we had a nice chat, and I rode on." Ride on she did, BB couldn't stand to be re-passed and she never was. Charly, following at a respectable distance, would give Beryl


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food, water, and at one time, a wheel - and he advised her on her riding. BB never had a coach and didn't want one, she couldn't see how anyone would want someone barking instructions at them from road or trackside - Charly's advice was all she needed. **As** the end of the twelfth hour arrived, Beryl had done the unthinkable. Not only had she surpassed her previous record and the previous men's record, she set a new overall record of 277.25 miles that, for the women, still stands. Mike McNamara set a new men's record of 276.08 miles.

BB's remarkable 12-hour sent shock waves through the cycling community and sparked a renewed interest, however small, in women's racing. British women had medaled more in World Championship competition than their male counterparts, and this 12-hour victory showed just how prominent women should be in a sport that all but ignores female athletes. BB followed a great line of British female champions; Kate Green, who in 1909 rode 313 miles in 24 hours wearing a billowing skirt common to turn of the century women cyclists; Lillian Dredge, the professional record setter of the 1920s and '30s; the "Bournemouth Blonde. Bombshell" Marguerite Wilson; and Eileen Sheridan who won the first women's B.B.A.R. and whose list of victories is only surpassed by Burton's. Women are great cyclists despite anonymity. Beryl didn't comment often on the lack of international recognition of female cyclists, but it did **disgust** her that even schoolboy racing got more attention - a problem that has persisted from BB's heyday to today.

Burton was proudest of her two World Championship road titles of 1960 and '67. It was a form of the sport she didn't prefer, but still managed to excel at. She didn't partake in many British road races, but when she did she would attack, Merckxian-style, on the first good hill and find herself alone for a **solo** victory. This style was a problem in international competition, the Russians were capable of hanging on to the very best wheel and leaving


Burton exhausted in the sprint. During the 1967 World's there **was**, for the first time in Beryl's experience, a real will to win and unity among the British riders. BB got in on a strong breakaway, as she had in her 1960 win, and then went **off** the front for gold - leaving the Russians and all the rest to struggle over the silver and bronze. After the race, Beryl said in her typically frank manner, "I've ridden harder races, and finished more shattered."

Charly and BB passed on some of their passion for cycling to their only daughter Denise. **You** may think she was spoiled with all the latest and greatest cycles and accessories, but not Beryl's daughter. "So many youngsters today," BB would say, "start with the best equipment going and are sick of it after a season. If you start in a modest way and build up, you always look forward to adding sprints, cotterless or whatever comes next" This was well before any of the time trialing amenities like aero-bars and skinsuits were available, new products for them were going from steel to alloy. Denise took to time trialing and road races right away, and in 1973 in Barcelona she and her mother made history **as** the first mother/daughter duo to compete in the World Championships.

With Charly also racing, cycling was indeed a focal point of Burton family life. "Cycling, for me, isn't just a sport. It's a way of life," said Beryl. This dedi-

cation could be found in the fact that she turned down more than a few professional contracts, choosing instead to remain an amateur, pick and choose her races, and have fun. She wasn't totally closed-minded about the idea of turning pro, but she disliked the thought of being tied down for years at a time to someone else's whims and rules. "When I stop racing for pleasure, that might be the time to start doing it for money."

On May 5th, 1996, Beryl Burton died of what is thought to be natural causes while on a training run near her home. She **was** 59 and still held most of the British women's time trial records. **END** .


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Q & A

THE QUESTIONS BELOW ARE SOME OF THE MOST COMMON. IN FUTURE ISSUES WE'D LIKE TO HAVE REAL QUESTIONS WITH REAL SIGNATURES. A GOOD LETTERS COLUMN. WE'LL ANSWER YOU IMMEDIATELY, AND PUT YOUR QUESTION INTO THE NEXT RR. OTHERWISE WE'LL HAVE TO DO **THIS** AGAIN.

I RIDE CONTINENTAL TIRES AND LOVE THEM. I SWEAR BY THEM. I NEVER GET FLATS, THEY WEAR LIKE IRON, AND THEY LOOK COOL, TOO. WHY DON'T YOU SELL THEM?

We tried to get the 700x28s, but the importer said they had none. If the importer won't stock a tire, we won't carry it. Some of the skinnier models are well-liked, but if a tire is skinnier than a Ritchey 700x28 and it weighs the same or more and costs a lot more, it has a hard time finding a home here. Still, some of the Contis look interesting, and we'll continue to investigate.

WHAT HAPPENED TO SOME OF THE EARLIER COLORS?

We can still offer them, but wanted to add a few others without driving Waterford crazy, so now colors such as Mustard, Caramel, Chameleon, and Red are secret. The replacement colors are pretty nice, and now our list is settling in at eleven or twelve.

I MISSED OUT ON THE MAVIC TRIPLE ADAPTERS. ANY CHANCE OF GETTING ANY MORE?

We'll ask Mavic if it's okay to copy it, and if they say yes, that's what we'll do. It's a smart design, a good way to triplize a Mavic road crank. The price will be around \$45, though.

TRACK FRAMES. BUILD A TRACK FRAME.

No, there are too many used track bikes out there. I think people want cheap track bikes, fun track bikes, track bikes for the road, not the track. If that's what you want, we can make you a road frame with track ends, or if you don't mind looking less than committed to the idea of fixed gear riding, you can always ride a fixed cog with the standard horizontal dropouts on the road or all-rounder.

CYCLO-CROSS FRAMES. BUILD THEM!

We're doing it. Details in the next RR.

I'M AN AMATEUR/PROFESSIONAL FRAME BUILDER AND I REALLY LIKE YOUR LUGS/CROWNS. WILL YOU SELL ME A SET?

Not unless you're Richard Sachs (who designed our road lugs). There are lots of nice lugs still available—Henry James, Everest, Long Shen. We're flattered that you'd ask, but we have to decline and hope you don't hate us for it.

MONTHS AGO YOU SAID YOU'D HAVE RACKS BY SUMMER. WELL?

Months ago Summer seemed like such a long way off. We've made progress, though. We're working with Nitto on front and rear racks, a neat low-rider system, and a mini-front rack that mounts on our fork crown and low-rider bosses. The racks will be made especially for Rivendell frames, but they ought to go well on any normal-configured frame, as well. They're pretty, they'll cost as much as Bruce Gordon racks (which are very fine as well, and available right now), and our next estimate is October. If you're interested, send a postcard or fax or email or call, and we'll notify you as soon as they come in. No obligation.

PROGRESS REPORT ON THE RIVENDELL STEMS, PLEASE. AND WHAT WILL THE CLAMP DIAMETER BE?

The lugs have been designed for months and are now in the capable hands of the casters, who are just waiting for us to give them the green light (in the form of \$3,000) to build the mold for the castings. If we have a good July and August, we ought to be able to do that sometime in September, and if all goes well we'll be hawking lugged stems by November. The clamp diameter will be 26mm (fairly standard nowadays), and the price will be between \$150 and \$200. That's a lot of money for a stem, especially considering you can get a Nitto Pearl for \$45; but we're shooting for the moon with this stem—it should be the prettiest thing you've ever seen stuck in a steer tube.

*We changed our minds
Track frames? yes*

FLYER AUG - SEPT

SPECIALES



SPECIAL DEALS ON THINGS WE HAVE VERY FEW OF, THINGS THAT MISSED THE CATALOGUE, OR THINGS WE CAN OFFER PRETTY CHEAP. MEMBERS ONLY, BUT IF YOU AREN'T A MEMBER, YOU CAN BUY AND JOIN AT THE SAME TIME.

Avocet 700x35 road slicks—\$25

At between 31 and 32mm, they're **too fat for most frames**, but not Rivendells. **REs**, or most pre-1982 road frames. If you're after a smooth cushy ride and a great grip (the alternative being...?), these **will** do the job. A great 700c loaded touring tire. I know what you're thinking—they **must weigh a ton**. No, just 360g with a wire bead, which isn't bad. I rode them last weekend up the mountain here, didn't even try to go fast, and still got my fastest time in **two years**. Your results may vary. (Note to **local riders who** wanna know how slow I go: Northgate Road on Mt Diablo, the lower gate to the junction, 3624.)

Ritchey Crossbites, Kevlar bead, 1.1—1.4—1.9 — \$24

The perfect all-round city/trail tire. Light **good** grip, smooth rolling, everything good. The 1.1s can go on any mtn bike rim you're likely to have; the 1.9s should be reserved for rims at **least** 22mm wide.

Tressostar cloth bar tape — \$7 per barsworth

The old traditional French stuff that's a bear to wrap smoothly **but feels** so good once it's on the bar. Tip: Position the levers where you like them, then remove the bodies from the clamps. You may need to tape the clamps in place. Then wrap and put the levers back on. **Blue, black, white, red.** Two barsworth (4 rolls) for \$12.

Paradise Saddlebag/handlebar bag — \$23

If you like your Carradice but want something smaller, this babe's a beaut. Big enough to hold a cantaloupe or a pair of shoes, with pockets on the side for tools and spoons, tubes, keys. There's no official tie-down method, but we generally tie the long strap through the loops and to a seat stay.

Homemade Carradice Handlebar bags — \$30

Many months ago we ordered a special, to-Grant's-spec version of the venerable Lowsaddle Longflap for small road frames. We (Grant) approved the sample before having Spencer actually try it, and when we got in fifty of them and actually tried them, we discovered that they didn't work. So we sat on them and thought "what a stupid thing to do, what a shame—built to last 25 years and they'll never see the light-o-day!" Then the second annual Rivendell Roughout came up, and I needed a way to carry more stuff. I took one of these, modified it, and strapped it onto

the drop handlebars of the mtn frame prototype, and it worked great. It requires drop **bars** if you have 700c wheels. you need at least a 57cm frame for the bag to clear the tire. If you **ride** drop bars and 26-inch wheels, it can be smaller. This is an excellent bar bag. It attaches with four **toe** straps, provided, and **goes** on and **off** in half a minute. The only negatives are: no map case, but if you already know the way, you're all **set**; and only one compartment, because we had to **cut off** the side pockets.

Clark's Derailleur and Brake cable sets — \$8

I know what you're thinking—**are these the Clarks cable sets**, the **coveted English ones from the late '70s**? Yes they are, in dark blue, medium blue, pink, or light grassy green. Even the derailleur cables are colored, but not the brake cables. Top quality. The only funny things are the plastic brake cable housing end caps, which we suggest you recycle, then put on real cable end caps, which we provide. Again: Pink, It blue, dk blue, green. Specify or we'll assume it's our pick

Fork Crown Paperweights—\$12

Our first batch of road crowns, long story, don't use them as crowns. but they're fine paperweights. \$12, a bargain, and it's pure money to us at this point. Profits will go toward stem lug tooling.

Mavic Cranks — \$170

We got a few more. Not enough to put in the catalogue, but enough to sell to members only now. 170 - 172.5 - 175 lengths. As far as I know these are the last of the Mavics, a crank many people regard this as the finest ever. We have ten bb's, too, see below. (Other BBs will work. Phils fit better than the Specialized ones we have, but not tons better.)

Mavic BB — \$60

Great bottom brackets, but you need to prep your frame for them, and that requires special tools that all good bike dealers are supposed to have. Sealed, smooth, adjustable chainline. I've heard of only one failure before, and that's a pretty good record.

Note: If you order Mavic cranks and BB before August 29, you can get them both for \$210. If you do this (before 8/29) and we're out of the bottom brackets, you'll get the cranks for \$140. No coupons on this deal, please.

Five Brothers Work Shirts — \$25

Long sleeve, all cotton, white with vertical navy blue stripes, open collar, two button-down chest pockets, tails for tucking in. Pal Jeff's favorite work shirt, and he's an ironworker who's been through them all. Many of the Rivendell frames are now brazed by a guy who swears in these shirts. The only button-down shirt a guy needs. M -L - XL - XXL

CYCLO-CROSS AND ROUGH-STUFF STUFF

Ambrosio Synthesis Tubular rims, 32H, silver — \$35

A nice 21.5mm wide, for more strength and gluing surface (very nice with fat tubulars). Silver. Heavy—over 500g. If you want no-nonsense heavy duty tubular wheels, these are a good start. We could find nothing like them already being imported, so we had them brought in from Italy. Wonderful rims. They have to be the very best choice for cyclo-cross.

Ambrosio-rimmed front wheels — \$80

SunTour sealed cartridge hubs, 32H, laced 2x 15ga DT on the above tubular rims. Q/R style hubs with the Q/R included.

ALE Cyclo-cross toe-clips (M or L) — \$14

The tongue is shorter, for easier entry. The strap is a strange yet smart strap with buttons, and it—well, you've got to see it. Instructions included, but I prefer asymmetrical strap routing (one strap to the front of the cage, one to the rear). That'll make sense when you see them. Size?

Bar-end shifters coming out of our ears**a Old style, no cables or housing, virgin but weathered \$35**

Pros: They shift great last long, and are cheap. Cons: You gotta get your own cables and housing. Brake cable housing works fine for these.

b. Old style, cables and wound stainless housing, in plastic: \$42

Pros: Complete package, ready to go, you don't even have to wipe them down. Cons: The stainless housing looks fine and works okay, but not as good as the indexable housing below.

c. Accushift, 6-speed indexable with friction on the right, pure power ratchet on the left \$40

Unless you plan to use these with some SunTour indexable freewheel (and we know you don't), please use the left lever on the right and vice versa. It's not as important with 6-speed freewheels, but with Sachs 7-speeders, it's necessary, as the left shifter pulls more cable than the right (which doesn't pull enough to cover a Sachs 7). Pro: The left shifter has the finest, smoothest, most aesthetically soothing click of any Power ratchet I've heard or felt. The cables and housing are top-notch. Cons: They're black, and if you don't like black parts, you have some work cut out for you.

d. Shimano Ultegra 7-speed (index with friction option)—\$59

If you want to index with bar-end shifters AND you want a friction bail-out you've got to get Shimano's, and unless you're doing the 8-speed thing, these are the way to go. No other options. They work great as most Shimano stuff does, and our price is pretty good. We got a good deal on them (relatively speaking) because they lacked the downtube shifter boss adapters. Well, we bought lots of those last year, so we can send you a complete package. We also sell the adapters alone, below,

Dura-Ace adjustable downtube shifter boss adapters— \$12

They slip over your downtube shifter bosses and convert them to cable housing stops. If you ride STI or bar-end shifters on a bike built for downtube shifters, these are what you need. Shimano Dura-Ace.

SR 47T x 130bcd chainring — \$7

Silver, a good size for cyclo-cross.

Dia-Compe #983 Cantilevers — \$15

These are down and dirty, perfectly good, cheap as bones cantilevers. They're the old "high profile" style, so the straddle wire gets up there nice and high, good for clearing fenders and looking classical. The springs are external, another nice feature: Unhook them for adjustment, then hook them back when you're finished. Are they shiny? Don't wren ask. One bikesworth, no levers included.

SunTour XC Compe Cantilevers — \$12

Black, low profile, and actually made by SunTour, not Dia-Compe. One side has an adjustable spring, the other doesn't. They're still more adjustable than most" says Spencer. Cold-forged, top quality. The black is paint not anodizing, but it looks fine. One bikesworth, no levers.

Campionato Del Mondo tubular tires — \$40 each, 2/\$70

Clement's fattest tubular, top quality polyester casing. mounts true, rides great rarely flats. We brought in 70 of these, they're selling well, we won't get them again, and you'll not find them for less anywhere.

Hey! We got a tent, now! Sort of.— \$178

It's a Black Diamond Megamid, and it's sort of a tent in that it has no floor, and no separate rainfly. What it is an adjustable centerpole (indexes) and a coated polyester canopy. It's roughly 9x9, sleeps 34, and is big enough to cover two riders and their bikes. Since there's no floor, you can be rough and messy inside. We've used this, we like it a lot. It's not the dream tent for camping in mosquito-infested peat bogs, but it's so much more pleasant to be in/under than a regular tent most of the time. It weighs a paltry/scant/sultry/poultry 3.5 lbs.

Mavic's Best 700c Touring Rim, no longer being made! \$42

It's the Mod. 3, 36-hole, 22mm wide, 51.5g. Silver satin finished. Traditional box-section with ferrules. It's basically the same as our favorite MA2, but 1.5mm wider for even more lateral strength. Not good for tires skinnier than the 700x28 Ritchey's. but super for anything wider. Limited, no longer made, we'll be out soon.

SunTour Alpha 5000 Triple Front Derailleurs!—\$25

Triple front derailleurs for normal-sized chainrings (not micro) are getting rare, and we were thrilled to find these. Silver, with external screws so you can see how they work and will always know which screw to turn. The cage is long enough for a triple, wide enough to eliminate trimming on every other shift, yet narrow enough to fit Ritchey, Mavic, SunTour, and the other low-Q triples we have. If the rest of your order totals \$100+, you may buy this for \$15 (offer good through Sept 19). Great value.

NEW! Phil-for-SunTour Superbe Bottom Bracket — \$125

This is a new BB especially made just for us and specifically for the Superbe crank, which is happiest snuggled onto a slightly smaller end-spindle. We've got doubles now, but if you want to triplize your Superbe crank, we'll longer spindles by September or so.

Pino Mock T-shirt, grey — \$22

Pino Morroni is the smartest and ~~any~~ most eccentric and ahead-of-his time bicycle person on earth ever. He's 77 years old, Italian, lies in a suburb of Detroit, and is my personal hero. His logo is 3 Green Mice.

Shimano Dura-Ace EX racing/double front derailleur — \$35

Clamp on, for std 286 seat tubes. (Like ours, most others). Shimano has made lots of parts and undergone so many changes over the years. As much as you-me-we-they may not like Shimano's approach to this or that, one thing's not debatable: Shimano stuff works, and my favorite Shimano stuff was from this series. If you can't bring yourself to riding with our \$5 or \$6 racing/double fronts, get this one. Fantastic, looks great all you want

Old Cycling Prints— 8 x 10 (\$30); 11 x 14 (\$45); 14 x 20 (\$55)

Sepia-tone photos of the Tour de France in the 30's, double matted, ready to hang or frame. Various scenes, but just state a preference for "close-up" or "scenic," or "whatever you like." and we'll do our best to accommodate you. Some are nicer than others, but when we're out of our personal favorites we won't sell them anymore. In other words, you won't get a boring or less than really nice one. A nice gift.

SunTour Rear Q/R skewers, for 130-135mm hubs—\$8

Made in Japan and very nice.

SunTour Front Q/R skewers, for std 100mm hubs—\$8

The perfect match to the rears.

Tagua Nuts— \$2 each, or 5 for \$10

Deep in the moist and verdant Ecuadorian rain forests, down there by the equator, there are tagua trees. The locals can either chop down the trees and sell the wood to make cheap unfinished furniture, or to make grazing land for McCows, or they can pick the nuts and sell them to American button makers. This last choice is the best, because the trees keep living

and the Ecuadorian economy gets healthier. In the Bstone days we had Castelli make us some jerseys, and, ever the zipperphobes, we asked for button necks, as was the style in 1915 - 1935. We bought zillions of tagua nut buttons and sent them to Italy, and we also bought some whole nuts, which were supposed to go with each jersey. When Bstone folded and we were cleaning out the warehouse, we came upon a barrell of taguas, and if I didn't take them they've have gone to the dumpster. Each is about the size of a walnut, as hard as a domino, and when you clack two together you feel like a million bucks. If you have a rock tumbler, you can polish them up and sell them at crafts fairs, because they get really smooth and attractive. All revenue goes directly into our stem tooling fund.

RIVENDELL BICYCLE WORKS

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MAILABLE, FAXABLE, COPYABLE PARTS & ACCESSORIES ORDER FORM

NAME _____ ORDER DATE _____
 SHIP TO ADDRESS _____ CITY _____ STATE _____ ZIP _____
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QTY	SIZE	ITEM. DON'T FORGET COLORS, SIZES	EACH	TOTAL

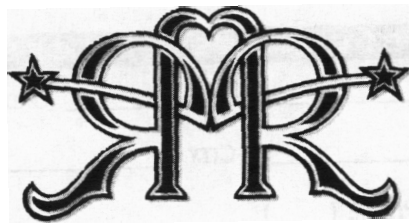
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 Second, possibly lower subtotal: _____
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TOTAL: _____

SHIPPING		
	Ground	Air
UPS	\$5	\$12
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INTL	\$25	\$45

Amount: _____
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 Signature: _____

OTHER NEWS:

After the current batch of prototypes, we'll be ready to make **cyclo-x frames** by September, but there's still a 5-6 week delivery, so if you're interested... They're like our other frames—lugged, silver-brazed, strong, pretty. Clearance for **700 x 38**. Same price as the others: **\$1,050** for single-color. sizes **51, 53, 55.57, and 59**. Size it 3 to 5 cm smaller than your road frame, or give us your saddle height (bb to top of saddle) and we'll get you the right size. **Call** or write for more details... **Track and fixed-gear frames** are coming, as well. And we plan to stock a few track bars and stems, Nitto-made. Just in time for your local six-day season... **Cycling caps** are coming, in stock by October 15, and the price is **\$7** each, or **\$2** with every order over **\$75** (after any coupon use, before shipping). Cotton, simple designs, assorted colors... If you're looking for a **tal quill (190mm)** cold-forged, beautifully finished, traditionally styled road stem in a size **8, 9, or 10cm**, we have a few. Made by Nitto, never before imported, very, very nice. Save your back for **\$40**. Eventually these will be a standard item, but for now we have just a few. If you're interested, ask about the **Nitto T-stems**.



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1561 - B THIRD AVENUE
WALNUT CREEK, CA 94596

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