

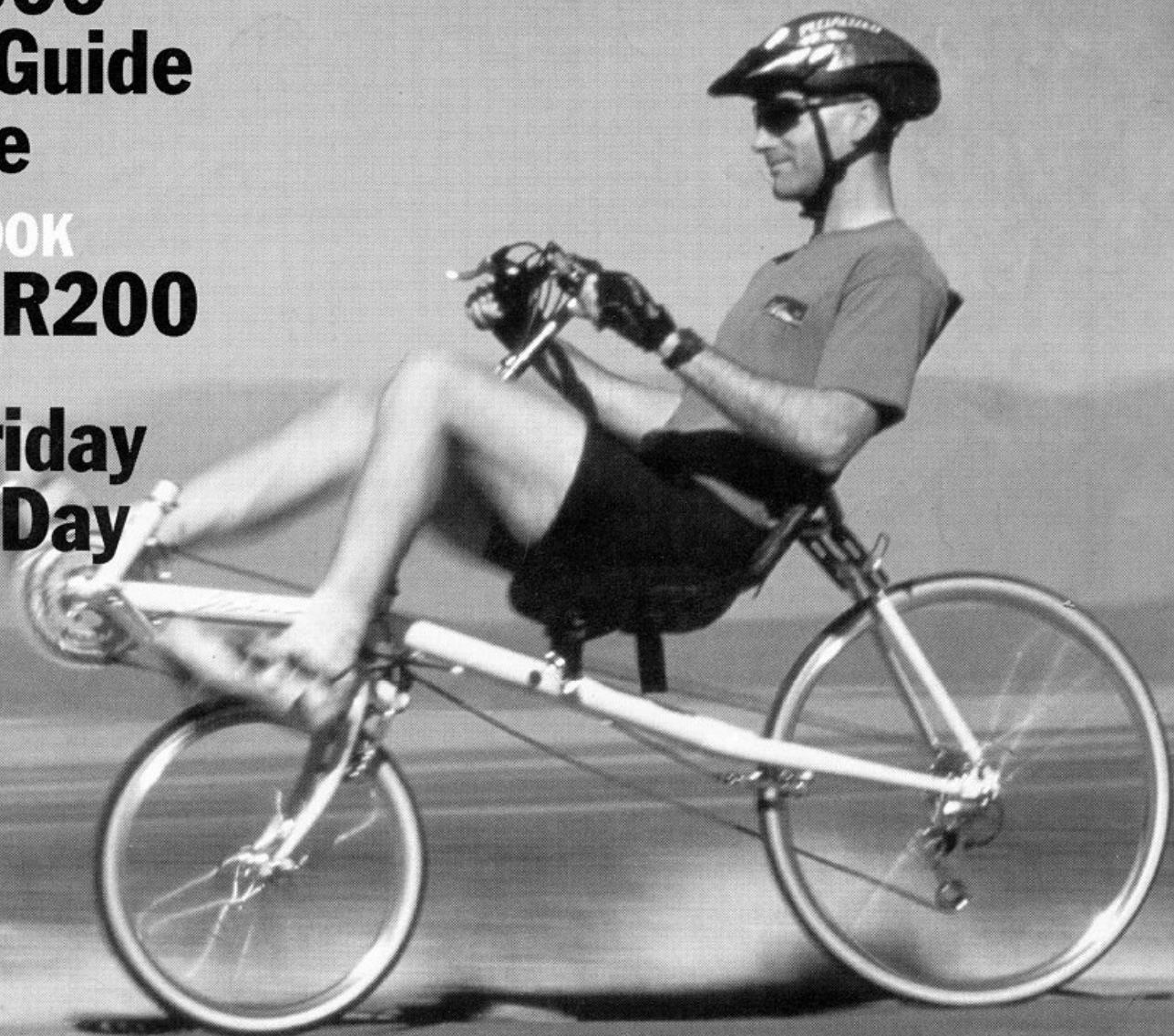
RCN

RECUMBENT CYCLIST NEWS

ROAD TEST
'99 Vision R40

PLUS
The 1999
SuperGuide
Update

FIRST LOOK
TREK R200
AND
BikeFriday
Sat-R-Day





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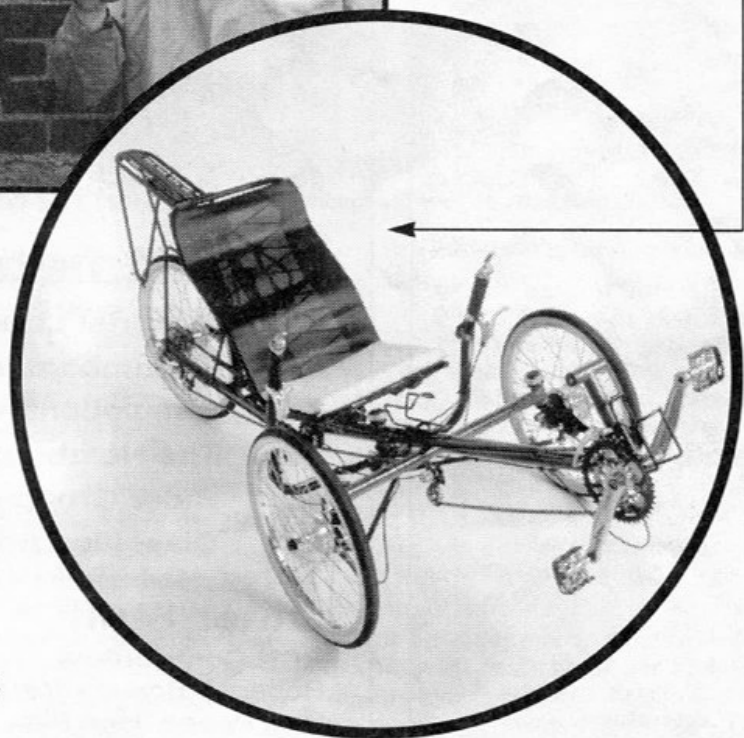


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About the Mail Service

Effective January 1999, we have stopped accepting standard 3rd class/bulk mail subscriptions. This service is primarily used for "junk mail" replacing the missing issues had become too costly as well as tedious. First class mail is more expensive, though we feel it is necessary to make this move.

We will no longer accept outdated order/renewal forms. If you need an RCN order form, email us or call 253-630-7200 and we'll mail you one.

If you have a standard subscription and would like to upgrade, the cost is \$5 per year or \$1 per outstanding issue.

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Although we at Recumbent Cyclist News make every effort to provide useful and accurate information, we do not claim to have definitive answers—particularly with regard to safety, technique and equipment.

What We Don't Do

Due to our minimal staff, we do not: give bike-buying advice, return advice calls, take credit cards, credit card orders, overnight orders, or bill for orders. We ask that you be patient, as we do make mistakes, but we guarantee that we'll do our best to correct them when we do.



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William Volk • Paul Arends • Christine Peterson • Ron Schmid

RCN Cover The new Vision R40 SWB**Cover Photo Credit** Photo courtesy of ATP Vision in Seattle, Washington

Fine Print: RCN is published by Bob and Marilyn Bryant & family in Kent, Washington. We are a two-person company. We publish from our home office. We have no employees, only dedicated volunteers and friends who work cheap. We are as far from a corporate affair as you can possibly imagine. This magazine is published by enthusiasts, for enthusiasts—because we love recumbent bicycles. We are the voice for the enthusiast recumbent world since 1990.

Editorial License: The Big Time and Bob Rants

by Bob Bryant
DrRecumbnt@aol.com

A recent topic of interest to the rumor mill as of late is that RCN has been sold, is for sale, or that we have declined an offer from a large publishing company or something to this effect. Please allow me to set the record straight.

We have had an ongoing discussion about the possibility of selling RCN with one individual throughout the past year. The discussions were serious and we really did have high hopes for the outcome. This would-be suitor *did not* represent a "large publisher." Nor has any offer "officially" been presented to RCN. We recently withdrew from these discussions as they reached a level no longer worthy of our attention. Also, the monetary aspect of the "discussion" just wasn't there to even consider the risk. The bottom line was that we couldn't bring ourselves to sell if we didn't wholeheartedly believe in the new concept and in the passion of the new "team." We found that we just didn't have the time to devote to such deals while there was a magazine to run.

Even though RCN is very small (no employees/still run from our home), it runs profitably because we work long hours at it. Any changes, new management team, or debt would make the business more vulnerable. Hours worked and dollars spent would need to be accounted for and it would inevitably lose money. After 8 years and nearly 50 issues, we don't want to see RCN fail—as so many magazines do these days.

Our primary concern with the possibility of selling RCN is that the manufacturers, dealers and advertisers who have helped build and depend on RCN may be priced out of the magazine. Full color glossy magazine advertising is up to and sometimes more than 20 times what RCN charges. We have always made it our policy to grow *with* the industry. Nevertheless, we plan to continue to produce Recumbent Cyclist News in the manner to which RCN readers have become accustomed—as we have since 1990. Any changes we make will be carefully planned and discussed. They would have to benefit the dedicated RCN readers and advertisers alike.

Dealing with this possible sale has indeed been an interesting experience. It may have ruined us for future offer possibilities. Our supposed suitor may have just been on a "fishing" expedition—as in parting I was left with a gift of a book entitled "The Art of War." Oh well, I guess we weren't ready for the big time corporate leagues anyway. Should this individual start a recumbent magazine, he'll sure know how we do it at RCN. This is the downside of entertaining such discussions.



1999 RCN Editor's Choice for Best Recumbent 1999—The \$995 Rans Rocket

On a positive note, this situation has brought up many questions—primarily, where does RCN go from here? Do we keep it the way it is, go monthly (more newsletter style) or go glossy (slick magazine style)? One thing is for certain—Marilyn and I are *not* capable of running a big glossy mainstream magazine.

So, the next time you ask yourself why RCN does something this way or that way, why we don't take credit cards, where the glossy color pages are, why we have such mediocre web sites (we're looking for somebody), or why we cannot handle your suggestion for a new project or promotion, or even why we don't have somebody to answer the phone in our office—the answer is that we're running a magazine on a shoestring budget with virtually no staff.

In actuality, RCN is a recumbent enthusiast newsletter that accepts advertising. RCN is not driven by ad sales. I don't particularly care for the advertising aspect of RCN (it takes up more time than anything else). We don't have any ad salespeople, and we don't make ad calls (unless requested). Advertisers must *want to* advertise in RCN. I like to think RCN advertisers are supporting the cause of promoting recumbent bicycles, though I understand that they need to sell products, too.

The future will probably bring less advertising to RCN. As we expand, we would like to bring you more issues (monthly?). The way things are going, we may end up mailing all first class by 2000 as the problems with 3rd class/bulk just won't go away (first class mail costs 2x-3x the cost of 3rd class/bulk rate mail).

You may have noticed that RCN#48 was mailed all first class mail. The costs are about \$2 per issue just to mail (postage + envelope + subcontractor mailer cost) and that doesn't include the cost of production or printing. What about full color? We have notified advertisers that we have color ad capability. One full color page adds about \$1200+ to the issue cost (for one ad page). That is about 20% of our printing bill.

Ask yourself what it is that you like about RCN. Is it the fact that we address enthusiasts with respect and we're not afraid to state our opinion or go out on a limb? Or that we print reader/enthusiast views (that sometimes contradict our own)? Do you see this in very many corporate owned big-time glossy magazines? Do you like what you are reading in the other mainstream magazines about recumbents? Well, you can bet that when another recumbent magazine finally does come around, it will be full of mainstreamed recumbent editorial. We're gonna hang onto Kent Peterson, Joe Kochanowski, Richard Drdul, Bill Volk and all of the other knowledgeable RCN enthusiast writers who live, eat and breathe recumbents. We have openings, too.

It's not the quest for wealth that drives us with RCN, but our passion for bicycles—recumbent bicycles in particular. So, if you hear any more rumors about the latest person to supposedly offer us a million sumolians for RCN, please drop me an email—and I'll set the record straight. □

Recumbent Mail

If you have a differing viewpoint or experience—we want to hear from you! RCN reserves the right to edit submissions for clarity, content and space limitations.
DrRecumbnt@aol.com or RCN, PO Box 58755, Renton, WA 98058

◆ CYCLING COSTUMES

Good editorial in RCN#48! You may get heat from it, but that's because people love to give heat. The second to last paragraph, about how you used to assume that cyclists in non-cycling clothes were rookies, but not anymore—excellent. I agree, and I think it's good to have it down on paper for people to read and think about.

So much of cycling gear and clothing alienates non-cyclists and, I think, ultimately makes us more the enemy. At the very least, harder to relate to. If the bicycle itself doesn't do it, then the costume can. It's easier for people, in this case motorists, to hate or feel anger and lack any compassion toward someone (or someTHING!) that's so obviously different than they are. As hidden-for-the-most-part humans in cars, they suffer the same feelings from cyclists. Over the past three years, as my riding, like yours, has declined in miles and increased in utility and overall quality, I find it less and less important to wear the costume. I sell \$75 cycling jerseys, but I find myself wearing \$40 all-wool sweaters instead. My summer top is a long-sleeved cotton t-shirt or button-down seersucker. Half the time I wear wool shorts, the other half, some kind of bermuda-thing. One of my bikes has platform pedals, which allow me to wear cheap sneakers painlessly and efficiently.

Other cyclists treat me differently, and that's okay. In most cases I've ridden twenty years longer than they have and am still much faster (not that it matters). New cyclists feel a stronger compulsion to look the part, and that may be important for them on a few different levels at this stage in their cycling. The gaudy midlife crisis cycling costume serves a function much deeper than protection from the elements and aerodynamics. I'm just glad I'm past it. Non-cyclists can better see themselves in me, and maybe they'll give me more room or even think about a bike for themselves.

People can talk about the "function" of cycling clothing forever, and the points made are uncontestable, but properly-chosen civilian wear is 90% to 100% there already, and has benefits the cycling costume never will. All my bikes are wedgies, but I enjoy RCN and wish you the best luck.

Grant Petersen
Walnut Creek, CA

◆ REAL WORLD CYCLING CLOTHES

Your editorial in RCN#48 was very interesting. It's increasingly clear that our nation's dependence on automobiles is simply crazy and cannot go on for much longer. I've been moving closer to your point of view over the years, and periodically ride my Tour Easy to

work, an 11 mile commute each way. On the roads of northern Virginia that is almost a death sentence (I have been hit twice over the years). My goal is to increase my riding time a bit each year until more than 50% of my commutes are by bike. Any suggestions about the clothes a minister (me) can wear that are appropriate for cycling and also for an emergency visit to the hospital or a visit to a proper older lady? Thanks to your recommendation I've ordered Asphalt Nation, and look forward to reading it.

Carl Schmahl

warrentonpc@erols.com

Carl, traditional cycling apparel was not lycra or clown suit-like. Check out RCN#47's resource for the Rivendell Reader. Grant Petersen is a cycling traditionalist (retrogrouch) and advocates riding in street clothes. Just about anything can work. Wool is good and was used previous to lycra. One guy in my rider group rides in hiking pants with zip off legs. Another rides with fleece sweats. I sometimes ride in sweats with my lycra shorts underneath (if the sun comes out or I get too hot). A fairing, fenders and a coroplast tail box will help to keep the weather off of you —Bob, RCN.

◆ ALL BIKES ARE GOOD

Glad to see you are finally coming around—bikes are just good! ANY bike, be it recumbent, folding bike, 10 speed, ATB, streamliner, tandem, trike—like I said, any bike. I'm a long time cyclist, been bike commuting on and off for over 20 years, ride for fun, ride for transportation, ride for therapy, ride just to ride.

A lot of your latest editorial hit true to home. I've been thru the many phases of cycling too, been married to a heart monitor, Lycra clad, trying to squeeze 1/10 of a mph out of these old bones. Now I'm just as pleased to be cruising along on my HPM Swift folding bike, clad in shorts, sandals and a T-shirt. Isn't it grand fun to show up for a group ride clad as above and get the lecture from the "experts" on why fat tires are so bad, how folding bikes are inefficient, and how do I ever expect to complete a 40 mile ride dressed as I am with such inferior equipment. It's fun to reply, "Well I've already done 25 miles getting here from home," and then pass them walking their Ti-Special up the last hill at the end of the ride, or patching a double snake bite flat on their Continental featherweights. Practical bikes rule!

Travel in England was an eye opener, especially the ease of multi-mode travel with the 2 folding bikes on the trains. With petrol about \$5 a gallon, people take bikes far more seriously in the UK. In fact, some I met resent that our gas is so cheap here.

Paul

plcs@juno.com

◆ WHERE IS THE BATHROOM?

Regarding the article, "A Ticket Out of Homelessness" in RCN#48—Brian Campbell and the other 800 people kicked off public lands in Arcata are nothing more than leeches on the rest of society. They take advantage of the welfare system and the goodness of people's hearts, use public facilities paid for by working people and trash the planet, literally, just so they can play, do drugs and not earn a living, which all species on earth have to do. In the US today, the only reason a person does not have a job is because he/she doesn't want one!

I used to enjoy going to the Kinetic Sculpture races on Memorial Day, but was always disgusted by the mess that I had to drive through to get to that end of the peninsula to watch the racers leave the bay. Since there are no sewer lines or trash service, I had to assume that most of it ended up in the sand. By the way, where is the bathroom in Campbell's bikehome? Or does someone else have to clean up his mess wherever he decides to relieve himself?

I happen to enjoy my warm, comfortable house and prefer to ride my bikes on paved streets. I enjoy the convenience my motorhome provides when I travel to other areas. I certainly hope civilization never lowers itself to Campbell's level.

I subscribe to RCN because I am interested in recumbents. If I wanted to read the kind of crap on pages 24 & 25, I'd get a subscription to Earth First! Please leave the Eco-Nut raving to them and stick with the subject your newsletter is named for.

Patrick Henderson

◆ HOMEBUILDER BEST YET

If all issues of RCN were like #47 you would have to make them out of better paper. Mine is almost threadbare. The Homebuilder Special is the best one yet.

I have been a Rans Stratus rider for the past 3.5 years (12,250 miles) and a regular commuter. I have been toying with the idea of getting a short wheelbase machine for my commute but have been reluctant to start building or spend the money on a manufactured machine.

After reading your magazine, a friend and I are both starting to build mixtie based homebuilts.

Allen Rosson

AKROSSON@aol.com

◆ TRIKES ARE UNSTABLE!?

Having read your review of recumbent trikes and then the feedback from Ian Sims (Greenspeed), I felt compelled to put my two

Continued on page 44

Recumbent News

January—February RCN#49



BikeE Introduces High End Performance "NX"

Corvallis, Oregon—Speed, comfort, and the latest in bicycle technology are now included on the BikeE NX 5.0. BikeE has worked 12 months to develop this new performance model. The NX 5.0 utilizes the Mountain Drive 2-speed internal bottom bracket, Hayes disc brakes, 8-speed SRAM drivetrain and a Cane Creek AD-5 air shock absorber. The NX is designed utilizing innovative lightweight components in order to have the same speed potential as a high-end conventional road bike with the fun and comfort BikeE has become famous for.

A key design goal in the BikeE NX 5.0 was to create a recumbent that would put to rest the myth that a recumbent does not perform as well as a conventional bike. By lowering the weight, widening the gear range, and improving the components, the NX has achieved that goal. The BikeE NX 5.0 has a suggested retail price of \$1995 and will begin shipping on March 1, 1999. □

Vision™ announces new "R32" MWB

Seattle, WA—The R32 isn't just a component or color upgrade from the '98 Metro R30, but is a completely new bike for 1999. The frame has been re-designed to optimize the rider's weight distribution and improve the handling significantly.

The suspension system now features a Cane Creek AD-5 air shock, and a 16" Ballistic suspension fork is available.

The component group is a 3x7 mated to Shimano RX100 rear derailleur, and STX-RC "V" brakes.

The R32 is still easy to transport, fitting onto standard roof or trunk racks when the swingarm is folded. Removable handlebars let you fit the bike into the trunk of most cars. As always, all Vision recumbents are hand-crafted in Seattle, one at a time.

The improved features definitely make the R32 a much better bike than the R30, but the real upgrade is in the ride. See your dealer about a test ride—you'll truly be amazed. MSRP starting at \$1295. □

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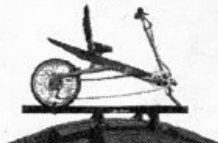
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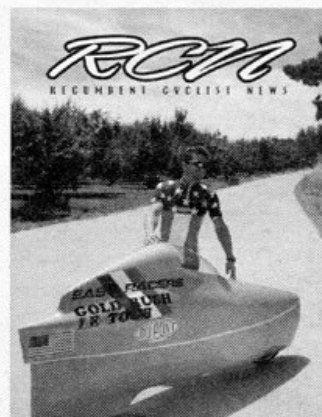
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The Trek R200 at Interbike Las Vegas —John Riley

TREK UNVEILS R200 SWB

Waterloo, WI—As aging baby boomers look for new ways to stay fit without the repercussions of high-impact exercise, many are attracted to the comfort advantages of the recumbent design. With this in mind, Trek's elite team of engineers designed the R200, a comfortable, yet performance oriented recumbent.

Riders may be laid out in a position similar to that on a lazy Sunday afternoon in the recliner, but make no mistake, the R200 was designed to be ridden aggressively. The R200's short wheelbase, above-the-waist hand position and unique stem make this recumbent a responsive handler in all conditions. A rear shock also

takes the edge off uncomfortable road buzz.

Trek's unique "mid-drive" drivetrain is equipped with a jack shaft in the center to permit the use of two freewheels with two separate rear derailleurs. This provides a wide gear range which adapts easily to hills or plains. Tour longer, faster and more comfortably thanks to a no-flex seat design and clipless pedals which maximize riders' output energy so they can maintain high speeds for long periods of time.

With the ease of a quick release, the sliding seat rail can be adjusted up to ten inches to fit anyone from 5'1" - 6'6." Riders can further customize the fit and feel because the R200 is offered in both a small and large size.

And whether you're done riding for the day or season, the 6061 Aluminum frame, rear swingarm and handlebar easily fold down to fit into the trunk or closet.

The Trek R200 retails for \$1649.99 and is available at selected dealers. □

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A Vision of the Future

R40: The mainstay of the Vision line is revamped, revived and an incredible enthusiast bargain for 1999!

by Robert J. Bryant

Vision is back for 1999! The flagship R40 SWB has a new aggressive, yet user-friendly, attitude that is sure to make it one of the best enthusiast bargains of 1999. The frame geometry has been tweaked and optimized with the 40" wheelbase and 406mm 20" front wheel and a new above-seat steering option as outfitted on our test bike. The '99 R40 has a CroMo frame and Shimano RX100/STX components previously found on the '98 R42—and is priced right—\$1095 (USS) or \$1145 (ASS).

The R40 received an outstanding review by RCN when it was unveiled in 1993, primarily because of its value and modular abilities (SWB, LWB, ASS, USS). In recent years the R40 has not exactly been the RCN media darling—primarily because the original R40 was more suited for medium-size entry-level riders and had a shorter wheelbase and a more forward center of gravity. With this in mind the R40's design update is especially sweet. Vision has done an excellent job!

■ NEW ABOVE-SEAT STEERING

The R40 is available with under-seat steering (USS) or optional above-seat steering (ASS). The majority of the bikes are sold as USS. We have never cared for the ASS option on the Vision—until now. Gone is the former tall riser stem bolt. The riser's pivot point is now projected out farther than its predecessor. This allows for more recline adjustment. The extended wheelbase of Vision SWB models will allow the unit to be reclined to either an upright or laid back position. The riser pivot adjusts the recline tension with allen bolts (the competition doesn't offer this) and the unit doesn't squeak.

An alloy stem at the top of the riser holds the MTB-style bars. You can select your own bars as well (though we like the stock bars). The bars flare down at the outside and you can adjust the angle (via the stem). The stem will face forward or backward to your liking. This is a great (though time consuming) way to find out how close you want the controls to your body. The Rapid Fire shifters hang below the bars.

The ASS unit is not as high-tech, nor does it have as finessed a look as a Rans Flip It, and it is a bit heavier (R44/45 STI ASS will be lighter). The adjustability and control options are welcome. With two wrenches one can adjust the (fold-forward) tension on the steering column. If there is a downside, it may be the sheer number of ASS adjustments available to the rider.

■ FRAME

The R40 mainframe is now TIG welded CroMo steel. Frames are built in Seattle, Washington. The forks are CroMo and have a USS tab on them. The fork is painted to match the bike. A Ballistic suspension fork is a \$200 option (model ETR). The powdercoat is done in house by NW rider and Vision employee Steve Nash. The R40 can still convert to a LWB. The new SWB geometry (roomy cockpit) will certainly improve the LWB as well.

Vision Engineer Joel Smith has designed many unique labor-saving guides, jigs and procedures that allow frames to be built quickly and efficiently. Production-wise the fabrication procedures are state-of-the-art, especially considering there is not a robot in sight.

The only drawback that we can see is that Vision does not have bicycle frame builders per se—but welders and fabricators that build bicycle frames. Structurally, this is a non issue—though we would like to see cleaner weld beads and more attention paid to bicycle-like details. We can live with this on the value-added \$1100 R40—though I could justify ranting more if I found the same on an R44 or 45. Vision is aware of this and each new Vision we see is improved.

■ VISION SEAT

The comfy Vision seat has a sling/mesh seat back frame with a suspended foam base pad and cover. There is no contoured (tractor style) seat base like a Rans. The Vision base emulates a full sling mesh, though it offers the comfort of a foam pad. The seat mounts at two quick-release points that run through the frame, one at each end of the seat. The seat is easily removable and allows a serious variable seat recline. Vision owners like laid-back seats.

The seat cover is connected to the suspended seat mesh. The foam pad covers up the "seat-horn" (pulls seat mesh forward). The seat base has a cushy piece of open-cell foam. The foam fits into a sewn-in seat-base envelope. The foam is difficult to upgrade as there isn't much room for a thicker piece. The optional Thermarest seat pad will fit under the seat foam and should resolve any seat-base "sink down" issues (for heavier riders).

Some may find the very laid back seat recline position awkward at first, though it is truly one of the keys to comfort. The recline also makes the seat horn and base frame less pronounced.

The seat back is breathable and comfortable, though it offers no lumbar support. Lumbar are arguable anyway, as in theory, everyBODY would need it in a different posi-

tion. The Vision mesh has a tendency to "push through" more than other mesh seats, though we have never found this to be a problem. Vision uses thick Velcro straps to hold the seat mesh to the aluminum frame.

The Vision SWB ergonomics are near perfect for an entry level SWB. Not too extreme, yet adjustable enough to please nearly any rider. The seat-base height is the same as the bottom bracket. This, combined with the adjustable seat recline angle, will allow riders to dial in a personal comfortable user-friendly rider position.

■ COMPONENTS

Vision's component selection throughout the line is the finest in the industry for '99. This entry level flagship is outfitted with the outstanding 24-speed RX100 road group utilizing a wide-range triple crankset and RX100 derailleurs shifted by matching STX Rapid Fire shifter/brake levers that also control the STX V-brakes. Yowza! Shifting is excellent and superior to any twist grips.

Chain management is controlled by two Vision-designed chain idlers that expertly guide the KMC chain. We did hear the occasional chain slap, though the drivetrain is fairly quiet—more so than most.

■ NO DISH WHEELS

The main difference between Vision and other manufacturers is in the asymmetrical frames and no-dish drive wheels. This means that Vision wheels are built with minimal dish. To compensate for this, the frames/rear stays are built asymmetrical: the drive-side stay is longer to compensate for the cassette. This absolutely makes for a stronger rear wheel, as bicycle wheels weaken the wider the rear cassette. However, these methods are not industry standard. With the advent of the 9-speed rear end (not on R40)—the no-dish theory is at its best. It is either brilliant or wacky, though Vision has never been afraid to be different.

■ RIDE

One quick trip around the block and there is no denying that you are on a Vision SWB, though it is quite evident that this is a redesigned Vision. The two inches of additional wheelbase are noticeable. The handling is more sure-footed, stable and predictable than past bikes. Even with the ASS, the bike is spirited—RESPONSIVE—as Vision aficionados may describe it. The center of gravity still feels farther forward than other SWB bikes—though it needs to be for the direct USS (ASS is

optional). The bike tracks very nicely, though you still need to be attentive. The stock Primo Comets are fairly quick handling tires. A fatter tire set does tame the bike a bit.

The RX100 8-speed shifting was wonderful. The Rapid Fire was predictable and shifted great under load. V-brakes are all the rage and as is expected these Shimano STX V's stop on a dime. Maybe these stop too fast? I could easily lock up the rear wheel, which often made braking more intense than I prefer. In contrast, the front wheel feels like a powerful antilock brake and is a noticeable improvement over Vision front brakes of the past.

■ ACCESSORIES

Vision offers one of the best lines of recumbent-specific accessories in the market. The Day Bag carries 800 cubic inches of junk, as well as an optional Hydro-Pack bladder with cool color Vision logo graphics. The suck tube conveniently clips onto your jersey. A light/computer mount adapts to the derailleur tube, or to the fairing frame. The Vision Zipper is a must have for the performance or rainy city commuter. A rearview mirror is available for both ASS/USS models. An optional rain poncho will keep your top-side dry. A matched Vision fender set is available. Full size rear racks will work and panniers will fit on just fine.

■ VISION—THE COMPANY

Vision is destined to be a big American recumbent producer with a complete line of bikes. They are the most aggressive and the largest of the recumbent manufacturers selling bikes to enthusiasts—through dealers. Vision has installed a powdercoat painting oven and the finish is much improved—it is among the finest powdercoats you'll see. Vision now buys components direct from Shimano in Japan—which is another big improvement. The next step will include building wheels in-house. Vision currently has no plans to send production overseas—a refreshing idea. The company principals are confident that they can stay one step ahead of the competition this way.

■ VERDICT

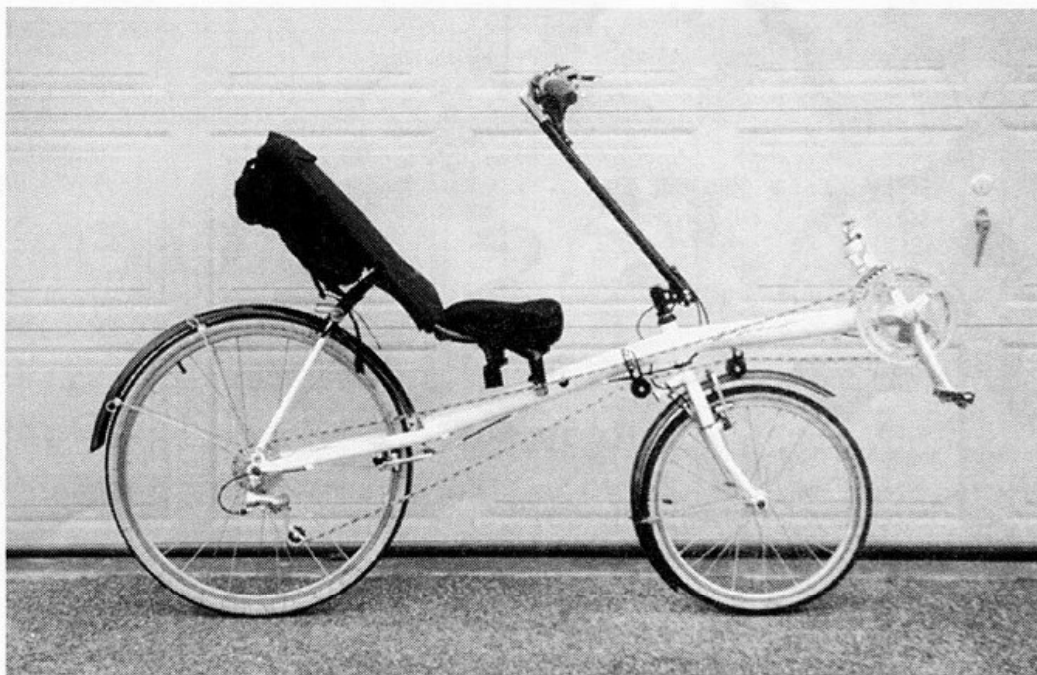
Vision has updated the R40 into an enthusiast dream bike that is an unequalled value at \$1145, yet at the same time a very serious SWB. The RX100/STX drivetrain is better than the drivetrains are on bikes costing hundreds of dollars more. I prefer the full Shimano to any SRAM ESP mixes that I've tried, even if they are considered to be upline. Vision's move to nearly full component groups is welcomed.

Some other nitpicks include the YST headset—which is just okay, but suffers in comparison to the other components. The drivetrain shifted quietly and smoothly, though we cannot help but imagine that 8/24-speeds may be outdated next year in favor of 9/27. Vision's R44 and 45 are both 27 speeds. The rear wheel spacing is the same, so with a new cassette and shifter it can be upgraded later.

All is not perfect. I did manage to break a boom-bolt during our test. We had an ASS riser



Vision co-designer Joel Smith rides the new R40—Vision



Our R40 test bike ready for the NW rain this past December—RCN

height glitch, an ASS unit QC glitch as well as an ASS unit cable routing glitch—all of which have been corrected for new models.

The V-brakes are very powerfull and R40 owners will need to learn to modulate—especially the rear brake—carefully. Zach Kaplan said, "That isn't a problem once you are used to the increased power of V-brakes. I've been riding SWB's with V-brakes for sometime now and know to not apply the rear brake as hard as the front." I am told that shorter arm and detuned V-brakes are available aftermarket.

The 559mm 26" rear wheel and 406mm front wheel are the best choice for an all around enthusiast recumbent. Owners won't have to rely on large chainrings or 3x7 hubs to achieve adequate gearing. However, there is a mystique with dual 20" wheeled recumbent handling not often found once you add a full size rear wheel.

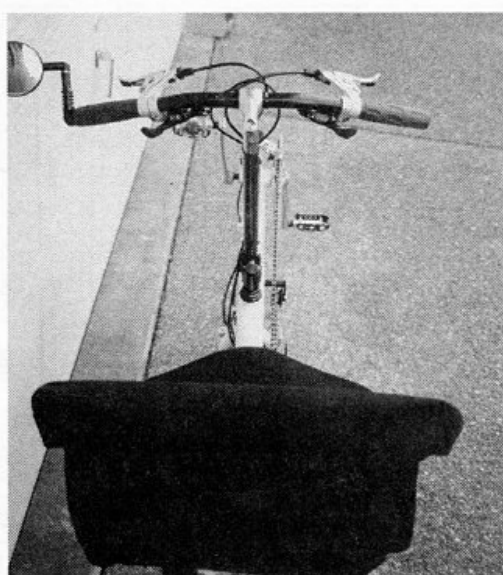
Like BikeE, Vision acts like a real bike company. There is a host of Vision specific options, an owner's manual, and even a recumbent tire set (that Vision is responsible for getting made). The rubber is a matched set of

Vision Primo Comet 20" x 1-3/8" tires—a true recumbent tire set. Fat tire lovers can easily install fatter tires on this bike to suit their needs.

As an XL-sized rider, I find that the ASS is more aerodynamic, making me faster. I have seen Vision USS riders that are very fast as well. The fairing seems to make up any differences between ASS and USS. I say try them both and go with what works best for you. This new Vision is greatly improved and I like it.

We're excited by the recent proactive updates and changes in the line. Vision is listening. The '99 line is the best ever. Rumor has it that the "pushed out front wheel" SWB geometry is being worked into suspension SWB and tandem models for mid-'99 introductions.

The new R40 is a wonderful bike and an exceptional value. Vision is sure to sell a bunch of them. For more information give ATP Vision a call at 206-467-0231. Be sure to tell them you read about it in RCN. □



Our test R-40's new ASS—RCN

See the all new Vision web site at www.visionrecumbents.com

2000 Buyers' Guide

With the recumbent world growing so fast, new bikes and models emerging, and RCN struggling to keep ahead of things, our next full size buyers' guide will be in 2000. For 1999, we will attempt to cover industry changes and new bikes as they happen—and hopefully do a better job of it than we have in the latter half of 1998. □



The 1999 R45 with ASS STI—John Riley

Vision Announces 40-Series Hardtail Updates

The 40 series hardtail frames have been completely re-designed for 1999. All the bikes are now made of chromoly tubing, and the geometry has been radically altered. Lengthening the wheelbase of the bike has changed the weight distribution to 60 rear/40 front. Fine-tuning of the front end head angle (and the resultant change in effective trail) to match the new set-up has smoothed out the handling considerably.

"These new frames are the best handling, easiest to ride Visions I've ever been on" says Ricky Comar, Vision's marketing director. "I'm not the only person who feels this way—we just finished the trade show circuit (Vegas, Philadelphia and Chicago) for the season, and were kept very busy in the demo area. Shop after shop commented on how easy the bike was to ride, just how noticeable the design changes were."

There is a lot more going on than just the changes in the frames. With the new buying power Vision has with overseas vendors, the component groups found on the 1999 Visions have all been upgraded.

The R40, Vision's best-seller, will be using RX100 eight-speed systems for this coming season, yet still retails for \$1095. 9-speed 105 and Ultegra components fill out the upper end of the line. All of these excellent components and the new frame designs make this season the best one yet to buy a Vision. □



The True Wheel!

The '99 Models are on the way!

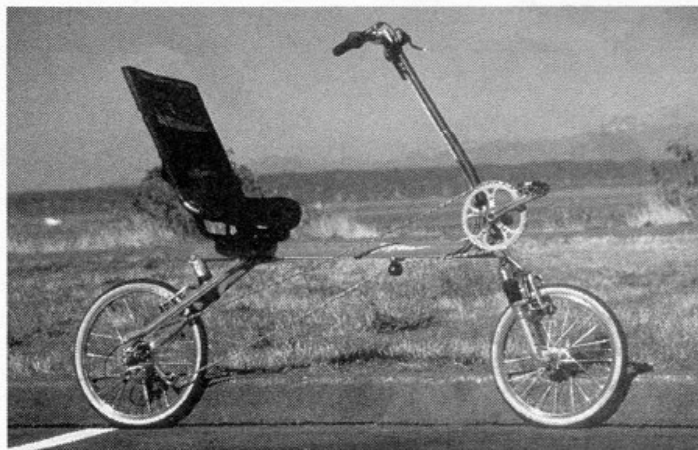
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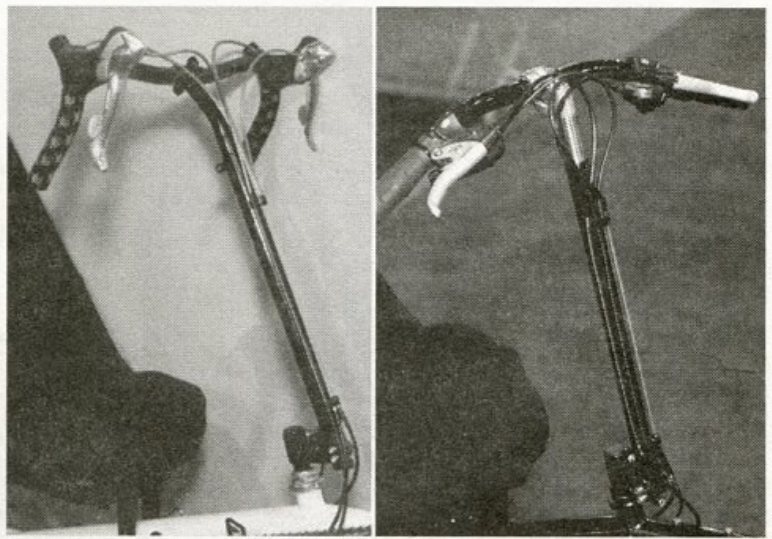
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The 1999 Vision R-32 MWB

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ABOVE LEFT: New R40 USS
 ABOVE CENTER: New R45 STI ASS unit
 ABOVE RIGHT: New R40 ASS unit

1998 VISION TEST BIKE RECAP

1998 was a year of RCN Vision test bike disappointments. We had two suspension SWB models, one suspension LWB and one LWB hardtail. All models have since been outdated by the new '99 changes—making our tests outdated. The LWB rear suspension model was discontinued. The LWB hardtail will have a roomier cockpit due to the new SWB geometry. Tony Licuanan, the NW rider group, and myself spent a month with a Vision suspended R42S. It was scheduled to be in RCN#48. A few weeks before press time, we were told that the suspension models will be getting a revamp for '99, so we pulled the article at the last minute, resulting in a smallish and late-ish RCN#48. Nevertheless, we are happy to see Vision making these changes. □

THUMBS UP

- ▲ New Steering geometry is a definite improvement
- ▲ New wheelbase (+2") is a definite improvement
- ▲ Shimano RX100 24-speed drivetrain works great
- ▲ Built in Seattle, Washington, USA
- ▲ An excellent SWB value
- ▲ Vision Engineers have been reading RCN

THUMBS DOWN

- ▼ Welds beads & details need a beautification treatment
- ▼ YST headset is not worthy of other spec
- ▼ Strong V-brake locks rear wheel in hard braking
- ▼ Needs sight align mark on frame/boom
- ▼ Excellent drivetrain—but an 8/24-speed
- ▼ KMC chain

Vision R40 ET Spec List

MODEL.....	.....Vision R40 ET
TYPE.....	.....SWB above seat steer (ASS)
WHEELBASE.....	.....40.25"
SEAT HEIGHT.....	.....24.5"
BOTTOM BRACKET HEIGHT.....	.....24.5"
WEIGHT DISTRIBUTION (Mfr.).....	.....approx. 50%/50%
WEIGHT.....	.....29.5 pounds (RCN)
FRAME.....	.....TIG welded 2" CroMo
FORK.....	.....CroMo
STEM/BARS.....	.....Vision ASS
SEAT.....	.....Alum.frame, sling mesh, foam base

COMPONENTS

CRANKSET.....	.....Shimano RX100 Triple 30/42/52
BOTTOM BRACKET.....	.....Shimano UN52
HEADSET.....	.....YST 1" steel
DERAILLEUR-REAR.....	.....Shimano RX100
DERAILLEUR-FRONT.....	.....Shimano RX100
SHIFTERS.....	.....Shimano Rapid Fire 8/24-spd
CASSETTE.....	.....Shimano HG50 11-28
WHEEL-REAR.....	.....559mm 26" x 1-3/8", Sun L18 rim, Primo Comet Tire
WHEEL-FRONT.....	.....406mm 20" X 1-3/8" Sun L18 rim, Primo Comet Tire
WHEEL BUILD.....	.....Winkel Wheel in Seattle
HUBS.....	.....Shimano RX100
BRAKES.....	.....Shimano STX V-Brakes
WARRANTY.....	.....Lifetime: frame, seat frame & fork; seat mesh 1 year
COLORS.....	.....Teal, red and white
PRICE.....R40 ET(ASS) \$1145; R40EU (USS) \$1095; R40ETF (ASS, ft.susp.) \$1345
NOTES.....ASS, USS, LWB, SWB and front susp. are options on this bike.

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Viva Las Vegas

Glitz, Glamour and Fun in the Worst City for bicycling

by Robert J. Bryant
DrRecumbnt@aol.com

I don't drink much (though after this trip...), I don't smoke, I'm not into cigars, I'm constantly concerned about my rolling mass, so I don't make a habit of gorging on massive amounts of mediocre food at low budget buffets and I don't gamble. My passion is cycling. So what am I doing in this neon strip of asphalt in the desert? I'm attending the 1998 Interbike Bicycle Industry Trade Show. I've decided to once again endure the suffering and to report back to you about what's new for 1999.

My trip started the week before in LA for the People Movers Rally. I was in Vegas a few days early. The first official event is the "Dirt Demo" happening 30 minutes outside of Vegas in the thriving metropolis of Blue Diamond. This year, recumbents were well represented. BikeE, Vision and Rans all made the "Dirt Demo" test ride day. In the afternoon, we made a few trips to the airport to pick up the RCN crew and then readied ourselves for the first day of the big show.

■ LIFESTYLE BIKES?

The mainstream bicycle industry is banking on the "lifestyle" or "comfort bike" as the next big thing. Entry level recumbents (compacts) have kind of come in through the back door of this category. Many industry insiders are calling this the next trend. Hmm, comfortable bikes for adults—what a concept.

The interesting part of this scenario is that recumbents are the most exciting new bicycles to come to the industry in years. Some dealers realize this and others do not. The industry doesn't seem to want to admit it. Most magazine show reports didn't even mention recumbents.

■ A BENT FUTURE?

With the emerging new, more mainstream recumbent market, those who don't come to Interbike don't get noticed by the industry—hundreds of bike dealers who are asking questions about recumbents (and considering them for their shops). Things are changing so fast that builders will need to pay close attention to their competition. A more mainstream market will mean more price competition and possibly lower-priced recumbent bikes.

BikeE, Rans and Vision were definitely treated like the serious players by everyone at the show. All were present with large upstairs booths with the big boys like Trek and Schwinn. These three recumbent companies are visionaries who have paid their dues and

earned the respect of the bicycle industry thus far. Any upstarts who come to future bike shows are already years behind the BIG-3.

All three received award nominations from *Bicycling*: Vision for the new MWB R-32; Rans for the Wave; BikeE for the NX road bike. These were truly the hits of the show. *Bicycling* has a sharp eye for cool new stuff.

It was very clear to the RCN crew that a separation in our business is taking place. There are the mainstream guys (BikeE, Vision and Rans) who sell to serious dealers/trade-show goers, the enthusiast guys (RCN advertisers), and the small time local builders. The small time builders will be the most vulnerable. This will continue to hurt their positions and accelerate the separation.

THE RECUMBENTS

■ BikeE

I didn't see a TrikeE, nor did I see a double BikeE, but this supercharged company has found a home in the bike industry. They now sit at the head of the class. BikeE sales tripled in 1998. The key seems to be that they have specialized in "Compact" style recumbents. There is the Air Tech and entry level \$650 CT now built by Giant in Taiwan. The all new \$2,000 NX "Next Generation" suspension road bike has the new "Sweet Seat," disk brakes, 16 speeds, and includes the unique Schlumpf Mountain Drive 2-speed bottom bracket, and the cool BikeE rear suspension. The NX and AT are built in the USA, though they use imported parts (seat and handlebar, etc.) from Taiwan. BikeE is already making performance claims in stating that the NX has, "the same speed potential as a high-end conventional road bike." This remains to be seen, and BikeE doesn't need to make these types of claims to sell this bike.

The new BikeE seat has an unsupported (no rear seat supports) tall back seat with a wider, more contoured base. The "Sweet Seat™" lists for \$249 and easily adapts to modern BikeE's. For those who don't want to spend that much, the seat base retrofits and costs just \$50. This is the finest seat to ever slide on a BikeE aluminum frame, though we have not ridden it very far yet.

One of BikeE's many strong points is the lengthy list of options. BikeE offers Primo V-Monster and Comet tires (New!) in 16" 305mm and 20" 406mm sizes. There is a 3x7 quick release option, Burley Picolo and Burley trailer hitch adapters, racks, fenders, fairings and bag. Many options offered by BikeE are the fin-

est recumbent accessories available.

BikeE's \$650 CT has some hot competition in the new \$699 Rans Wave (with Rans seat)—providing that Rans can deliver them. The BikeE CT still uses the old BikeE seat. One disappointment for BikeE fans is that you can tell the difference between Taiwan and previous Oregon built BikeE's. The aluminum extrusion is now polished (rather than brushed). The stainless seat frame/steering parts are gone, replaced by CrMo/HiTen with an "alloy" finish. V-Brakes (well, sort of) are now standard equipment on the CT and AT.

BikeE is a first class company and has a dealer list that is the envy of the recumbent world—which should ensure a great '99.

■ RANS

Rans is ramping up for serious production in 1999. Several of the models will be built overseas. We haven't seen any 100% Taiwan Rans bikes yet, though the show bikes looked fine.

Rans is using a mix of Campy, Shimano and SRAM ESP components (drivetrain), with ESP V-brakes on all models this year.

The '99 offering includes Wave (Compact), Tailwind (LWB), Rocket (SWB), V-Rex (SWB), Stratus (LWB—now with T bars), Vivo (full suspension SWB), Gliss (rear suspension LWB) and two Screamer models. All Rans models will be powdercoat painted. Rans no longer offers Magura brakes on the Vivo or Gliss, though they do on one model of Screamer tandem. There is also a factory S & S coupled Screamer and Vision IPS remains an option.

The new Rans Wave utilizes the Tailwind frameset with a 16" front wheel, lower gearing and lower level components—and an excellent price of \$699.

The Rocket is much the same as last year, however, there is one distinct difference—the price. The value leading SWB Rocket now retails for \$995 with a Flip It stem—an excellent value.

The Stratus geometry has been tweaked with a more adjustable seat recline, and Stratus specific head-tube angle and steering geometry. The ride is even better for '99 with the classic of the Rans line.

The biggest news for enthusiasts comes with the "The Bike Formerly Known as Limbo" —the Velocity². This long and low LWB will have a top secret component group, a new top secret modified seat, handlebars and fairing mounts for the stock Super Zzipper. This factory hot rod, code named

"Gold Rush Killer" is similar to the Stratus in design, though the seat is lower and the bottom bracket is higher for optimum performance. The show bike had a steel frame, though rumors of aluminum or titanium abound. Details on the "The Bike Formerly Known as Limbo" are still sketchy. We are aware that they are still trying to dial in the steering geometry of the bike. Rans has been taking dealer orders for V². Retail is \$2700! The bike is slated for spring deliveries. In an odd twist, Rans' existing Limbo/V² prototypes were sold this past Fall.

1998 wasn't the easiest year for Rans. They sold lots of bikes and were not able to deliver them all. So far we don't have any Rans test bikes here. We can hardly wait to try them.

■ Trek

The Trek recumbent was not in the '99 catalog that I picked up in Las Vegas, but the bike was at the show and we managed to get a test ride. The rear-suspension (only) 40-speed aluminum SWB ASS will be priced at \$1650 and be available at select Trek and recumbent dealers this spring. Word has it that the bikes are sold out (to dealers) and 1000-1500 units will be built. Dealing with mainstream bike corporations is a new experience for us. We are very much looking forward to testing the Trek R200.

■ Vision

Vision is looking great for '99 with an extended wheelbase SWB (40"), and an all new R-32 MWB, ASS unit. A full line of extended wheelbase SWB models (R40, 44 and 45) and redesigned tandems and suspension models (R42-S, R44-S and R45-S) are due very soon. All SWB models are available with ASS (above seat steering) or USS (under-seat steering).

Vision is really refining and streamlining for '99. The quality looked excellent, we really like the ASS unit and love the idea of an extended wheelbase Rans-esque SWB geometry. Unlike industry leaders BikeE and Rans, all Vision models will be hand-built in Seattle, Washington, USA.

The Metro as we know it has been discontinued. In a surprising move, Vision designer Joel Smith has brought the new R32 to market. The bike is a true medium wheelbase, with a new fixed above-seat (ASS) steering, and 20/16 wheel combo. The bottom bracket is higher than the seat, and attaches to the head tube. The Euro-ASS is so rock solid, Dirt Demo riders were easily steering with no hands. The bike comes with a re-engineered Vision rear suspension at \$1295 (and 20" drivewheel...do you think they are getting the hint....). As with many Visions, a front Ballistic shock is optional—bringing the full suspension, Sachs 3x7, STX V-brake, Cane-Creek and Ballistic equipped R32 in at \$1495. This had many show goers abuzz in Las Vegas.

The only thing remotely similar to the old R30 is the fixed recline angle sliding seat. Both the seat and the ASS unit come off quickly and the swing arm folds under the bike for compactibility.

The R40 is a hot value for '99. The entry-



The 1999-1/2 Rans Velocity²—John Riley

level Vision SWB sports a CrMo frame and USS or ASS with optional front suspension. Vision has discontinued the R42 hardtail and has taken the RX100/STX components and put them on the \$1095 R40.

The R44 and 45 hardtails are some of the lightest production recumbents made—and they have lifetime frame warranties. The R44 is an excellent value for a 26 pound recumbent. The R45 is the Vision connoisseurs' machine. It has an Ultegra/XT STI drivetrain and weighs just 23 pounds! There is a new STI ASS option that is very cool. HED wheels are optional as well. R45's are painted ANY color you want.

The Vision SWB are looking better than ever! We're really jazzed about the new proactive enthusiast type agenda that is just one of the cool updates of Vision for 1999.

■ SMALLER SHOW ATTENDEES

Greenspeed—Ian Sims did not make it to Interbike this year, though S & S Machine (couplers) had a coupled Greenspeed in their booth. We have a high performance Greenspeed trike test coming from Zach Kaplan and rumors persist of a new '99 model trike introduction. We still love the Greenspeed. Greenspeed is the veteran touring/performance trike builder.

Lightning—has introduced a new \$850 SWB ASS design called the Thunderbolt. Front suspension is optional. We are hoping for some Lightning test bikes in '99.

Linear—was in a small booth in the downstairs section of the Sands Convention center. The '99 offerings are the same as the '98, with the addition of the long overdue Linear Compact Mk. III OSS—which was shown in Chi-

cago (CABDA) and which we are expecting any day now (for the last 18 months).

Pashley—Pashley didn't return our info-request and the recumbents don't seem like a priority for the US distributor. Nevertheless, Pashley has a neat trike in the PDQ³. The three-wheeled PDQ³ is the former Counterpoint Triad. This is a really cool trike based on the Counterpoint Presto. It is taller, wider and tipper than most other trikes, with a more user-friendly riding position. This \$2500 trike has a Sachs 3x7 21-speed drivetrain. It is not at the level of the custom Angletech Triads, but nevertheless an excellent trike buy. The Presto had a tight cockpit due to the shorter wheelbase compared to SWB models of today.

The PDQ two wheeler is available, though not a very good value in the US market—and its competition, the Rans Rocket, is a superior bike at half the price.

If you would like information on the PDQ, call Absolutely Recumbent in Albuquerque or Angle Lake Cyclery in Seattle.

■ OTHER GUYS

Keep in mind that Interbike is an industry tradeshow for bike manufacturers who sell to dealers. Those recumbent manufacturers who were not present are as follows:

Brompton—Channel Wasson, the USA Brompton folding bicycle distributor, will be importing the German-made SWB recumbent kit. Look for an article in RCN #50.

Comfort Cycle—We've lost contact with Comfort Cycle. The address(es) have changed and we don't have current contact info. Rumor has it that this company has changed hands.



Nils Palm's new German Radius Recumbents built in Taiwan. So far I don't know who the USA dealers are. Anybody out there selling these?—John Riley



The \$695 Rans Wave compact. This bike is very similar to the Tailwind, though it has lower line components, lower gearing, shorter wheelbase and a 16" front wheel.—John Riley

Earth Cycles—is very busy delivering trikes after our very positive review. The trikes have been updated since our test. Gone is the 3x7 hub and a new idler has been developed. There have been prototype disk brake versions built and a tandem is rumored in the works.

Easy Racers is busy gearing up a new factory near the Watsonville Airport. There is a new prototype sorta Compact SWB/LWB. Another low(er) priced model is rumored. The \$5,000 TiRush (see RCN#48) and new Cool Back seat are the big news from Freedom, California as all other offerings, specs and prices will remain the same as they were in 1998. We were disappointed to see the same kinda stale, kinda retro EZ1 and Tour Easy specs for '99—though the Easy Racer LWB bikes are RCN favorites. An upgraded Tour Easy spec would

be a worthy addition to the Easy Racer line.

Green Gear/Bike Friday—sells direct to the customer only, though we have ridden it (see article in this issue).

Haluzak—Bill Haluzak attended the People Movers 'Bent Rally in Orange showing his new People Movers Transit and Transport Compact recumbents. The Transport has a unique take-apart frame. Both will be marketed through People Movers and other dealers.

Haluzak is also moving into larger digs, so there were no Haluzaks in Las Vegas. The '99 line offers component upgrades as well as price increases for the Horizon, Hybrid Race and Traverse (rear suspension) and Leprechaun (a 26"/16" wheeled version of the other models). All Haluzak SWB bikes are 26"/20." The Horizon is the tourer, Hybrid Race the perfor-



The \$2500 Pashley PDQ³—John Riley

mance and Traverse is off road. Haluzak does many custom build features including bikes for really big or really small folks, custom paint and component groups.

Crystal/Ross—Peter Ross has sold his company. The new name is Inspired Cycle Eng. Ltd (ICE). The Speed Ross gets a new larger diameter chain pulley and an optional Rans seat for shorter riders. The dual 20" wheel/Tioga Comp Pool Festina low-racers are available in the USA from Zach Kaplan. Fillet-brazed frames, other upgrades, new US dealers and lots of new energy have ICE looking good for '99.

Human Powered Machines—Jan Vander Tuin is busy building SWB, LWB and trikes. He has a new folding SWB recumbent version of his "Swift" folder. It is said to be less expensive than other folding recumbents.

Turner—While not at the show, an RCN reader reported that a new Graphite Turner SWB exists. It looks like a composite T-Lite. We were unable to get '99 Turner info.

Rotator—While not at the Vegas show, there is a Titanium Pursuit/Tiger option for 1999. Prices start from \$2200 for a frameset. Component specs appear to be unchanged.

Longbikes/Ryan Recumbents—Dick and Karl Ryan were nowhere to be found in Las Vegas. A few weeks later at the Philly Interbike show, a Vanguard was sitting in the Longbikes Tandem booth with Longbikes decals on it. Longbikes is an upstart tandem manufacturer from Colorado. On October 26th, Longbikes owner Greg Peek announced on the tandem internet mailing list that all had signed a letter of intent for Longbikes to take over manufacture of the Ryan Vanguard and DuPlex Recumbent. Dick Ryan will still be involved on a consulting basis. We have not heard from Longbikes about '99 specs. Long live the Ryan Vanguard!

S & B—There was no sign of S & B at the show in Vegas, nor did we see them at the People Movers Rally in LA. S & B will have a new SWB with ASS capability for 1999. There will also be a Rans seat option. The old style S & B frame will soon be offered by Recumbent Barn.

WizWheels is alive and kicking. The trikes have been updated and we will be getting a test trike. I have not ridden one yet, but they



Cadillac style at Specialized—John Riley

are definitely among the most affordable trikes in the US market.

The new recumbent market has raised the standards up a few notches. As the mainstream manufacturers come on board, values will increase as will availability. No longer will mediocre bikes that lack finesse or have crude finish work be acceptable. I fully expect prices to start coming down. Those who can't compete will be left behind. There are new stakes in this game of 1999—and the winner will be the recumbent bicycle consumer. Value has never been better.

■ TECHNOWEENIE STUFF

Our compliments to BikeE for bringing over the Schlumpf Mountain Drive. This unique 2-speed bottom bracket makes for a very wide gear range with fewer gears and more range than a 3x7 hub (unless you go 63-spd.). We're hoping that more manufacturers go for the Schlumpf. One confided in me that they won't due to the relatively inexpensive crankset used (and the really high price—around \$500 retail).

Angletech's Kelvin Clark and RCN's Ron Schmid were so excited about the new Magura "Louise" disk brakes that they could hardly contain themselves. Angletech has outfitted these new cooking oil disk brakes on "Daphilouse" spec models. Rumor has it that a Stratus touring bike may be available as well.

For those of you who just can't stand it any longer, the '99 Angletech spec catalog is

out. If it is high tech and cool, you can bet it will be found on an Angletech model.

As for stuff that we really don't want to see on 'bents, wizbang leader White Industries, announced a 2x10 shifting system for 1999. The system includes a wide range White-made derailleur, twist shifters, a special 137mm hub and a 10-speed 11-38 cassette (is this the widest range EVER!). The system works with a 28-42 (or 44) double crank for 20 gears, however, with the long recumbent chain and a triple 30 gears are easily achievable. White's system is inspired by the Ritchey 2x9 in 1997.

We hear that Sachs is working on a 3x9 to replace the 3x7, but this could be a ways away. They are having trouble delivering 3x7's as it is. Green Gear/Bike Friday offers 3x8's and

some 3x9's that are custom spec'ed at the factory. Speaking of the 3x7, BikeE offers a Sachs 3x7 quick-release skewer.

■ LEAVING LAS VEGAS

On the last night of the trip, we found the true oasis in Las Vegas. Our hotel, the Flamingo Hilton, has arguably the best pool in Vegas. In the evening, everyone is gambling or eating. We had acres of pools and hot tubs to ourselves. Decadence at its finest.

Las Vegas could learn a few lessons from Anaheim in the convention center business. The center food was very poor and Latte's were scarce. Nevertheless, Interbike is Candyland for bike junkies and I'll be back next year. □

Made In...Taiwan

by Robert J. Bryant

For the first time ever, recumbent enthusiasts will have the opportunity to buy "built in the USA" recumbents, or imported from Taiwan recumbents. This may be a very political issue that is hotly debated. It is my guess that each and every one of you will have an opinion. First, let me preface these comments by saying that most components are imported. So, generally, this topic has to do with where the frame is built.

Some customers won't care—heck, we're in a world economy. Others, maybe union workers, won't want a bike made in Taiwan. If you've been downscaled or laid off because we don't build much in the USA anymore, or don't like corporations moving production overseas to reduce costs, select your bike and model carefully.

The builders going to Taiwan are those who sell a lot of bikes to dealers. The idea of going to Taiwan for production is simple—lower the price and increase the production numbers (without expensive USA labor). With the mainstreaming of recumbents, some of the the bikes have become commodities, rather than a hand crafted product (that you have to wait three months for). Whether this means something to you or not will be a personal decision.

The Giant Bicycle company is building BikeE's in Taiwan. The new NX will be built in Corvallis, Oregon, though using some Taiwan BikeE parts. Rans is in the process of shifting production to Taiwan; The Wave, Tailwind, Rocket and V-Rex are there, others to follow.

Rans has a different problem in that they have had a tough time finding qualified craftsman to build bikes in Hays, Kansas. Rans' John Schlitter has told me that he is very im-

pressed with his Taiwan factory and feels the frames are every bit as good. What we saw at the Vegas show does confirm this. However, the bikes are not built in Kansas anymore.

The majority of the low cost imported bikes are entry level compact Rans Wave and

BikeE CT models. An interesting twist to this—Bicycles by Haluzak and People Movers have a pair of even lower priced compacts in the Transit & Transport. They are built in the USA by Haluzak in Santa Rosa, California.

Vision's goal is to be the largest recumbent manufacturer, period. They are currently a powerhouse and certainly building more "enthusiast" style recumbents than anyone else. And they are not going to Taiwan. Even the entry-level value leader R40 SWB is built in Seattle, Washington, USA. The bikes don't come from far-off lands, but from hometowns across the USA.

One difference that separates Vision from the others is the cost of their lowest priced model. Where Rans and BikeE are in the sub \$700 range, a Vision starts at \$1095.

So what is the difference in the bikes? Well, they all have excellent warranties. The craftsmanship on the BikeE CT and Rans Rocket look great. BikeE has mostly worked out their minor CT upstart glitches.

The bottom line is that some of the imported materials will not be as good, but mainly the bikes are just more time consuming for the dealers to set up. This is where the good dealers will be separated from the mediocre ones. Chances are this won't affect the end customer-user much (we hope). I guess it comes down to where you want your bike built and how much money you are willing to pay. We have just entered the world recumbent economy. Times are certainly changing. □

The Bike Manufacturer Food Chain

(Country of manufacturer perceived quality of bike)

1. USA
2. Europe¹
3. Japan
4. Taiwan/China
5. Malasia

¹#1 and #2 reversed in Europe



Vision's new "Short 16" R44 SWB optimized for shorter riders—John Riley Dan Duchaine's new Pharobike Low Fat at the People Movers Rally



BikeE's Sweet Seat™—John Riley



The new Lightning Thunderbolt sells for \$850/\$1090 with front suspension.

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The Trek R200

...It's a SWB Recumbent

by Robert J. Bryant

The new Trek recumbent was present at the Interbike trade show in Las Vegas this past September. The subtle buzz was that this was an improved bike over that shown at the midwest rally. The oversized 3" aluminum "Powertube" mainframe tube has a look all its own—you either like it or you don't. No "official" test rides were being offered—though we managed to score a ride.

■ TREK DESIGN

Trek has a reputation for being a conservative midwest company, though they have made some bold moves with the R200 design. They are insisting the "mid-drive" (a la Rotator) is the way to go for wide-range gearing (with dual 20" wheels).

The consensus about the Trek after the Midwest Rally this past summer was that the bike was tall (high seat). Trek realized that they needed to do something about this. Over the summer, they worked fast and furious to get the bike ready for Interbike. A custom designed seat track (for the Rans seat), a low stack height head set, and a deletion of the front suspension fork are the methods used to lower the bike's seat height. The updated Trek was looking fine, though the deletion of the front shock is *not* good news.

■ WE GET A RIDE

Kelvin Clark of Angletech had an appointment to check out the new Trek. I asked real nicely if I could "just happen to be there." Something was said about me behaving myself, but I don't remember what. So a plan was set in motion, and our little group just happened to meet at the Trek booth after the show one evening. We rolled the bike out with the crowd for a brief test ride.

This beta version is still a bit unrefined in the steering geometry, though it definitely has potential. All but one of our group liked it. Later I asked each rider to rate it on a scale of 1-10, and the average was an 8. Most thought it needed a few tweaks in the steering geometry, though one rider said, "Leave it just like it is." The beta version weighed 33 pounds. Trek will be putting it on a diet in hopes of getting it down to 30 pounds for production.

The R200 is still rather tall, and the riding position is less performance oriented than any Vision or Rans SWB—though it seems intentional. The bike is designed to go after Trek 2300 riders who are no longer comfy on their wedgie steeds.



Whereas you sit "in" a Rocket, V-Rex or Vivo, you sit "on" the Trek. The bottom bracket is lower than the seat—which is really user-friendly. It was this feature that won me over. There is a very nice Trek-designed adjustable steering column and seat recline thanks to the Rans Vivo-like rear seat adjustment.

■ TREK QUALITY

Most manufacturers I've talked to are a bit cocky about Trek's entrance into the recumbent biz and what this could mean to recumbency (and even RCN). The fact is that they should be worried. Trek's bikes are very high quality. The finish quality on US-built wedgies is better than that of any current recumbent. They are built in Wisconsin, USA of TIG'ed CroMo and have better paint than any recumbent.

Trek is serious about parts specs. The fold-forward stem is very unique and had a trick machined stem that was gorgeous. At least they are taking the mid-drive concept seriously. The unit is Trek recumbent mid-drive proprietary—a sealed cassette. SRAM has developed a 5-spd indexed left shifter for Trek's mid-drive. The swing-arm and rear suspension technology is directly from their new very cool VRX mountain bikes. Many aspects of this bike are very well thought out and Trek has taken some chances with the design. The R200 is different from other SWB bikes, enough so for it to be a

welcome contender in the marketplace. We especially like the low bottom bracket height.

■ RUMORS AROUND

We have heard about the apparent lack of support the Trek recumbent has received from within the company. In John Schubert's recent *Adventure Cycling Cycle Sense* column, he wrote, "when I visited the booth, the bright red Trek recumbent was being ignored." He follows this up with, "and the trade press reported that many people within Trek were lukewarm to the idea of making a recumbent, and that they may withhold marketing support. True or not, these reports throw cold water on the introduction."

■ SALES SUCCESS

Word has it that the dealers bought them—as the Trek R200's are sold out (to Trek dealers). So if you want one, better call your Trek dealer soon. Angletech, The Bike Rack, Wheel & Sprocket and others will carry the new Trek. As for pricing—list is \$1650, though one source told RCN that he expects that these could be available for under \$1500!

Bicycling Magazine suprisingly gave the Trek a Gear of the Year award. This bike is already a success by 'bent industry standards and production has not even started yet. We are expecting a Trek R200 test bike soon. □

The Fringe

of cycling is alive and well in Las Vegas

by John Riley

j.riley16@genie.com

You will read about the latest products announced by the big bike companies at Interbike in the glossy bike magazines. But in the small booths along the back aisles and on the lower level of the mammoth convention center, there were people you may never read about in *Bicycling Magazine*. Some of them are people with an idea and not much more. Others represent companies that push products outside the normal bike industry channels with infomercials on TV. As one who has ridden recumbent bikes for 16 years, I know something about being out of the mainstream. I am drawn to these inhabitants of the cycling fringe.

Here are some of the things that caught my eye along the back aisles, along with a few unusual items from bigger companies.

■ UNUSUAL DRIVE SYSTEMS

I find the idea that there might be some way to modify the pedal motion to improve performance intriguing, as unlikely as this may be after over 100 years of effort. Still, people try, a testament to the persistence of human invention.

At least three devices were displayed that allow the pedals to travel at different speeds during the stroke and at different speeds relative to each other. Frans Vereyken displayed a drive system that has the pedals on a system



Frans Vereyken drive system—John Riley

of two levers per side. The lower lever on each side is attached to the crank arm. The pedal is attached a few inches forward of this point. This results in an elliptical pedal path and variable pedal speeds through the stroke. A 12% improvement is claimed.

A device from B N Speed Cycle of Korea has the crank arms telescoping in and out through the stroke by means of an eccentric disc attachment to the bottom bracket axle. The crank arms are longest in the power stroke and shortest in the return stroke. The pedal

motion remains circular. A 15 - 20% improvement is claimed.

A device from Spain, The Rotor, also has the pedals following a circular path, but their speed and relation to each other are mediated by a set of eccentric gears. When one pedal is at the bottom of the stroke, the other is already started on the power stroke. Also, the pedal travels slower in the power phase and faster in the recovery phase. A 20% improvement in output and a 15% reduction in lactic acid build-up are claimed. Some of the research was performed by the famous exercise physiologist Francesco Conconi.

Ziegler-Lam Cycling and MBI World Industry of Korea both displayed gear devices that allow you to propel the bike by rotating the pedals forward or backward. They are attached at the bottom bracket or incorporated into the rear hub. The gear ratio also changes when you change directions. The Ziegler-Lam booth featured a mountain bike racer (from Toronto, as it turns out) who claims that it is a great aid to him, especially during steep climbs.

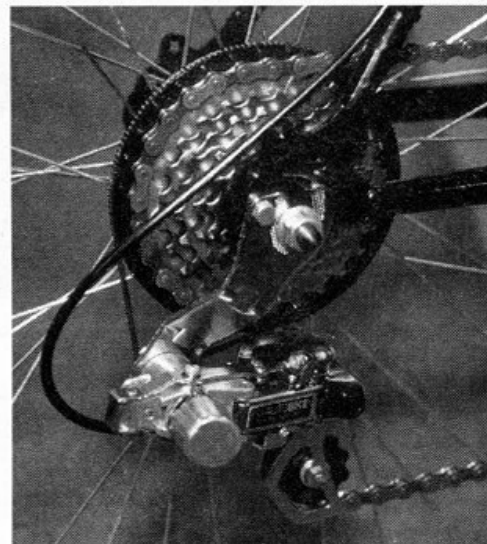
■ BACKWARDS CONFESSIONS

I have a confession to make. I have been interested in the idea of backwards pedaling ever since I read what Raymondo Spinnetti had to say about in the IHPVA publications in 1985 and 1987. He said it works, but not in the conventional upright riding position, where it puts too much pressure on the shoulders, arms and hands. It will work on an upright bike if the seat is back about a foot or so from its usual position. It also will work on a recumbent. I have experimented with backwards pedaling on my Doppler compact. This bike has an open chainline so you can flip the chain into a figure 8 and propel the bike by pedaling backwards.

When pedaling forward, one pushes into the seat, when pedaling backwards, there is much less of this because the power stroke is closer to the body and more nearly under it. You use your weight more. It may capture some of that elusive magic that seems to be lost on a recumbent by virtue of the fact that you cannot stand on the pedals.

With one of these gear devices, being able to switch back and forth would offer the opportunity to change muscle groups and perhaps reduce fatigue on a long ride.

Normally when I speak about pedaling backwards I see people's eyes glaze over as they slowly back away from me. I think I hear the sound of pages turning now, so I will leave it. Just remember, if you try this, it will unscrew your pedals!



The new Autobike automatic—John Riley

■ AUTO SHIFT (LAZY) SYSTEMS

The Auto Bike automatic derailleur shifting system has been around for years, and is now one of those "as seen on TV" items. Sliding weights are attached to the spokes. As the wheel goes faster the weights move outward and levers attached to the weights shift the derailleur into a higher gear. As the wheel slows, the weights move in and a lower gear is selected.

Of course serious cyclists take a dim view of adding weight, especially rotating weight. Perhaps because of this criticism, there is now a new version of this device. A small belt drive is attached to the back side of the cluster. This belt connects to a much smaller pulley on a short shaft that is mounted to the rear of the derailleur. The weights that regulate the shifting are attached to this shaft. Because the step up in the belt drive causes this shaft to rotate at a higher speed, the weights can be much smaller. The whole mechanism looks like it would be very vulnerable to dirt and grit. The thing that fascinates me about it is that this seems to be the same principle employed in the governor devices found on antique steam engines!

At the other end of the spectrum from the completely mechanical Auto Bike is the Shimano Nexus Auto-D. This is an automatic shift system built around a 4-speed hub gear. A control-display unit mounts on the handlebars, a CPU/battery box mounts at the base of the seat post behind the bottom bracket, a speed sensor mounts on the frame, and a shift motor mounts at the rear axle. A bulky electrical cord connects everything.

Just like on your fancy sports car, there are three shift modes: M: manual, D: normal automatic, and Ds: for earlier upshifts. The unit is programmable for wheel size and miles/kilometers at the display unit.

The brochure describes the system thusly: "Auto-D uses an integral speed sensor that enables the CPU to calculate shift points from a speed shift reference map programmed into the unit. This means that the Auto-D executes gear changes automatically at the most efficient shifting speed without any input from the cyclist."

Seems a bit much until I consider the number of utility cyclists grinding around Toronto with their derailleurs stuck in their default high gear positions. They will walk up hills rather than shift.

The word around the booth was that the Auto-D had a "park" function that locked the hub, but that this was deleted because too many people were forgetting the PIN number for their bike!

A different twist on electronic shifting was on display at the Mavic booth. The rider must go to the trouble of selecting the gear, but that choice is transmitted to the rear derailleur without wires of any kind. The brochure says it uses a frequency that is below 150KH, which is supposed to be below those used for radio, telephone, and satellites, and above induced frequencies from high tension lines or trains. It says the frequency is different from those of wireless bicycle computers and heart rate monitors. Apparently the only other emitters in the zone used by the Mektronic derailleur are primarily military.

The derailleur is aimed at the road racer crowd. Will we see a new electronic battle ground in the peloton? Tiny scanners and jammers might be used to try to interfere with a rival's shifting.

As one who struggles to keep the various cables adjusted and operating properly, I would not be sorry to see them go, if a system like this worked as advertised. Unfortunately I expect the cost to be prohibitive.

A hydraulically actuated derailleur system was shown by Hydraflight of Georgetown, Texas. It is aimed at the MTB market and claims to be mud-proof and waterproof. One control unit controls both derailleurs; a button selects front or rear. Low shifting force and the ability to shift through multiple gears with a single motion are also claimed advantages.

Vivo Sport Design, the people who make the Grunge Guard™ rubber boots for derailleurs now have a rear derailleur of their own that has been designed with complete rubber boot protection of the parallelogram and cable in mind.

I would put the "Tranzflo 100 speed manual or automatic internal shifting hub" in the vapor gear category. The hub was about the size of a 3-speed hub. It has a claimed 500% gear ratio range with a 5% difference between gears. When I was at the booth, a bunch of

SRAM people were gathered around. By counting the revolutions of the crank relative to the tire, they demonstrated that in fact the ratios were changing. Big deal. I asked how it worked and someone said, "He could tell you but then he would have to kill you." Yeah, right. The flyer says patents pending.

Seems to me if it's not planetary gears, it would have to be some sort of continuously variable mechanism. If I understand these correctly, they rely on friction rather than gear interfaces. If a friction device this small could handle the torque involved on a bicycle, it would be pretty amazing.

Meanwhile the brochure for the Rohloff 14 speed hub gear has a nice cutaway drawing revealing its planetary gears. No secrets here. It has a gear range of 526% with a 13.6% difference between gears. I will look forward to field reports after some of these things get a few miles on them.

■ WEIRD RIDES

Driving through the Ontario countryside, I once



The Mitraco 4-wheeler—John Riley

caught a glimpse of an older child riding a kind of pedal car in a farm yard. I saw one on one other occasion, but was never able to ascertain where they came from. At the bike show there were not one, but two booths displaying these vehicles. Both companies, Mitraco and Ulamo, are from The Netherlands. They both offered a variety of vehicles and accessories, but the main products were similar: four fat wheels, automotive type steering, and simple chain drivelines. They were a little small for adults, but it might be possible to move the bottom bracket forward. They are heavy and have no gears, but for short trips on level ground in adverse conditions, they might suffice.

■ A QUESTION OF STYLE

By now you might have heard about the Trek recumbent, but Specialized had a recumbent at the show too. It seems Specialized sponsors MTB racer Shaun Palmer, who apparently has some affinity for Cadillac, as evidenced by his

Cadillac tattoos. Perhaps this was the inspiration for the Specialized recumbent. Imagine a 1959 Cadillac scaled down and reduced nearly to two dimensions. That is what this show-only recumbent looked like. It had dual head lights in front and a single Cadillac fin at the rear. And, of course, a few Cadillac options: telescoping steering wheel, radio, something that might have been a cigarette lighter, and an adjustable black and white vinyl (or was it leather?) upholstered seat. In a concession to modern tastes, it also had a cup holder in the center console sized for a bicycle water bottle.

Almost as outlandish were the Harley-style low cruisers on display at the United States Bicycle Corporation. They had air brush paint jobs on their for-style-only gas tanks and huge valanced fenders. They were accessorized in Harley and Indian motorcycle-style themes.

In the "Dyno Kustom Cruiser" corner of the GT Bicycles display "kustom kulture artist" Von Franco autographed copies of the Dyno calendar. I am no authority, but Von Franco seems to be working in the style of hot rod artist Ed "Big Daddy" Roth, despite the fact that Von Franco looks young enough to not have been born when Roth was in his prime.

The Dyno bikes are styled along a variety of 50's themes, and since they do not have rim brakes, colored rims are used in some of the designs, as well as colored spokes. The Dyno Roadster is low enough to be considered approaching recumbent status. Kustom Cruisers are complete with flame paint, saddles with flames stitched on, flame-tread-design tires, and the look of a Bonneville Salt Flat racer of the sixties—American Graffiti and Easy Rider all wrapped into one.

Seated next to Von Franco and also signing calendars was a young woman who was a model in the calendar. She was, as they say in the South, blessed, but perhaps not by her creator. One recumbent booth featured a large poster of silicone enhanced wonder as well, but these were not the curves that interested me in this context.

The graceful curves of the cruiser frames made me wonder if a recumbent could not be made in a similar manner. Compared to these distinctive cruisers, recumbents lack style. Many recumbent buyers are engineers, and if they believe that the design supports the function, they are satisfied. Architect Louis Sullivan said "form follows function" and then designed the Carson Pierre Scott building in Chicago, a high water mark in modern architectural ornamentation. It seems to me there is still room in recumbent design for more attention to the look without violating the form-follows-function aesthetic.

Would curves weaken the structure or complicate the manufacturing process? Not necessarily. The design of the Defelice Bitubular used curved tubes to reduce the number of welds in



The Rowbike on the Interbike test track in Las Vegas—John Riley

an attempt to reduce the cost of the frame. They were only trying to reduce cost, not add style, and the bike was not a success for a variety of reasons, but a recumbent frame with graceful curves might still be a possibility.

In any case, all it would take to have rims colored to match or compliment the frame color would be the use of some sort of hub brake. I am amazed at how much of a difference it makes to the look of a bike to have colored rims. Some of the cruisers also have black spokes and of course the painted fenders are a big part of the color scheme. I wonder if Von Franco has ever seen a Tour Easy?

■ WEIRD MOTIONS

Track star Carl Lewis was at the Media Group

booth where a bike with supplemental arm power was displayed. Pulling back on the handlebars powered the front wheel. I found myself wondering if this could be incorporated on a SWB recumbent. Watch for this one on a TV infomercial.

■ TOO WEIRD FOR ME

I am afraid I walked by the Rise-n-Go booth too quickly to gather any information. The bike in this booth was powered by a complex motion not unlike that of the "aerobic riders" that were popular a few years ago. You pulled and pushed on the handlebars and pedals in unison, and the seat went up and down too.

I suppose the "too weird" feeling was mutual. Not a single one of any of the drive

systems was designed around or demonstrated on a recumbent. I explained to more than one exhibitor that on a regular bike the rider can move around and change position. They can spin in the saddle or stand on the pedals and grind. They are unlikely to embrace any new system that interferes with this. The recumbent rider, on the other hand, is pretty much stuck in one position. If someone demonstrated something that made that position more efficient or offered the chance to use a variety of muscle groups, as a forward/backward system might, I think recumbent riders would be open to it. I did not get much response. I guess the recumbent market is not considered big enough to bother with.

I suppose the Rowbike might be considered an exception. But it would be difficult to call it a rowbike if it was not pretty much recumbent. These were available for test riding in the demonstration area, but I was not brave enough to try it. Steering while pushing and pulling seemed a bit much for me to try in full view of the show-going public, but it might be fun to try in another setting.

■ JUST FOR FUN

Have you been looking for a way to listen to your collection of Slim Whitman tapes on your bike without resorting to dangerous and illegal headphones? Check out the Byco WRX1 bicycle stereo system. A holder for your walk-person-type personal listening device mounts like a water bottle holder. It has a small built-in 2 watt amplifier. The system's two small yellow and grey speakers can be mounted on top of the handlebars, or at the ends, bar-end style. (Ed. Note: Angletech sells these).

All opinions expressed are my own. If you don't agree, not to worry. By the time you read this, they will have changed. □

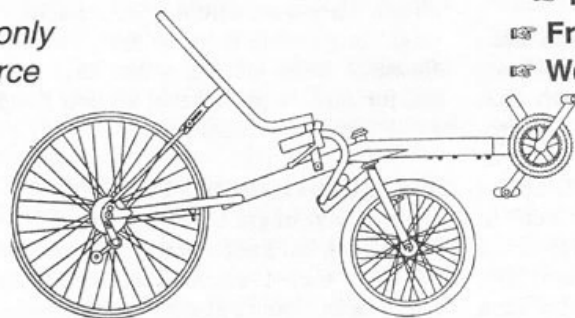
John Riley has been riding recumbents since 1982. He has owned eight of them, "plus maybe a couple more I never bonded with." Originally from Waterloo, Iowa, John now lives in Toronto, Ontario.



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Do you dream of cycling the world?

Well, Greenspeed trikes are built to go the distance! Last year Jeff McLean, owner of Greenspeed touring trike #10, built 20/11/1991, set off from China and rode through Asia and Europe to London.



"Their (Vietnamese) roads can be shocking. My back wheel was flexing so much over the sharp rocks and broken tarmac that, in low gear, the rear derailleur would rub against the spokes frequently. 10km/h was a speed befitting the gods."

Yes folks, it's Greenspeed owners like Jeff who have tested Greenspeed trikes to the max, so you can be sure that you are getting the very best trike available, and one that will go the distance, when you buy a Greenspeed.

Jeff's trike, frame number GRT 20260010, is an early Greenspeed tourer with a 26" rear wheel. The frame was mainly mild steel with a Cro Mo cross member. Since #10, many, many improvements have been made, which have resulted in a much lighter and even stronger touring trike, the GTR 20/20, with 63 speeds.

"All seven limitations I noted with my model have now been fixed in subsequent models."

No wonder the Greenspeed GTR 20/20 was selected by RCN as the Best Trike in 1996, 1997, and 1998!



We are still improving our trikes, and increasing our range of trikes so that we will remain the number one trike manufacturer. The new GTE Expedition Trike has a longer wheelbase, built in pannier racks to take two sets of panniers, and a tandem strength rear wheel. This is the machine preferred by world tourers—capable of dealing with third world roads and a full camping load, yet lighter than #10, and equally at home doing the shopping!

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GREENSPEED RECUMBENTS

The 'Bent Cost of Success

An RCN Guest Editorial/Industry Rant

by Bentan Pist

What impact will the 1998 season have on the future of recumbents? Well, that depends on who you ask, but I think 1998 was a bittersweet year. Yes, most 'bent manufacturers reported record sales, but their own ineptitude at production may have caused more harm than good. The increase in popularity was no surprise. Everyone involved with the recumbent industry saw it coming. Dealers increased their pre-season and early season orders in preparation for the coming wave. The design and build quality of the bikes available for the '98 season were unprecedented. But the people who build them didn't gear up their production to match.

Why not? I believe that it's primarily because they don't have real confidence in the widespread acceptability of the product they manufacture. None of the U.S. manufacturers really see the true marketable potential of the product they build. Or maybe they simply don't believe the true potential. Maybe they are afraid of the big, bad wolf. I don't know what their problem is. But it's pretty sad to see them cower in fright from the success that we've all anticipated for years. Some may argue that it's not a lack of confidence in the product, but a lack of confidence in the cycling community to accept 'bents as real bicycles. It's my feeling that if you believe in what you do, it will show. No manufacturers are taking the bull by the horns and heading up the movement.

"Well, it's not my job to promote recumbency!" Oh, really? Well if not, whose job is it, genius? The bike shops? The mainstream bike industry road reps (yeah right...!) The IHPVA? RCN? No, building the popularity of recumbents is up to all of us who care about them, but

mainly it is the responsibility of the manufacturers to increase the size of their market. 1998 proved that the market can grow, somewhat, without a bus driver.

However, when the market increases, so must production. This didn't happen in '98. Why not? Who knows? What's worse is that they don't even care about the business they may be losing. For example, how many of you ordered a recumbent last spring? And waited... and waited... and waited... How many calls to the factory checking on its progress did you make? How many different stories did you get from how many different people? How many weeks longer than the original time frame did it take to arrive at your local bike shop? How many parts were missing from the box delaying its assembly? How happy were you with the whole experience? Now, the big question—what is your overall impression of recumbency? Sure, the bike is awesome! It's an engineering marvel and rides like a dream. Too bad you missed the whole cycling season waiting for it to arrive! I'm not just picking on one manufacturer here. Some are so arrogant that they act like they don't even want, let alone need your business.

There are few things more frustrating to a bike shop than to have customers lined up to buy a product that is back-ordered for 3-4 months, if available at all! What an amazing product the recumbent is to have customers calling all over the U.S. to find a shop with the bike they want in stock. Unfortunately, when that ride wasn't available ANYWHERE, it caused a few hard feelings. Customers are pissed at dealers for not having the products they advertise, dealers are pissed at the manufacturers for not supplying product on a timely basis, and the manufacturers are pissed because.....they're idiots for not seeing the big bus headed right for them!

Oh well, live and learn, you say? Things will be better in 1999? Don't bet on it. Nothing is being done to significantly increase quality production! What's worse is that the manufacturers have us believing that by having some models built in the great land of China, all of the availability woes will be relieved. I wouldn't bet on it. Asia makes good bikes, I'll concede that point, but part of the charm of recumbents is that they are made by people whose names you know in hometowns across the USA. Also, much of the justification for their high price is that they're *American Made* (with all due respect to those respected builders in Australia and England).

What about the new sub-\$699 recumbents? Are they really a good buy? Uprights with the same componentry, made in the same factories in Taiwan, would sell for around \$399. So why do they charge \$699? Because they want to keep their sales volume at a level that they can control.

The current manufacturers seem to be unwilling to grow their businesses to the level of a Trek or Schwinn or Cannondale or whoever. With all due respect to them, they simply don't aspire to that level of success. At least they don't act like it. Simply put, they like being big fish in the small pond. Now hold your horses; I'm not implying that there is anything wrong with that. Just remember that you manufacturers aren't the only ones who have something at stake with the growing popularity of 'bents. You may have a bit of cash invested, but there are many more of us who have a lifetime of sweat, tears and chain lube invested in the recreation we love. The bottom line is that high prices and poor availability are not the kinds of issues that promote growth for any of us!

So, have your bikes built overseas, hire some more employees, institute a 2nd and/or 3rd shift, whatever it takes. Just get the job done or get the hell out of the way because this business is outta control.

Editor's Note: Readers can write Bentan c/o RCN. □

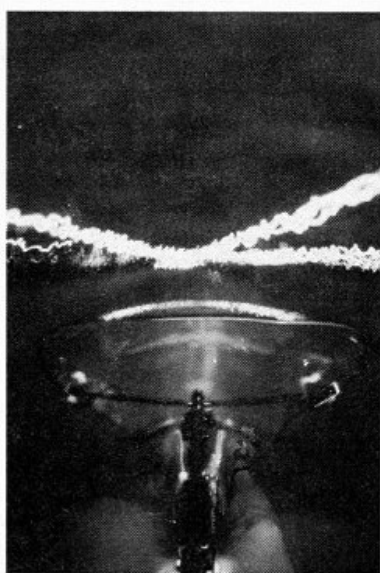


Photo courtesy of Keith Philpott

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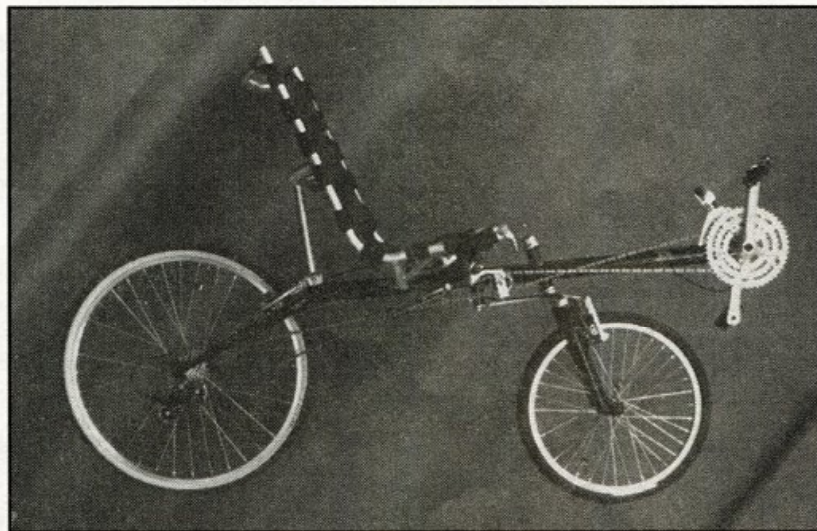
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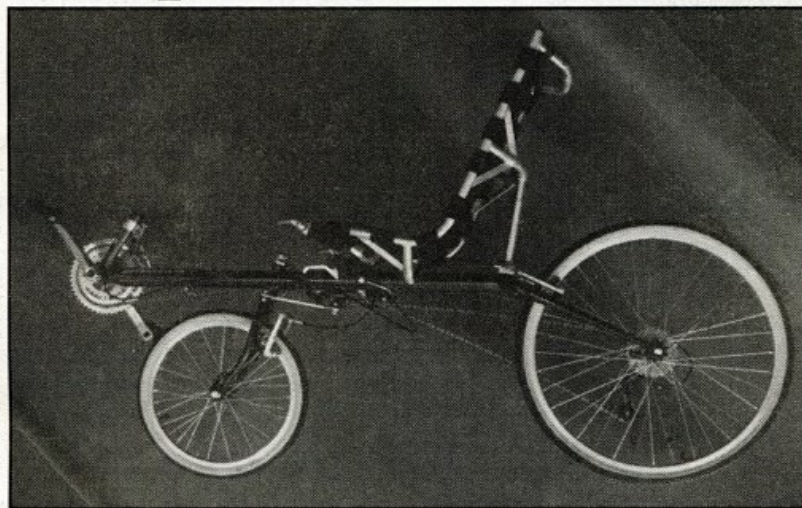
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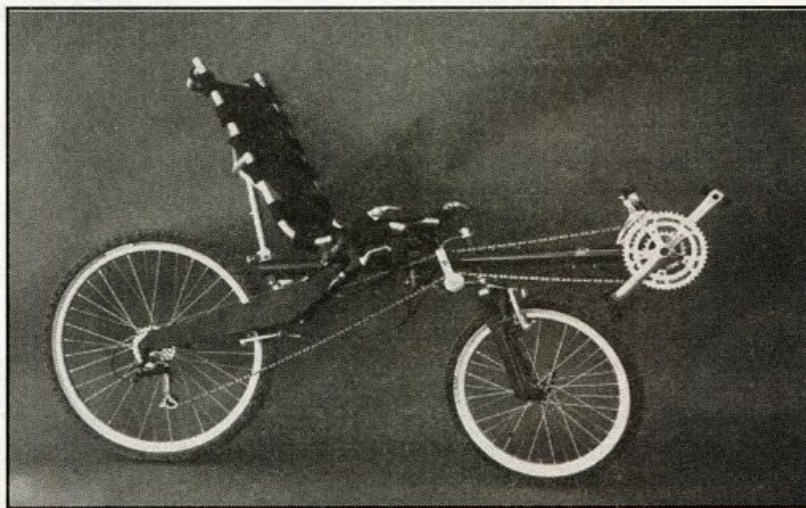
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The Sat R Day

A Beta Test of the Bike Friday Recumbent

by Rick Pope
poper@elcsci.com

I have been testing a Beta version of the new recumbent from the folks at Green Gear Cycling. Named the "Sat R Day," the short (38") wheelbase bike uses dual 16" 349 mm wheels and fits into a suitcase for travel mode. This is a trademark of all Green Gear bicycles.

■ FRAME & SEAT

The main frame section is an ovalized CroMo monotube while the rear stays and front boom are made from smaller, twin ovalized tube members. The twin tubes up front really stiffen the bottom bracket area, something that is usually lacking on monotube booms. Seat height works out to about 28" on my bike when adjusted for my 5'11" frame, a little higher than a suspended BikeE, and the bottom bracket sits 21" off the pavement. Green Gear wanted a bike that offered good visibility in traffic.

The seat is a Bike Friday original with a flat, foam base pad and low mesh back. The entire seat can be flipped forward and to the side with one quick release, or pulled off the bike with one more release pin. Instead of mounting the seat directly to the main frame, it clamps to an upward sloping round tube that pivots about a point near the headset. The rear of this beam has a vertical member that is isolated from the main beam by an elastomer giving the seat some suspension. Sliding the seat forward along the beam also lowers the seat height for shorter riders.

■ DRIVETRAIN

There are two chainlines (two chain drive system), the front having a single chainring and ending at a step-up cassette located near the rear swing arm pivot point. The step-up mid-drive has two cogs to bring the gear inch range up a bit. The rear drive chain mates to an 8 speed cassette/Sachs 3 speed hub, thus a 24 speed drivetrain. The bike has a 25" low and 114" high as it sits. Right now all the test bikes have Shimano Ultegra STI shifting and cranks, V-brakes, and your choice of upright or under-seat steering.

Since I was accustomed to underseat steering, my Beta Sat R Day had this setup. The bars are pretty unique in that they are adjustable for both tilt and width with one simple quick release. They can also be slid along the seat beam after loosening the connecting rod to the front fork to match the sliding seat position.

To quick fold the bike, the front boom is flipped up and rotated back so the crank is

located over the seat pad. With the main chain tension released like this, picking the bike up allows the rear swingarm to drop down and then pivot forward so the rear wheel lies next to the front (the pivot axis is set at an angle so the wheels don't hit each other).

In practice this "Z" fold move happens very quickly since there are no latches or levers to deal with. I can fold the bike to fit in a car trunk in a few seconds. This is the one feature that always causes people to say "Wow, do that again, I missed something!"

To pack the bike in its suitcase, a little disassembly is required. In addition to the folding operation, the wheels, bars, and right front crankarm (self extracting bolts require only one allen wrench) come off. The seat splits into a lower and upper half by loosening two bolts and sliding the sections apart. The bottom half of the seat goes into the case first, folded frame (with rear wheel slipped forward in the rear stays) next, the bars with cables still attached can be slipped along the sides, and the front wheel and seat back nest on top. The folded dimensions are about 20" x 28." Appropriate padding is provided with the case.

After two weeks, I decided to convert the bike to above-seat steering. The ASS upright stem simply clamps around a tube extending up from the fork steerer (kind of like an Aheadset). A second stem piece slides down into the first allowing bar height adjustment. The bars are Bike Friday custom units and are split in the middle. They insert into a tee fitting and are clamped down with a single bolt. The old under-seat steering mechanism unclamps from the seat beam, and the linkage is removed from a boss on the fork.

With ASS the steering effort is decreased and has a more direct feel. The stem flips forward like that found on many SWB bikes for easy access and safety in the event of a collision. My first hinge joint couldn't be tightened enough to keep the bars from flopping forward too easily, but a fix had already been developed and several days later I received a new, stronger clamp by special delivery.

■ THE RIDE

The low speed balance is among the best I've experienced on a recumbent. With practice I've been able to pull a U-turn within a 6' path width. On several downhill runs at 40 mph it was stable. I still like the unencumbered view and look of USS and may eventually switch back. The handlebar pivot needs a real bearing for smoother action, and the linkage geometry could be tweaked a little.

■ VERDICT

I think the bike is very promising. The handling is great, quality is good, and the compact folding can't be beat. My test bike has a number of bugs that need to be worked out and I've been giving feedback to the Green Gear folks at regular intervals. I'd like to see a quieter chain management system, a lower seat with more recline adjustment, and a different component choice. Ultegra is a real hot group for road racers, but I don't like it that much. STI shifters are very expensive and not serviceable. The related components (narrow chain, cogs etc.) are more expensive to replace, and there is no visual gear indicator (you can't see the rear cogs while riding). I'd just as soon have something simple like Gripshift and mountain brake levers (New World Tourist spec) rather than STI. A lower spec'd model will appear later in 1999.

■ WHEEL SIZE RANT

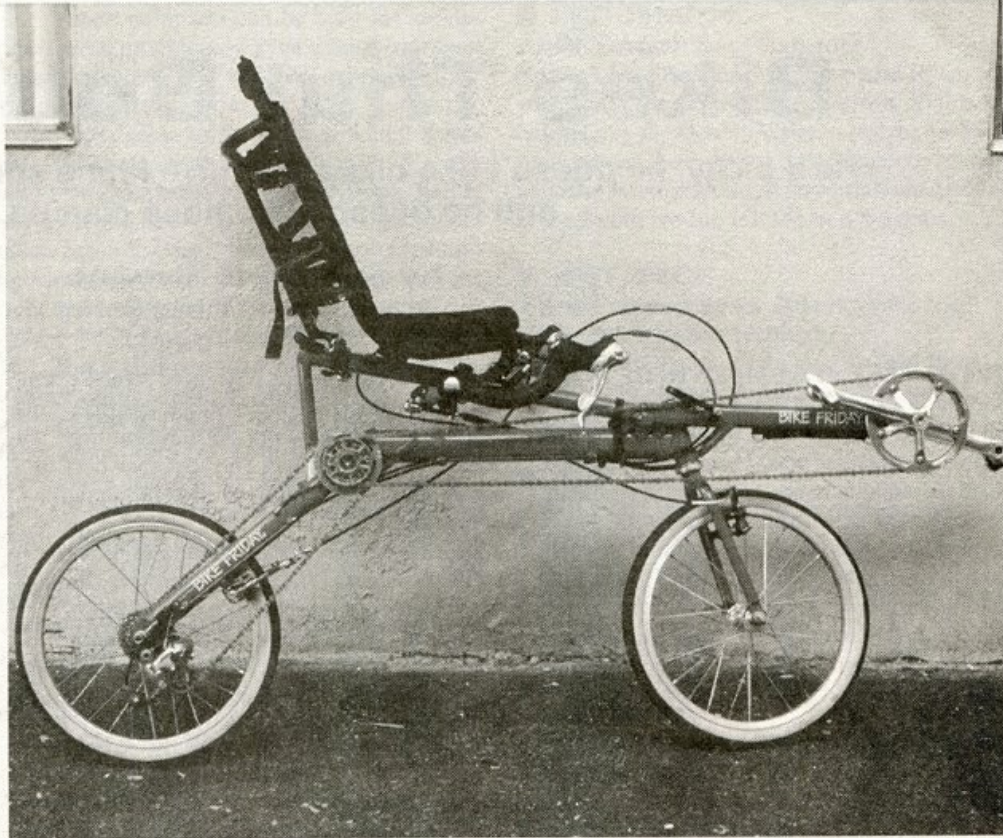
One final issue I should discuss is the wheel size. There are darn few choices in 349 mm. Fortunately, the Primo Comet 85 psi tire is a really good choice, but the 20 inchers offer more than a dozen decent tires plus the emergency Kmart/Walmart tour offerings. The combination of 20 inch wheels and the seat volume won't fit into the hard shell case however. I received a lot of feedback on my trip indicating that many people would rather have the larger wheels and either didn't care about suitcase traveling or would pack the wheels in a separate bag. No word yet as to whether this option will be available, but I think it would expand the sales potential of the bike considerably.

At the end of the testing period, all Beta bikes will be recalled and replaced with production versions. Stay tuned for my long term test report! □

Rick Pope is a lifelong bicycle nut and has been involved with recumbents one way or the other since 1985. Past bikes include a Counterpoint Opus, Presto, BikeE Air Tech and too many wedgies to mention. He was one of the first Bike Friday customers back in 1992 and has served as one of their test pilots on several occasions. A relentless tinkerer, he has dreamed up several hundred bike inventions. Two of them actually worked. Chief officer of Oregon Human Powered Vehicles, he resides in the Portland, Oregon area sharing his house with a current stable of four bikes.



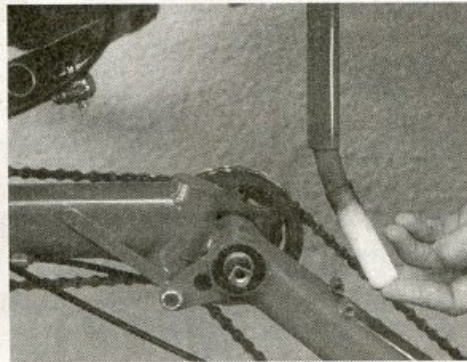
Rick Pope quick folds and carries the Sat R Day



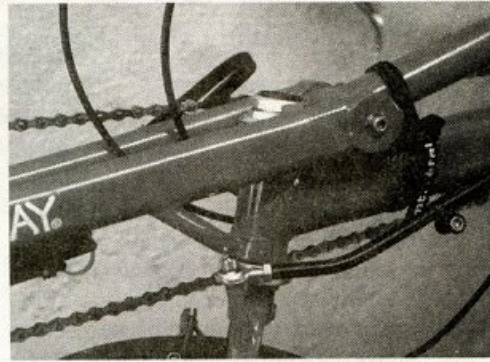
The 1999 \$2900 Green Gear Bike Friday Sat R Day folding ASS/USS recumbent—John Riley



Sat R Day coming out of case—John Riley



Sat R Day seat suspension—John Riley



Sat R Day folding boom—John Riley

'Bent Friday is For Real!

by Robert J. Bryant

Yup, we saw it. It says Bike Friday on it and it came out of a suitcase. The folks at Green Gear love small wheels and like recumbents. With the popularity of their folding bikes, urban bikes and compact and folding tandems, R & D of the Bike Friday has been slow in coming. The "Bike Friday recumbent" Interbike rumor is revived like clockwork every September.

Well, things started to pick up last spring when we heard more rumors that a recumbent liaison had been assigned and things were starting to roll.

A second prototype had been ridden for some time (the first had been around for years). I'm a past Bike Friday upright owner, so I stayed in touch, without being "in their face." In mid-August, a call came from Hanz

Scholtz about fairings and chainguards and a promise of a real bike in October.

It wasn't on display at Interbike, but Oregon HPV fearless leader Rick Pope was doing demos at the unofficial unveiling at the People Movers Rock and Roll Recumbent Rally. The crew got to try it and their opinions varied. The most common comment was the wish for 20" wheels (the bike sports dual 349mm 16" wheels). According to a very recumbent committed Hans Scholtz, there is a reason for the 16" wheels—fitting it into a single suitcase.

Comments about the "Sat R Day" ranged from glowing positive comments, to surprisingly negative. The dual 16" wheels are probably the most arguable feature, though according to Green Gear, it is the only way that the

bike will go in one suitcase. Also, the bike is priced at \$2900, with lower-priced models to follow at a later date.

Bike Friday is a very cool company. There is no doubt that they will get this bike refined and dialed in. Bike Friday ownership comes with some unique benefits. Owners have a toll free number that can be dialed from anywhere in the world for "next day" shipment of parts. They will even bring somebody in to make you a part if need be. Bike Friday also guarantees you a 40% trade-in value should you decide to change models, upgrade or get 'bent. This also ensures resale value and a good selection of used Bike Fridays in stock at the factory.

The Sat R Day will be custom built and comes with a suitcase for \$2,900. □

Bikes That Bob Likes

He's picky, he doesn't like bikes that give him a sore hiney or stiff neck and he doesn't like hose clamps.....

by Robert J. Bryant
DrRecumbnt@aol.com

■ THE BEST RECUMBENTS OF 1999

Get set for the most opinionated of opinions in Bob's Picks for best recumbents of '99. These are based on what I know about the bike models, manufacturers, reputations, problems, successes, what enthusiasts are saying and of course, my own editorial opinion. Oh yeah, unlike other magazines, we won't give a bike an award unless we've had one here to test ride (though Honorable Mention is acceptable for new models). No prototypes, no betas and no vapor 'bents—just production machines.

✓Recumbent of the Year 1999: The Rans Rocket SWB ASS

A great handling SWB, the best seat, the best ASS unit (Flip It is standard)—all in an excellent performing enthusiast level bike at a new lower price—\$995. WOW! We suggest you spend a few bucks on a pair of Comp Pool tires for it. Look for an updated test soon.

✓Recumbent Manufacturer of the Year 1999: Bill Haluzak & company at Bicycles By Haluzak.

Rather than come out with something new, supposedly better and different every year, Bill & company continue to refine their line of excellent bikes. Very few manufacturers in this biz match the quality of preassembly, special details, in house custom spec, component options, color options, careful build etc. You can even talk to the guy who welded, painted or built up your bike. The bikes are proudly built in Santa Rosa, CA. Service and quality are very important to this sometimes overlooked (sorry, Bill) small builder. They also offer the finest 100% sling/mesh seat in the biz.

✓Honorable Mention: to Easy Racers, Inc. because Gardner and crew wrote the book on this kind of service and attention to detail. The rest of you should be calling these guys to find out what their secret is (it may be that they actually like to talk to customers).

■ BEST NEW MODEL 1999

✓Best New Model: The Trek R200 has the ability to change recumbency as we know it.
✓Honorable Mention: to the Rans Wave, Vision R-32 and BikeE NX.

■ Entry Level Bike Trail Cruisers

Entry level compacts are optimized for low and medium speed handling. They are rather compact in size with low pedal height and they are easy to ride. This is why they tend to

twitch at higher speeds. The more "erect" riding positions work best for city streets and bike trails as long as that same upright position does not lead to recumbent butt for you. Our best recommendation for this kind of bike would be a compact.

✓Best Entry Level Compact: BikeE AT still owns this market, however, there are changes with the the Taiwan bikes (see RCN#50).

✓Honorable Mention: I haven't seen a production Rans Wave, but it has the Rans seat and costs just \$699. If you want more performance, move upline to a Rans Tailwind with a 20" front wheel.

■ COMMUTER

Commuting beats the crap out of bikes. We suggest Compacts for intercity use. If you have a long commute, a fat tire SWB ASS will definitely be a better performer and you'll be more comfy in the laid back position, though stops and starts will be more difficult with the high BB. LWB ASS are a bit long, but easy to ride in most conditions.

It is not always best to have a fancy, expensive and technologically advanced commuter bike. Cheap is good. Ugly is better.

✓Best Commuter: BikeE CT/AT.

✓Honorable Mention: Rans Wave, Rocket, Vision R40 and Haluzak Horizon.

■ RECREATIONAL ENTHUSIAST

Do you ride 20-50 miles, maybe an occasional century with a rider group or club? You are the average RCN reader (or is this where you'd like to be). If you haul your recumbent around by car, the SWB is much easier to put on a rack and fits small cars better. It seems like the SWB is the recreational enthusiast's choice.

✓Best Enthusiast SWB ASS: Rans Vivo. This is a very smooth, stable and sweet riding SWB.

✓Honorable Mention: Angletech Altitude & Rocket, '99 Vision SWB, though the new Trek R200 is the bike to watch!

✓Best Enthusiast SWB USS: Haluzak Horizon & Vision R44. Haluzak for medium/tall riders; Vision for shorter/medium build riders.

✓Best Enthusiast SWB Budget: Rans Rocket.

✓Best Enthusiast LWB ASS: Rans Stratus.

The design has been optimized for '99—the best Strat we have ever ridden. The components are better than that of the Tour Easy and it has the Rans seat. I'm still getting used to the T-bars.

✓Honorable Mention: Easy Racer Tour Easy.

✓Best Enthusiast LWB USS: Longbikes/Ryan Vanguard (based on Ryan Vanguard).

✓Best Enthusiast LWB Budget ASS: Rans Tailwind. This can be an incredible bike. For a medium height rider this can be a real speedster.

✓Best Enthusiast Trike: Greenspeed. Hey, Ian Sims knows trikes better than anyone we know.

✓Honorable Mention: Earth Cycles Dragonflyer & ICE Trice.

■ LONG DISTANCE TOURIST

Have you ridden the length of either US coast, or across the USA? Is your second favorite magazine *Adventure Cycling*? Long distance tourists have specific needs that are not always addressed in cycling today. Real touring bikes need beefy stiff frames, fat tires (1.5" and beyond), good weight distribution, strong brakes and tough componentry. I'm not making this stuff up as I go—read *Adventure Cycling* or bike touring books and you will see that I am right on. Manufacturers don't want to admit this and will argue that a skinny tire is fine for touring. I don't buy it. I will also question the use of monostays (lack torsional rigidity) on a loaded bike. The idea of flying down a mountain pass with a loaded pannier or trailer on a bike that isn't really stiff does not appeal to me at all.

✓Best LWB ASS Tourist: Easy Racer Tour Easy or Gold Rush Replica EX.

✓Best LWB USS Tourist: Longbikes/Ryan Vanguard (based on Ryan Vanguard).

✓Best SWB ASS Tourist: Angletech Altitude, Angletech V-Rex (fat tire), Rans Vivo (fat tire), depending on your budget.

✓Best SWB Budget Tourist: Rans Rocket with fat tires and a BOB trailer.

✓Best Globetrotting Tourist: Do you ship your bike around the world for tours? The Angletech Altitude is the proven winner.

✓Best Compact ASS Tourist: The BikeE AT is your best bet. Racks, fenders, etc. We hope to ride the new Transit Compact soon.

✓Best Supported Tourist: Just about any bike will work. Understand the differences in performance and that skinny tires often equal flat tires. Light frames can be more flexible.

✓Best Trike Tourist: The Greenspeed is proven tough—circumnavigating Australia.

■ HIGH PERFORMANCE

The question is, "how fast do you want to go?" Low racers are fast, though they can be dangerous on the streets. A SWB (USS or ASS) with fairing and tailbox can really kick butt.

A streamliner will be the fastest, though it is an advanced bike for skilled riders.

✓**Best High Performance: Easy Racer Gold Rush Replica.**

✓**Honorable Mention:** Believe it or not, the Rans Tailwind can be a fast bike if set up right and it is downright cheap! Add a Zipper and tailbox... The Tour Easy and Stratus are also worthy choices in LWB. If you don't mind a low bike, the ICE (formerly Crystal) Festina Low Racer set up by Zach Kaplan is the way to go. In SWB, I would choose a Rocket or V-Rex with fairing and tailbox. You can't go wrong with a Vision R44, especially for a light weight-conscious rider and the Haluzak Hybrid Race is a very nice bike. The Lightning P-38 is a fast bike as well. I've never ridden an F40, but it is sure to be the fastest production 'bent.

We haven't ridden the Rans Velocity² in its final form yet—though we're excited about it. The V² has a higher bottom bracket and a lower seat height than Easy Racers and Stratus. We are very excited about this new bike.

Trikes are generally not as fast as their two-wheeled brethren, though there are other reasons to consider a trike (no balancing, or taking your feet off the pedals). The Greenspeed is the best mix of performance and proven durability.

■ BIKES BY RIDER SIZE

I like the idea of shorter riders being able to sit flat footed while seated at a stop. This is possible with a long and low LWB ASS like a Stratus or Gold Rush Replica. For those of you who want to ride a SWB, plan carefully. Even though seat heights appear very similar, it can depend on the cut of the seat base.

BikeE compact can be built for shorter riders even though they have a fairly tall seat. Trikes are very low and will work well for shorter riders. Most of the "one-size" recumbents seem to fit medium height riders best. Those of you who are in the 5'6" - 6' range with a medium build can ride anything. Really tall folks and heavy six footers will need to be more careful. Forget about skinny tires and lightweight bikes and buy something that fits right and feels good.

✓**Best SWB Small Rider: Vision R44 "Short 16."** This bike is optimized for the shorter rider.

✓**Honorable Mention:** Haluzak Leprechaun.

✓**Best SWB Big Rider: Rans Vivo.** Really big folks should skip the suspension and get a fat tire custom Haluzak or Rans V-Rex. There is also a V-Rex XL (limited production tall rider bike). Haluzak builds custom tube thickness bikes for really big riders up and over 300 pounds!

✓**Best LWB Small Rider: Easy Racer Tour Easy Gold Rush Replica.** These bikes have nice low seat heights and great performance, even though they can be heavier than a SWB.

✓**Best LWB Big Rider: Easy Racer Tour Easy or Gold Rush Replica (fat tire).**

✓**Honorable Mention:** Rans Stratus.

✓**Best Compact Small Rider: BikeE** (custom small frames).

✓**Best Compact Big Rider: BikeE** (custom long frames and XL frame size).

✓**Best Trikes Small Rider:** Any custom build.

✓**Best Trikes Big Rider:** The Greenspeed seems to be the toughest.

✓**Honorable Mention:** ICE Trice and Earth Cycles Dragonflyer.

■ BEST TANDEM

✓**Best Tandem: Rans Screamer**

Notes: Longbikes has just purchased Ryan, so we haven't seen a Longbikes DuPlex. Vision is redesigning the Double Vision—and we haven't seen one of these either. The Screamer seems to be the favorite amongst enthusiasts as well—at least until we can test the new tandems.

■ BEST SPECS

✓**Best Compact Specs: BikeE** for the NX.

✓**Best SWB Specs: Haluzak.**

✓**Best LWB Specs: Easy Racer Gold Rush**

✓**Best Trike Specs: Greenspeed & Trice.**

✓**Best Custom Specs: Angletech.**

■ BEST SEATS

✓**Best Seat Overall: Rans.** Sorry folks, nobody even comes close to this great seat.

✓**Best Compact Seat: Rans** for the Wave.

✓**Best SWB Seat: Rans** for the Rocket, Vivo and V-Rex (also on the Trek).

✓**Best LWB Seat: Easy Racer** "Cool Back."

✓**Best Trike Seat: WizWheels** and Trice (optional) Rans seat.

✓**Best Custom Seat: Angletech Altitude** fold forward Rans seat.

■ CLOSING THOUGHTS

Some manufacturers are noticeably absent from my list. Some of the builders let their egos get in the way of criticisms, yet they send us test bikes full well knowing that no bike escapes unscathed. If you disagree with my critique, I am perfectly willing to listen to a good argument and an attempt to change my opinion. □

Proper Riding Position = Comfort

by Robert J. Bryant

It is my theory that riding position and comfort are THE most important aspects of selecting a recumbent for yourself. The following are important points to consider:

✓ **SEAT RECLINE**—The ability to recline the seat is very important. It is one of the keys to comfort and can even make up for a less than perfect seat. The idea is to recline the seat just far enough to take the weight off of your hiney, while retaining support of your neck so that you don't strain it looking straight ahead. This is comfort optimized. The downside is that this position is not the same for everyBODY. You can have the world's most comfortable seat, but if you place it in an upright position heavily loading the seat base—the dreaded recumbent butt may set in.

This theory works best on SWB and high(er) pedal height LWB and compact models. You are limited to how far you can lay your seat back on a low pedal height bike.

✓ **SEAT BASE**—The trick to a comfy base seems to be in its shape and how it spreads hiney mass. High centering on the tailbone or center soft tissue areas is a big NO-

NO! Spreading the weight over the sit-bones is ideal. Some riders prefer a contoured foam-covered base like the Rans, some sling/mesh like the Haluzak and others a combination of the two. The seats we do not find comfortable for long hours in the saddle are most shell/foam seats—especially those with minimal padding.

✓ **PEDAL HEIGHT** (or BB) Pedal height is another subject of major importance. Enthusiast athletic riding positions with very high bottom brackets may be great for performance, though they can create toe and foot numbness. Anything BB higher than your hip joint intensifies the possibility. If your seat angle is fixed (or has a limited adjustment range), you'd better like the riding position—because you are stuck with it. A reclinable seat angle is almost required today. It allows the rider to dial in the perfect pedal angle (seat base related to BB height).

✓ **HEIGHT FROM THE GROUND**—Different manufacturers have different standards about how high you can be off the ground. Generally, SWB with 20" front wheels tend to be high. If you add a sling/mesh seat into the

picture, they seem even higher. Seats with cut-aways, contoured bases or designed for ease of putting your feet down (Rans and Vision) will not seem as tall. Personally, I don't like being on my tip toes at a stop. Even at 6' tall, I've had goofy low-speed fall-overs on tall SWB bikes.

Try not to generalize about like recumbent designs. Carefully analyze seat design, seat recline, pedal/bottom bracket height in relation to your hip joint and steering type.

I am a firm believer that optimum speed/performance comes from optimum comfort. Do your homework and think about what you have read and compare to your own rides and experiences—as everyBODY is different.

When I speak of optimum recumbent comfort—I mean the best seat, seat recline and pedal/bottom bracket position that you could hope for. Most recumbents are better than uprights, but the range of comfort that an optimized comfortable recumbent dialed-in just for you can bring is heaven on two wheels. You can ride for miles and miles—for hours, days or weeks. □

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RCN 1999 Recumbent Listings

PRICE	MFR./ MODEL	STYLE/STEER/WT#	FRAME/SEAT	COMPONENTS/BRAKES	WB/ST HT/BB HT	WHEELS
\$650	BIKEE CT	MWB (Cpt)/ASS/#30	Al/CrMo,ht,msh,frm	ESP 7.0, 3x7 21-Spd/ESP V	52"/25"/17"	406 20"/305 16"
\$579.99	P'MOVERS TRANSIT ¹	MWB (Cpt)/ASS/#NA	Ht/Ht,msh,frm	Shimano 7-spd/V	Est. 52"/25"/NA	406 20"/305 16"
\$729.99	P'MVRS TRANSPORT ¹	(above with takepart frm)	Ht/Ht,msh,frm	Shimano 9-spd/V	Est. 52"/25"/NA	406 20"/305 16"
\$699	RANS WAVE	MWB (Cpt)/ASS/#NA	CrMo, Al, frp, msh	ESP24-spd,Dotek/ESP V	52"/25"/NA	40620"/305 16"
\$800-\$975 (3x7)	HPM TRICK	SWB USS or ASS/28-31	A, Al, msh	Sachs/Shimano/drum or V	33" or 39"/varies	559 26"/406 20"
\$850-1090(ft susp.)	LIGHTNING T'BOLT	SWB ASS/#NA	Steel/al,msh,frm	N.A.	NA	559 26"/20" or 16"
\$869	EASY RCR EZ1	MWB (Cpt)/ASS/#29	hts, Al, frm	Shim/Sachs/Canti	56"/24.5"/15"	451 20"/349 16"
\$910-\$1495	S & B MALIBU	SWB USS or ASS/NA	CrMo,frp,frm	7, 14 or 24 spd/V-brakes	37"/20.5"/17"	26"/305mm 16"
\$910	S & B VENICE BCH	Trike (tadpole)/USS/#34	CrMo,frp,frm	Shim/rear hub brake (ft. opt.)	60"/20.5"/17"	24"/305mm 16"
\$995	RANS ROCKET	SWB ASS Fli lt/#30	CrMo/Al, frp, msh	ESP 7.0 24-spd,Dotek/ESP V	40"/22"/25"	406 20"
\$995	RANS TAILWIND	LWB (Cpt)/ASS/#30	CrMo/Al,frp,msh	ESP 7.0 24-spd,Dotek/ESP V	60.5"/23"/19"	406 20"
\$1095	BIKEE AT (rr susp)	MWB (Cpt) ASS/#30	Al/CrMo,ht,msh,frm	ESP 7.0, 3x7 21-Spd,Dotek/ESP V	60"/23"/17"	406 20/305 16"
\$1095-1195	VISION R40 SWB	SWB ASS or USS/#29.5	CrMo/Al, msh, sm	Shim RX100 24-spd/STX V	40"/22"/NA	559 26"/20"
\$1220	VISION R40 LWB	LWB ASS or USS/#34	CrMo/Al, msh, sm	Shim RX100 24-spd/STX V	60"/23"/20-21"	559 26"/20"
\$1099	LINEAR COMPACT	MWB (Cpt) ASS or USS	Al/Al,msh,frm	Shimano/Sachs/NA	54"-60"/23"/17"	406 20"
\$1100	HPM ROADSTER	LWB ASS/#32	CrMo/Al, msh	Sachs/Shimano/NA	NA	559mm 26"
\$1250	TURNER T-LITE	SWB USS/#NA	CrMo/frp, frm	NA	NA	NA/349mm16"
\$1299-\$1499	RADIUS C4 (rr susp)	MWB ASS/USS	CrMo/NA.	Sachs 3x7 21-spd/V	NA	406 20"
\$1250-\$1500	LIGHTNING STEALTH	SWB ASS/#30	CrMo/al,msh,frm	N.A.	45"/19"/22"	559 26"/20" or 16"
\$1295-1495	VISION R32 (susp)	MWB ASS/#29.5	CrMo/Al,frp,msh,frm	RX100,Sachs 3x7,Sugino/STX V	54"/NA/NA	406 20"/349 16"
\$1319.99	AT ROCKET BLT63 ⁷ (3x7)	SWB ASS/#29.5	CrMo/Al, frp, msh	ESP 7.0/Sachs 3x7 21-spd/ESP V	40"/22"/25"	406 20"
\$1350	LINEAR FOLDING	LWB USS/#30	Al/Al,msh,frm	Shimano/Sachs/NA	62"/25"/19.5"	559 26"/406 20"
\$1350	LINEAR SONIC	SWB USS/#29	Al/Al,msh,frm	Shimano/Sachs/NA	38"/25"/28"	559 26"/406 20"
\$1500	CRYSTAL SPEED ROSS	SWB USS or ASS/#25	CrMo/Al,msh	Shimano Nexave,LX,105/Shim V	40.2"/17"/25"	700c/406 20"
\$1500	HALUZAK HORIZON	SWB USS or ASS/#29	CrMo/Al,msh	Shim LX-105/Ult 27-spd/Shim V	40.5"/23"/24"	700c,26"/20" or 16"
\$1500	HALUZAK LEPRECHAUN	SWB USS or ASS/#27.5	CrMo/Al,msh	Shim LX-105/Ult 27-spd/Shim V	40.5"/21"/21"	26"/16"
\$1595	ROTATOR PURSUIT	LWB ASS/#30	CrMo,ht/Al, msh	Sachs 35-spd/Sachs Canti	65"/15"/NA	406 20"
\$1595	ROTATOR TIGER	SWB ASS/#NA	CrMo,ht/Al, msh	Sachs 35-spd/Sachs Canti	41"/18"/NA	406 20"
\$1595	RANS STRATUS	LWB ASS/#30	CrMo/Al, frp, msh	ESP 9.0/105/Campy/27-spd/ESP V	67.75"/22.25"	559 26"/406 20"
\$1595	EZ RCR TOUR EZ EX/SS	LWB/ASS/#30	CrMo/SS, cmp,msh,frm	Shim XT,105, Sachs, 27-spd/Canti	67"/20-21.5"	700c/451or 406 20"
\$1595	RANS V-REX	SWB ASS/#28	CrMo/SS, cmp, msh, frm	ESP 9.0/105/Campy 27-spd/ESP V	42.75"/24"/25.5"	559 26"/406 20"
\$1650	TREK R200	SWB ASS/#NA.	CrMo/SS, (Rans seat)	NA	NA	406 20"
\$1795-\$1895	VISION R44	SWB ASS or USS/#27	CrMo/Al,frp,msh,frm	Shimano 105 27-spd/LX V	40"/23"/NA	559 26"/20" 1800
\$1800 (Est.)	PASHLEY PDQ	SWB ASS/#NA	CrMo/Al, msh	Sachs/Shimano/V-brakes	36.75"/NA	406 20"
\$1845	VISION R42-S (full susp)	SWB ASS or USS/#NA	CrMo/Al,frp,msh,frm	Shim RX100 27-spd/STX V	NA	NA
\$1849	RADIUS HORNET (full susp)	SWB ASS or USS	CrMo/NA.	Shimano LX/Shimano V	NA	406 20"
\$1850 (Est.)	LONGBIKES V'GUARD	LWB USS/#30	CrMo/Al,msh	Shim 105,Ult/LX V	65"/25"/15"	559 26"/406 20"
\$1895	HPM TRITAN	Trike (delta)/USS/#39	CrMo/Al, msh	Sachs/Shimano/Disc & V-brake	73"/22"/15.5"	3 406 20"
\$1895	HALUZAK HYBD RCE	SWB USS or ASS/#25.5	CrMo/Al,msh	Shim LX-105/Ult 27-spd/Shim V	40.5"/23"/24"	700c,26"/20" or 16"
\$1945	VISION R44 SHORT 16"	SWB ASS only/#27	CrMo/Al,frp,msh,frm	Shimano 105 27-spd/LX V	NA	559 26"/349 16"
\$1995	RANS GLISS (rr susp)	LWB ASS/#31	CrMo,Al,cmp,msh,frm	ESP 9.0/105/Campy 27-spd/ESP V	67"/23"/18.75"	406 20"
\$1995	BIKEE NX (rr susp)	MWB (Cpt) ASS/#NA	Al/CrMo,ht,msh,frm	ESP/Schlumpf 42-spd/Disc	52"/25"/17"	406 20/305 16"
\$1995	WIZWHLS TERRATRIKE	Trike/ASS or USS/#34	CrMo,Rans seat	Sachs 3x7/SA Drums	42"/12"/14"	26"/406 20"
\$1995	RANS VIVO (full susp)	SWB ASS/#31	CrMo/Al, frp, msh,frm	ESP 9.0/105/Campy 27-spd/ESP V	46"/23"/25.5"	406 20"
\$1999.99	AT TAILWIND GL63	LWB (Cpt)/ASS/#30.5	CrMo/Al,frp,msh	ESP9.0 SL/Phil/ 63-spd,Ritchey/Magura	60.5"/23"/19"	406 20"
\$2095-2850	LIGHTNING P-38	SWB/ASS/#25	CrMo/Al,msh,frm	Std./Deore XT or Campy	44"/20"/24"	700, 26"/20" or 16"
\$2195+ Can\$	CAMBIE RECUMBINI (susp)	SWB/ASS/NA	CrMo,frp,frm	LX/STX/RX100/Sachs/V-Brakes	48"/25"/27.5"	559 26"/406 20"
\$2195+ Can\$	CAMBIE RECUMBONI	LWB/ASS/NA	CrMo,frp,frm	Alivio or STX or LX or XT	NA	559 26"/406 20"
\$2195	HZK TRAVERSE (rr sus)	SWB USS or ASS/#33	CrMo/Al,msh	Shim LX-105/Ult 27-spd/Shim V	40.5"/23"/24"	26"/20"
\$2195	TURNER T-LITE DLX	SWB USS/#NA	CrMo/frp, frm	NA	NA	NA/349mm16"
\$2299.99	AT STRAT PHILTEGVID ⁹	LWB ASS/#29	CrMo/Al, frp, msh	Sachs/Ult./Phil 27-spd/Avid V	67.75"/22.25"	559 26"/406 20"
\$2299.99	AT VREX PHILTEGVID ¹¹	LWB ASS/#28.5	CrMo/Al, frp, msh	Sachs/Ult./Phil 27-spd/Avid V	67.75"/22.25"	559 26"/406 20"
\$2345	VISION R44-S (full susp)	SWB ASS or USS/#NA	CrMo/Al,frp,msh,frm	Shimano 105 27-spd/LX V	NA	NA
\$2499.99	AT RANS V-REX GL63 ¹¹	SWB ASS/#28.5	CrMo/SS, cmp, msh, frm	ESP 9.0SL/Phil/Ritchey/Magura	42.75"/24"/25.5"	559 26"/406 20"
\$2400	S & B DOUBLE PNTHR	Tandem/USS/#41	CrMo,frp,frm	Shim/Sachs/Sugino/V-brakes	72"/19"/19"	26"/16"
\$2499/2599.99	AT VISION R44/45 GL63 ⁷	SWB ASS or USS/#26.5	CrMo/Al,frp,msh,frm	Sachs Plasma/Quartz 63-spd/ Magura	40"/23"/NA	559 26"/20"
\$2500	PASHLEY PDQ3	Trike (tadpole) ASS/#NA	N.A./Al, msh	Sachs 3x7 21-spd/drum & V rear	NA	406 20"
\$2545	VISION R45	SWB ASS or USS/#23	CrMo/Al,frp,msh,frm	Shimano Ultegra STI 27-spd/XT V	40"/23"/NA	559 26"/20"
\$2599.99	AT GLISS GL63 ³ (rr susp)	LWB ASS/#31	CrMo/Al,cmp,msh,frm	9.0SL/Phil, Sachs/Ritchey/Magura	67"/23"/18.75"	406 20"
\$2699.99	AT TOUR EZ EX GL63 ⁹	LWB/ASS/#NA	CrMo/SS, Rans seat	ESP 9.0SL/105/Phil/Ritchey/Canti	67"/20-21.5"	700c/451or 406 20"
\$2749.99	AT VIVO GL63 ³ (susp, 3x7)	SWB ASS/#32	CrMo/Al, frp, msh,frm	9.0SL/Phil, Sachs/Ritchey/Magura	46"/23"/25.5"	406 20"
\$2800	S & B SPEEDSTER	Trike (delta)/USS/#34	CrMo,frp,frm	Shim/Phil/Disk & Dia Compe	NA	20"/16"
\$2899.99	AT STRATUS SHO ⁹	LWB ASS/#NA	CrMo/Al, frp, msh	9.0SL/Phil/HED/SRP 27-spd/Avid V	67.75"/22.25"	559 26"/406 20"
\$2945	VISION R45-S (full susp)	SWB ASS or USS/#NA	CrMo/Al,frp,msh,frm	Shimano Ultegra STI 27-spd/XT V	NA	NA
\$2995	EZ RCR Gold Rush	LWB/ASS/#27	CrMo/SS, cmp,msh,frm	Shim XTR/105/Ult 24-spd/105 SC	67"/20-21.5"/13"	700c/451 20"
\$2995	DRAGONFLYER (rr susp)	Trike (tadpole)/#41	CrMo/Al,msh,frm	Shimano Deore LX/Drums	40"/11.5"/16.5"	406 20"
\$3000 (varies)	CRYSTAL TRICE	Trike (tadpole)/#39	CrMo/Al,frp,frm	Shim Nexave/Ult/Drums	39"/11"/16"	559 26"/406 20"
\$3099.99	AT VREX SHO ¹¹	LWB ASS/#28.5	CrMo/Al, frp, msh	9.0SL/Phil/HED/SRP 27-spd/Avid V	67.75"/22.25"	559 26"/406 20"
\$3099.99	AT P38 GL63 ⁶ (3x7)	SWB/#26	CrMo/Al,msh,frm	ESP 9.0SL/Phil, Sachs, Ritchey/Avid V	44"/20"/24"	700c/20"
\$3195	HOST SH SCRMR ECO ⁴	Tandem ASS/#45	CrMo/Al, frp, msh,frm	GS/LX/STX/Nex/Ult/Sugino/LX V	74.5"/25.5",23.5"	559 26"/406 20"
\$3200	LINEAR TANDEM	Tandem USS/#NA	Al/Al,msh,frm	NA	NA	559 26"/406 20"
\$3200	DAISY MAYHEM (FlsCro)	Tandem/USS/#42	CrMo/Al,msh	Shim XT,Ult 24-spd/XT V	75.5"/24"/NA	406 20"
\$3299.99	AT ROCKET SHO ^{3,7}	SWB ASS Fli lt/#NA	CrMo/Al, frp, msh	9.0SL/Phil/HED/SRP 27-spd/Avid V	40"/22"/25"	406 20"

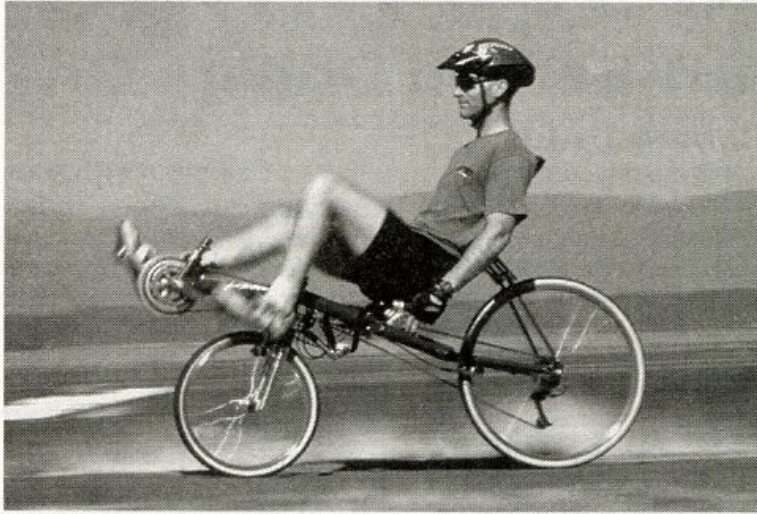
KEY: Al=Aluminum; AT=Angletech; Canti=cantilever brakes; CrMo or CrMo=Chrome-moly steel tubing; ESP=SRAM/Sachs drivetrain; EZ RCR=Easy Racers; fm=foam; frp=Fiberglass; HED=HED wheels; Host SH=Hostel Shoppe; Ht=HiTensile steel tubing; HPM=Human Powered Machines; HZK=Haluzak; msh=mesh; NA=Not Available; Nuke=Nuke Proof; Phil=Phil Wood; Plasma=SRAM Sachs parts; P'MVRS=People Movers; Shim=Shimano; SS=Stainless steel; V=V-brakes; Shimano groups: Nexave, RX100, STX, 105, Ultegra, LX, XT, XTR; Quartz=Sachs parts.

PRICE	MFR./MODEL	STYLE/STEER/WT#	FRAME/SEAT	COMPONENTS/BRAKES	WB/ST HT/BB HT	WHEELS
\$3400 Aus\$	PM GREENSPEED⁵	Trike (tadpole)/#39	MIG CrMo/CrMo,msh	Shimano LX/Drums	39"/12"/18"	406 20"
\$3495	HC SCRMR MTN ECO⁴	Tandem ASS/#45	CrMo/Al, frp, msh, fm	GripShift/XT/Nex/Ult/Sugino/Magura	74.5"/25.5", 23.5"	55926"/406 20"
\$3599	ANGLTECH TRISPDER³	Trike (tadpole)/#39	CrMo/CrMo, msh	ESP 7.0/Sugino 35-spd/VT500 Drums	48"/20.5"/13"	406 20"
\$3799.99	AT GOLD RUSH GL63⁹	LWB/ASS/#28	CrMo/SS, Rans seat	ESP 9.0SL/105/Phil/Ritchey/105 DP	67"/20-21.5"	700c/451or 406 20"
\$3800-\$4050	DOUBLE VISION R82	Tandem ASS or USS #45	CrMo,SS/Al,frp,msh,fm	Shim RX100,XT,STX 24-spd/STX V	Est. 70"/NA	559 26"/20"
\$3800 (Est.)	LONGBIKES DUPLEX	Tandem USS/#53	CrMo/Al, msh	Shim Deore LX, Spec/Shim V	103"/25"/15"	559 26"/406 20"
\$3995	RANS SCREAMER	Tandem ASS/#45	CrMo/Al, frp, msh, fm	ESP 9.0/105 Ritchey/Nuke/Magura	74.5"/25.5", 23.5"	55926"/406 20"
\$3999.99	AT ALTITUDE³ (full susp)	SWB ASS/#31	Al, Rans seat (folding)	ESP 9.0SL,Sachs 3x7 63-spd/Magura	41.5"/22"/NA	406 20"
\$4049.99	AT SCREAMER GL63¹⁰	Tandem ASS/#46	CrMo/Al, frp, msh, fm	ESP 9.0SL/Sachs Ritchey/Magura	74.5"/25.5", 23.5"	55926"/406 20"
\$4299.99	AT GOLD RUSH SHO⁹	LWB/ASS/#26	CrMo/SS, Rans seat	9.0SL/Phil/HED/SRP 27-spd/105 DP	67"/20-21.5"	700c/451or 406 20"
\$4595	RANS SCREAMER TRVLR	S & S TDM ASS/#46	CrMo/Al, frp, msh, fm	ESP 9.0/105 Ritchey/Nuke/ESP V	74.5"/25.5", 23.5"	559 26"/406 20"
\$3999.99	AT QUADRAPED³	Trike (tadpole)/#44-47	CrMo/CrMo,msh	SRAM NEOS 3x7/Sugino 35-spd/Drums	48"/20.5"/13"	406 20"
\$4349.99	AT SCREAMER GL27¹⁰	Tandem ASS/#44.5	CrMo/Al, frp, msh, fm	ESP 9.0SL/Sachs Ritchey/Magura	74.5"/25.5", 23.5"	559 26"/406 20"
\$4400 (Aus\$)	GREENSPEED GTR20/20	Trike (tadpole)/#39	MIG CrMo/CrMo,msh	Sachs 3x7 63-spd/Drums (disc opt)	39"/12"/18"	451 20"
\$4600-\$4850	DOUBLE VISION R85	Tandem ASS or USS #45	CrMo SS/Al,frp,msh,fm	Shim RX100,XT,Ult 27-spd/Magura	Est. 70"/NA	559 26"/20"
\$4699.99	AT ALTITUDE SHO³	SWB ASS/#28	Al, Rans seat (folding)	Ultegra/Plasma/HED/Phil/Avid V	41.5"/22"/NA	406 20"
\$4600	LIGHTNING R84	SWB/ASS/#19	Composite/Al,msh,fm	NA	44"/18"/NA	700, 26"/20"
\$4700	LIGHTNING F40¹²	SWB/ASS/#33	CrMo/Al,msh,fm	NA	44"/20"/24"	700, 26"/20" or 16"
\$5000	EZ RCR GRR TIRush	LWB/ASS/#26	CrMo/SS, cmp,msh,fm	Shim XTR/105/Ult 24-spd/105 SC	67"/20-21.5"	700c/451 20"
\$5200 (Aus\$)	GREENSPEED GTS ST	Trike (tadpole)/#35	MIG CrMo/CrMo,msh	Sachs/Drums (disc opt)	40"/10"/16.5"	451 20"
\$5399.99	AT SCRMR DAPHILOUISE¹⁰	Tandem ASS/#46	CrMo/Al, frp, msh, fm	9.0SL/Ult.Sachs/DaVinci/Magura disc	74.5"/25.5", 23.5"	559 26"/406 20"
\$7400 (Aus\$)	GREENSPEED GTR TDM	Tandem Trike USS/#63	MIG CroMo/CrMo,msh	Sachs 3x7 63-spd/drum	98"/12"/18"	406 20"

Manufacturer Contact Info

<p>ANGLETECH 318 N. Hwy 67, PO Box 1893 Woodland Park, CO 80866-1893 Tel. 719/687-7475 Anglezoom@aol.com www.angletechcycles.com Products: Custom-spec dealer who also builds trikes and SWB and folding suspension SWB recumbents.</p> <p>ATP VISION 400 Terry Ave. N. Seattle, WA 98109 Tel. 206/467-0231 ATPVision@aol.com www.visionrecumbents.com Products: Complete line including SWB, MWB, LWB and tandems.</p> <p>BIKEE 5460 SW Philomath Blvd. Corvallis, OR 97333 Tel. 1-800-231-3136 www.bikee.com Products: Line of compact ASS.</p> <p>BICYCLES BY HALUZAK 2166 Burbank Ave. Santa Rosa, CA 95407 Tel. 707-544-6243 haluzak@sonic.net; www.bikeroute.com/ haluzak Products: SWB USS recumbents.</p> <p>CAMBIE CYCLES 3317 Cambie St. Vancouver BC Canada V5Z 2W6 Tel. 604-874-3616 www.cambiecycles.com Products: LWB & SWB (full service dealer).</p> <p>COMFORT CYCLES No response.</p> <p>CRYSTAL (Now Inspired Cycle Eng. Ltd.) Unit 9B Spencer Carter Works Tregoniggle Industrial Estate, Bickland Water Rd., Falmouth, Cornwall UK TR11 45N Tel. (011 44) 1326 378848 tricehpv@globalnet.co.uk www.cycling.uk.com/bikeshop/trice.htm Products: SWB & trike.</p> <p>EASY RACER PO Box 255 Freedom, CA 95019 Tel. 408/722-9797 Tooeasy1@aol.com; www.easyracers.com Products: Touring and high performance Compact & LWB ASS.</p>	<p>EARTH CYCLES 2106 25 Ave. S. #3 Minneapolis, MN 55405 Tel. 612-729-4035 e-cycles@spacestar.net www.spacestar.net/users/e-cycles Products: Trikes.</p> <p>FOOLS CROW (Organic Engines) 1046 Commercial Dr. Tallahassee, FL 32310 edde@freenet.tlh.fl.us www.foolscrow.com Tel. 850-224-4767 Products: Recumbent dealer, importer and custom manufacturer.</p> <p>GREENGEAR/BIKE FRIDAY 3364 W. 11th Ave. Eugene, OR 97402 Tel. 1-800-777-0258 www.bikefriday.com Products: Introducing folding SWB.</p> <p>GREENSPEED 69 Mountain Gate Dr Ferntree Gully Victoria 3156 Australia Tel. +61 3 9758 5541 greenshp@ozemail.com.au www.ihpva.org/com/Greenspeed/ Products: ASS Trikes.</p> <p>HOSTEL SHOPPE 929 Main St. Stevens Point, WI 54481 Tel. 1-800-233-4340 www.hostelshoppe.com Products: Custom spec Rans tandems (full service dealer).</p> <p>HUMAN POWERED MACHINES 455 W 1st Ave. Eugene, OR 97401 Tel. 1-800-343-5568 cat@efn.org; www.efn.org-cat Products: SWB, LWB, Folder ('bent'), trike and work bikes/commercial 'bents.</p> <p>INFINITY (Bike Emporium) 8433 E. McDonald Dr Scottsdale, AZ 85250 Tel. 1-800-DR BIKE1 Products: Representing Infinity, though did not respond.</p> <p>LIGHTNING CYCLE DYNAMICS 312 9th St. Suite B, Lompoc, CA 93436 Tel. 805-736-0700 Lightning@utech.net Products: High performance SWB.</p>	<p>LINEAR 32744 Kestrel Ave. Guttenberg, IA 52052 Tel. 319/252-1637 www.Bikeroute.com/Linear linear@netins.net Products: Complete line including SWB, MWB, LWB and tandems.</p> <p>LONGBIKES (formerly Ryan) 8160 Blakeland Drive Littleton, CO 80125 Tel. 1-877-TANDEMS www.tandembike.com Products: LWB, tandem & USS.</p> <p>PASHLEY/DEKKER SERVICE 5433 116 Ave. SE Bellevue, WA 98006-3317 Tel. 425-641-9639 mdekker@eskimo.com www.pashley.co.uk Product: Importer of the Pashley PDQ.</p> <p>PEOPLE MOVERS 980 N. Main St. Orange, CA 92867 Tel. 714-633-3663 peplmvs@primenet.com www.recumbent.com Product: New compact (one with take-apart frame (full service dealer).</p> <p>PEUGEOT Tel. 1-888-783-8025 www.quetzal.ca Products: LWB and opt. trike conv.</p> <p>RADIUS Liegerad Munster GMBH Borkstrabe 20 48163 Muster, Germany Tel. 49 18 05 RADIUS Products: LWB & SWB.</p> <p>RANS 4600 Hwy. 183 Alt. Hays, KS Tel. 785-625-6346 bikes@rans.com; www.rans.com Products: Complete line including SWB, Compact, LWB & tandems.</p> <p>REBIKE www.rebike.com Products: Entry level Compacts.</p> <p>REYNOLDS WELD LAB 134 Rockingham Road Derry, NH 03038 Tel. 603-432-7327 Products: Custom built low-SWB performance bikes and framesets.</p>	<p>RHOADES CAR Tel. 615-822-2737 www.4wc.com/?16186 Products: Pedal cars.</p> <p>ROTATOR BICYCLES 4325 Montgomery Dr Santa Rosa, CA 95405 Tel. 707-539-4203 Products: LWB & SWB.</p> <p>S & B RECUMBENT PO Box 3061, Compton, CA 90222 Tel. 310-608-0008 Products: SWB, tandem & trike.</p> <p>TREK BICYCLES 801 W. Madison St., PO Box 183 Waterloo, WI 53594 Tel. 1-800-313-8735 Products: Introducing new SWB.</p> <p>TURNER ENTERPRISES Tel. 520-290-5646 Products: SWB USS.</p> <p>WHEEL RECUMBENTS (Wheel & Sprocket) 5722 S. 108th St. Hales Corner, WI Tel. 1-800-362-4537 Products: Projects in the works.</p> <p>WINDCHEETAH www.windcheetah.co.uk Products: Trike & cycletruck</p> <p>WIZWHEELZ RECUMBENTS 529 W. Clinton, Hastings, MI 49058 Tel. 616-940-1909 wiz@iserv.net www.wizwheelz.com Products: Trikes.</p> <p>SPEC NOTES (from above): 1 People Movers markets the Transit and Transport Compacts manufactured by Haluzak. 3 Angletech's TriSpeeder and Quadraped trike frames are built by Nobilette. The Angletech Altitude frame is built by Boulder. 4 The Hostel Shoppe Rans Screamer MTN Eco and Eco models are custom spec'ed. 5 People Movers imports Greenspeed trike frames—specs may differ. 6 Angletech sells this model in SHO, GL63 and Philtegvig spec. 7 Angletech sells Rans Rockets in stock form, BLT63, GL63 and SHO formats. 8 Angletech sells this model in stock, SHO, and Philtegvig formats. 9 A Gold Rush GL63-\$3799.99 and a TIRush GL63-\$5299.99 (est.). 10 Angletech Screammers can be ordered as stock, GL63, GL27, Daphilouise versions. Angletech tandems have Nobilette forks. 11 Angletech V-Rex come in stock, SHO, GL63 and Philtegvig models. 12 The F40 is based on the P-38 but has a full fairing. □</p>
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1998 Year End Recumbent Closeouts

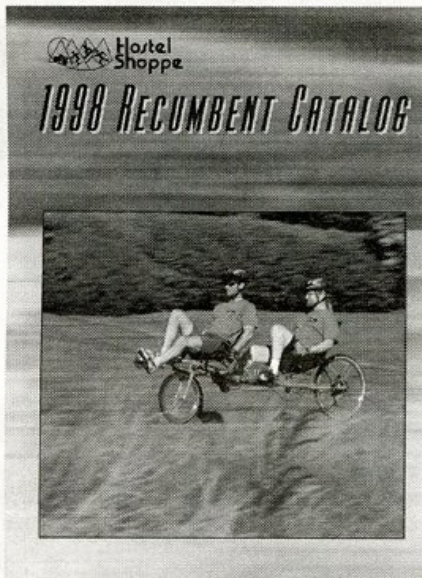


Hostel Shoppe



1998 Closeout list:

✓ Vision R-40 16" SWB OSS Rigid Red	Reg. \$1,080	Sale \$995
✓ Vision R-40 16" SWB OSS Rigid Teal	Reg. \$1,080	Sale \$995
✓ Vision R-40 16" SWB OSS Rear Susp. Red	Reg. \$1,325	Sale \$1,125
✓ Vision R-40 20" SWB OSS Rigid XL Red	Reg. \$1,080	Sale \$925
✓ Vision R-40 20" SWB USS Rear Susp. Red	Reg. \$1,295	Sale \$1,095
✓ Vision R-40 20" SWB USS Full Susp. Red	Reg. \$1,450	Sale \$1,150
✓ Vision R-40 20" SWB USS Full Susp. XL Teal	Reg. \$1,450	Sale \$1,150
✓ Vision R-42 20" SWB OSS Rigid XL Red	Reg. \$1,525	Sale \$1,150
✓ Vision R-42 20" SWB OSS Rigid XL Teal	Reg. \$1,525	Sale \$1,150
✓ Vision R-44 20" SWB USS Rigid Red	Reg. \$1,825	Sale \$1,525
✓ Vision R-44 20" SWB OSS Full Susp. Red	Reg. \$2,210	Sale \$1,895
✓ Lightning Stealth L/XL Red	Reg. \$1,370	Sale \$1,095
✓ Rans V-Rex 1998 Tall Seat 40" Monarch Blue	Reg. \$1,595	Sale \$1,395
✓ Rans V-Rex 1998-1/2 Tall Seat 40" Monarch Blue	Reg. \$1,595	Sale \$1,495



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The 10 Best Things To Spend Your Hard-Earned Dollars On

by Richard Drdul
drdul@portal.ca

Pople are always asking me (well, not really, but it's a great opening line) what they can do to improve the performance and/or comfort of their bikes. I'm constantly tinkering with my bikes, tweaking this and tuning that. In the many (three) years that I've been riding recumbents, I've learned a fair bit, and I now have a pretty good handle on what's a worthwhile upgrade and what's a waste of money. So, if you're interested in getting more out of your 'bent (or—perish the thought—your upright bike), then read on.

1. HEART RATE MONITOR

Okay, so it's not really part of your bike, but it should be. Buying a heart rate monitor is the single best thing you can do to improve your cycling experience. Since I began using one, I no longer kill myself when I go for a ride. Instead, I cruise at a comfortable heart rate, and really enjoy the ride. And just in case you think I've become a wuss, consider that my performance has improved dramatically. I can now ride faster than I could before, with less perceived effort. What a deal!

All these benefits can be had at a reasonable price. I bought a heart rate monitor from Nashbar for the ridiculously low price of \$56. This heart rate monitor has features that you can only get in other monitors costing over \$200! It has proven extremely reliable, and even if it dies tomorrow and I have to buy a new one, I'm still ahead of the game financially.

When you're shopping for a heart rate monitor, look for one that records time spent in, above and below your target heart rate zone(s). Deluxe monitors allow you to set more than one zone, but I've never felt that was a necessary feature. Also look for a monitor that allows you to set your target heart rates to the nearest beat per minute—many inexpensive monitors (but not the Nashbar unit) only permit you to set heart rates to the nearest five beats per minute. Lastly, get a monitor that permits you to change the battery in the transmitter strap yourself. Otherwise, it can cost you over \$50 for a battery change—the price of a complete Nashbar unit!

2. SUSPENSION FORK

If you ride a SWB, a tandem or a low racer, you really ought to get a suspension fork. Most of the time, you won't notice the improvement, as most roads are reasonably smooth. But when you ride over rough or washboard roads, or hit a pothole, you'll be very glad to have the suspension fork. Comfort and control are improved considerably in rough conditions,

and as a result, you can go faster with less effort and fatigue, and there's less chance you'll get hurt. On a recent tour, I was blowing past wedgies on downhills at up to 50 mph (80 km/h), partly because my suspension fork allowed me to blast over rough pavement at full speed.

Basic suspension forks incorporate telescoping, sliding legs and suspension provided by elastomers and/or coil springs. Fancier forks are also telescoping, but with fluid damping and other nifty-neato features. Some use linkage designs rather than telescoping legs. And many fancy forks offer large amounts of travel.

A basic suspension fork is all that's needed for road riding. You're not looking to swallow up huge obstacles as you might if you were riding gnarly off-road trails. Buy a decent telescoping suspension fork for around \$200. If the suspension is entirely elastomers, consider upgrading the guts of the fork with coil springs, such as those made by Mountainspeed and other aftermarket manufacturers.

3. COMPUTER WITH CADENCE

You've probably already installed a computer on your 'bent. After all, it's nice to know how fast you're going when you execute a beautiful wedgie poseur pass, and trip distance comes in real handy when you're following a route map. Statistics like average and maximum speed are useful in comparing results of training rides from day to day.

But have you got cadence? If not, get it. With a cadence display, you'll soon learn to select gears that allow you to pedal most efficiently (generally, in the 85 to 100 rpm range). And you'll avoid low knee-grinding cadences on steep uphill (if you can't keep your cadence above 80 rpm, then get lower gears).

My favorite computers are made by Cateye and Avocet. Cateye's cadence model is called the Astrale, and sells for about \$40. Avocet offers the model 45tt for \$60. The only significant difference between the two computers is that Avocet uses a circular magnetic speed pickup that mounts on the side of the hub, whereas Cateye uses a pickup that mounts where two spokes cross.

4. CLIPLESS PEDALS

Clipless pedals are a necessity on a 'bent. They prevent your feet from falling off the pedals, hitting the ground and then disappearing under your seat as you literally run yourself over. Ouch! They also enable a recumbent cyclist to pedal through much more of the pedal stroke, increasing pedaling efficiency. Yet despite these obvious and significant benefits, I still see many

recumbent cyclists pedaling with toe clips, or worse, no clips at all.

My favorite clipless pedals are Speedplay Frogs. Bebops are a close second. Both cost in the order of \$120 to \$150. If that's too much for you, don't despair. Get a pair of inexpensive Taiwanese SPD-type pedals, such as those by Wellgo and VP. These can be found as cheap as \$35. That's a small price for safety and better pedaling.

5. CAMELBAK

Okay, this really isn't a bicycle component, but it's such an ideal accessory for a recumbent that it should be standard equipment on every 'bent sold. Just hang one off the back of your seat, throw the drink hose over your shoulder, and you'll stay hydrated long after cyclists who depend on water bottles have dried up and blown away. A large Camelbak bladder can hold 100 oz., which is equivalent to 4-1/2 large water bottles! A complete Camelbak costs as little as \$40. Camelbaks which include zippered pockets—such as the MULE for \$70—can double as seat bags, holding spare tubes, tools, energy bars and copies of recumbent FAQ sheets to hand to curious wedgie riders.

Unless you also plan to use the Camelbak mountain biking or something, consider buying just the bladder for \$25. My wife made me a custom seat bag, which incorporates a pouch into which the bladder slides. Vision now offers this as an option with their seat bag—maybe others will follow suit.

Although you can pour anything into one, I only put water in my Camelbak. I use a water bottle for sports drinks, juice or beer, as the residue from these drinks can really gum up a Camelbak. It's a lot cheaper to throw away a crusty water bottle!

6. V-BRAKES

Most 'bents on the market now come with V-Brakes, which offer the best stopping power, modulation and serviceability of any type of rim brake. If you've still got cantilevers on your 'bent, and don't find that you have enough stopping power, or hate fiddling with brake pad alignment, consider switching to V-Brakes. Get a model with a "parallel push" mechanism and brake pads which slide into brake pad holders. These features mean that you only have to align your brake pads once, and can change pads without messing up the alignment. Now that's low maintenance!

For 1999, parallel push is available at a low price on Shimano's LX V-Brakes. You'll

also have to switch to V-Brake compatible brake levers, so figure on spending \$70 or more to upgrade. You'll be glad you did.

Also consider a brake booster on the rear wheel if you ride a Rans recumbent or other 'bent with small-diameter stays. A brake booster costs as little as \$20, and prevents the stays from flexing outward when you apply the brake.

7. LIGHTWEIGHT WHEELS

Your wheels have more effect on the acceleration, speed and handling of your recumbent than any other component (except the frame, of course). If you've got wheels of lead, get yourself a new pair of lightweight wheels, tires and tubes, and revel in the performance boost. Remember—saving a pound of rotating weight is like saving two pounds of weight on the rest of the bike.

Consider a "stock" rear 26" wheel (without cassette). Hub, rim, spokes, tire and tube might weigh in around 1,700 grams. Replace that LX hub with an XTR hub (\$100) and save 150g. Ditch the box rim for a Velocity Aeroheat AT aero rim (\$50) and save 30 grams, with a much stronger rim that's less likely to die when you hit a big pothole at speed. Lose the heavy tire and tube, and replace 'em with a Ritchey kevlar-bead folding 1.4" Tom Slick tire (\$25) and a Ritchey super-lightweight butyl inner tube (\$7) and save over 200 grams. Total savings—400 grams. You can expect to save about half that again on the front wheel, for a total weight savings of 600 grams, which is 1-1/3 pounds of

rotating weight.

8. LUBE INJECTION

Maintenance is one of those annoying necessities. I like my bikes to work perfectly, but I also like to spend my time riding, not chasing loose ball bearings across the floor. So, where possible I buy components with lube injection ports.

Wilderness Trail Bikes makes a whole line of lube-injectable components, including hubs, bottom brackets, headsets and pedals. Speedplay Frogs have lube-injection ports, as do Campagnolo road hubs. Zach Kaplan can also modify most road hubs for lube injection—he did a set of Shimano Ultegra hubs for me for \$90 plus the cost of the hubs. As far as I'm concerned, that was \$90 well-spent. I will never, ever have to disassemble these hubs. All I do is squirt some grease in them every month or so, and they spin soooo smoothly.

9. RAMPED/PINNED CHAINRINGS

I used to hate front derailleurs. Chainring shifts were never as crisp and snappy as I would like, no matter how much I fiddled with the alignment and adjustment of the front derailleur. Then I discovered ramped and pinned chainrings, and now I love front derailleurs.

If you're using old-style flat chainrings and suffer from crappy front shifting, get yourself new middle and big rings. You'll have a choice of rings from Shimano, Campagnolo and a dozen or so aftermarket manufacturers. Most

work quite well, though those which include both shifting ramps and pins to lift the chain up to the larger ring. Figure on spending anywhere from \$20 to \$50 a chainring.

Make sure you know what bolt circle diameter (BCD) you need. Newer compact drive MTB chainrings have a BCD of 94mm, while old-style MTB chainrings have a BCD of 110mm. Shimano road rings have a BCD of 130mm, and Campagnolo rings have a BCD of 135mm. If you're in doubt, take your old chainring with you to your LBS.

10. CHAIN

If your chain is getting old, replace it. Your shifting will improve, and your drivetrain components will last longer. I've used many different chains, and I swear by Sachs chains. The PC-51 is the best value at \$16, and now includes a Superlink-style reusable master link, which means you don't need a chain tool to remove or replace the chain (you will need one to install the chain to the correct length)

If you have a Shimano Interactive Glide cassette, you'll get slightly better shifting performance using a Shimano IG-90 chain (\$16) than the Sachs chain. However, instead of the nifty master link you'll have to deal with the installation hassles of Hyperglide pins. Also, be sure to rinse the chain thoroughly in solvent before lubricating it—the stuff Shimano smears on their chains gunks up real fast. □

Editor's Note: Oops, I almost forgot #11 A subscription to Rivendell Reader.... (see RCN#47).



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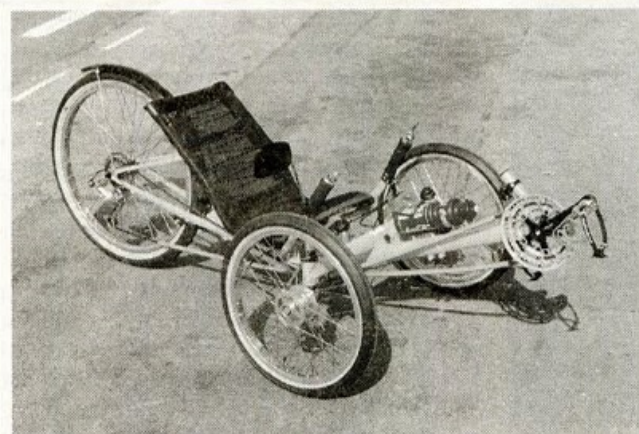
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The Reynolds Weld Lab Wishbone SWB

A Review By Kent Peterson

George Reynolds is a very smart man who has obviously spent a lot of time building and thinking about bikes. His latest bike, the Wishbone, has been living with me for the past few weeks and I've got to confess, it's really grown on me.

The Wishbone arrived packed in a normal-sized bike box that was suspiciously light, but turned out in fact to contain all the pieces needed to assemble a complete bike. It was accompanied by a friendly note with a couple of hand-drawn diagrams and the cheerful assurance that "a handy guy like yourself should have an easy time reassembling." I followed George's optimistic instructions and was pleased to find that aside from a minor glitch in the chain routing, George was right. I realized that when I pedaled backwards, the bike went forward, so I knew I'd made a mistake somewhere. I rechecked George's diagram (correct) and my chain routing (incorrect) and quickly fixed the problem.

The most striking feature of the bike is its custom-crafted frame. Rather than use conventional round or square tubes, George hand-builds the curved and tapered frame from CroMo flat stock that he shapes into a swooping elongated "S." I know of no one else on the planet who builds a frame this way, and there are probably only a handful of people who would have the skills and the patience to make a frame like this. George's years of building conventional bikes (including a few years at Fat Chance Cycles) and various aerospace projects have given him the skills needed to build a truly unique bicycle.

The bike I'd just assembled gleamed like a million bucks. Well, actually it gleamed like a big pile of nickels, which despite the lower value, still makes for a very attractive bike. It seems George lives down the road from a place that does electroplating, and when he was checking into various finishing options, he found he could get his frames nickel plated for less than it would cost to powder coat them. The nickel plating is extremely durable, looks great, and seals the frame inside and out from rust and the elements. Again, it's one of those touches I haven't seen elsewhere, but it makes a lot of sense.

Once the initial "Wow!" impression fades, you'll find the rest of the bike to be a rather eclectic mix of some beautiful details with some extremely basic hardware. For example, the custom fork and steering assembly have a lovely aerodynamic simplicity, and the brass headbadge and maple plug on the derailleur tube show a craftsman's attention to detail. But the seat stays are plain square

aluminum tubes, the seat itself has an almost homemade look to it, and the front brake is an undistinguished side-pull that would look right at home on a 1972 Schwinn Varsity. These are the kind of details that made my friend Tom ask, "Is that bike made by a factory or just some guy?" The answer is "both." Reynolds Weld Lab is George Reynolds.

I got to know George Reynolds through this bike. George and I exchanged a couple of phone calls before he sent the bike out from New Hampshire. In the course of these calls, George determined my size, weight, riding style and preferences. George makes the Wishbone with either a 26" rear wheel and conventional gearing or a 20" rear wheel using a Sachs 3x7 hub. I opted for the 26" wheel. Another available option is above-seat steering (ASS) rather than the Reynolds standard under-seat steering (USS). I prefer ASS and told George this, but George is very proud of the under-seat steering system he uses and he convinced me to give it a try.

Actually, "under-seat steering" doesn't quite describe the Wishbone's steering mechanism. There's a crossbar that has a pivot just under the nose of the seat and this is attached to the fork via a steering rod. Rather than gripping the crossbar horizontally, you grab onto a pair of curved tubes which rise vertically from the ends of the crossbar forming side sticks. These sticks resemble over-sized mountain bike bar ends. Both the brake levers and Sachs Power Grip shifters attach to the side sticks.

I didn't expect to like the side sticks and initially, I didn't. Yes, they were in a good position with my hands just ahead of my hips and yes, George had built in a high degree of adjustability, but I like having a handlebar in front of me. I find that with above seat bars, my arms fold into a more aerodynamic line with my body, I have more of a feeling of direct control, and I've got an easy, visible place to mount my computer and see my shifters. Still, I know fans of under-seat steering rave about the open, unobstructed view of the road and find the riding position very relaxing. I figured I'd work on keeping an open mind.

The seat was another item I was skeptical about. Compared to the seat on a Rans or an Easy Racer, the Reynolds seat looks crude. It consists of a molded fiberglass base and back that is padded with about a half an inch of closed cell foam and then covered with black vinyl. The seat shape seems fine, but it looks more like something you'd expect to see on a nice home-built bike rather than a production vehicle. But then again, George is a one-man factory, so in a way he straddles that line be-

tween being a talented home-builder and a full-time producer of bikes.

Which brings up an interesting point. Given the work involved in building this bike, I think George is charging a fair price at \$1650. But that price puts him in competition with some of the far more established recumbent manufacturers and potential customers will definitely be right in asking why they should buy a Reynolds Wishbone over a number of other very fine bikes. It's a perfectly good question and one that every buyer has to settle for him or herself. For me to settle that question in my mind, I'd have to get the bike out on the road.

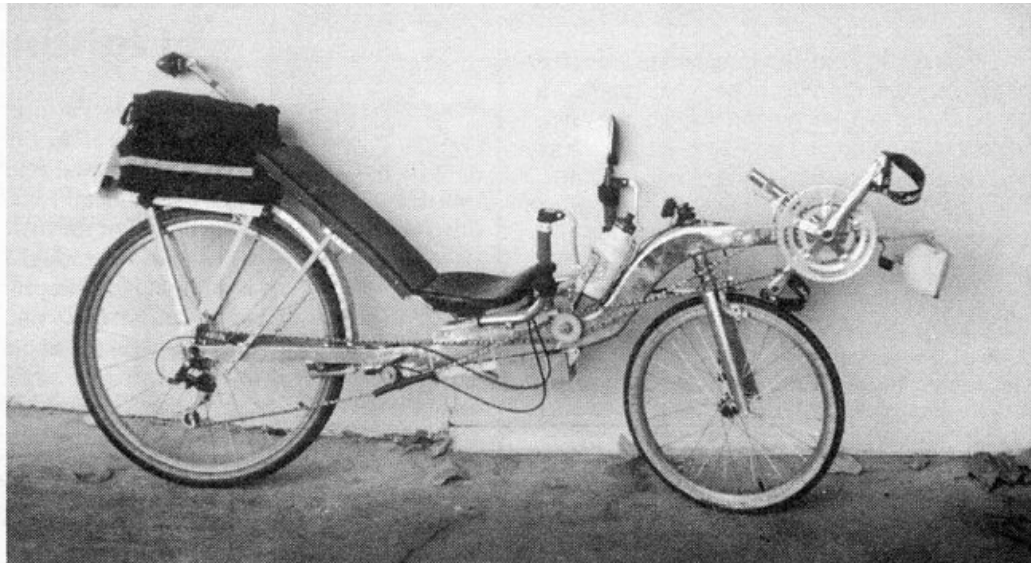
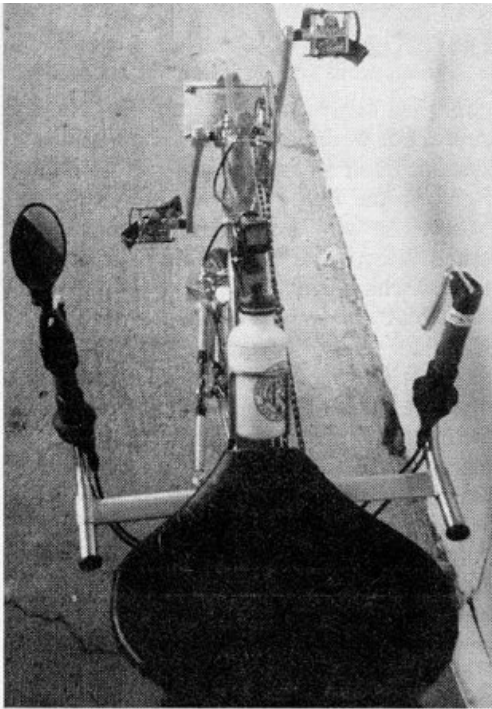
▲ ROAD TEST

My initial trips on the bike were short little jaunts around the neighborhood. I didn't want to subject a review bike to too much north-western rain, and we were in the midst of one of the wettest Novembers on record. The breaks in the rain were rare and brief, so I wound up having to stick close to home and get familiar with the bike in fits and starts. I could control the under-seat steering, but it still didn't seem natural to me. The bike did handle very well and my friend Andy, who has very little recumbent experience, was able to hop right on it and go. After two minutes on the bike he was doing u-turns on my street and had that big recumbent grin.

I was still critical of the shifters and brakes. The Sachs twist shifters mount in such a way that you can't see the numbers on them and they also point down so you aren't gripping them between your thumb and fore-finger, but rather between your pinkie and your palm. The brake levers are the kind designed for the cow-horn bars favored by some messengers, and while they seem to stop fine, they feel kind of mushy. Also, since the seat and bars have a good range of adjustment, you have to be a bit creative when it comes to cable routing, depending on how you configure the controls. When you get everything set up the way that feels best, you may find yourself wishing you'd run the cables a bit differently.

Another problem was drivetrain noise. The bike has a main idler on the power side and a smaller idler on the return side to route the chain away from the rear brake. These idlers are made of a hard plastic and they make a bit of noise that is amplified by the frame. I suspect that replacing these idlers with rubber idlers fashioned from skateboard wheels would quiet things down somewhat.

Bob Bryant had been skeptical of the Wishbone's riding position, which is more



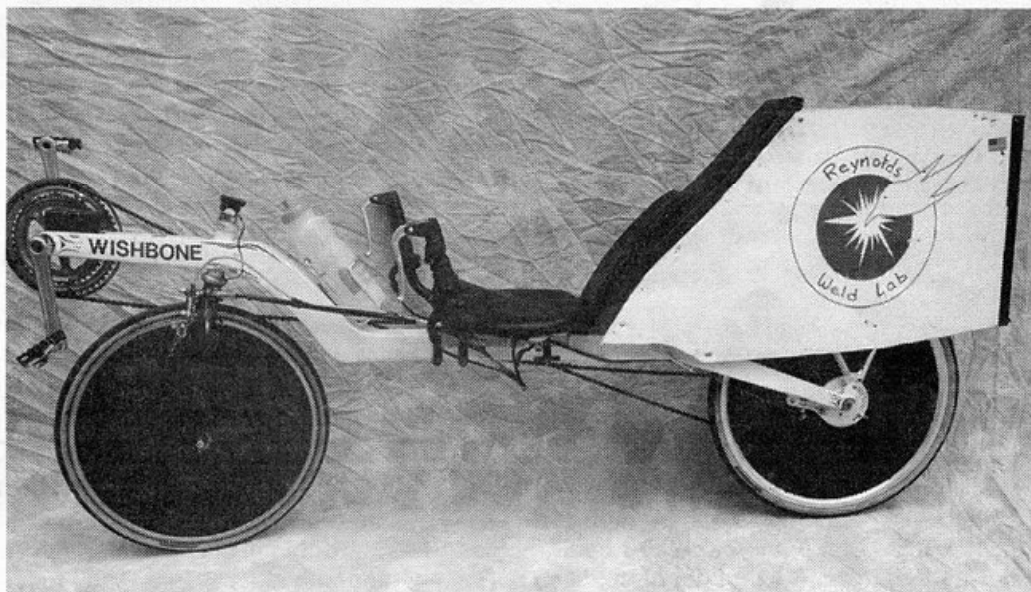
Kent Peterson's 26/20 Wishbone Low Racer—Kent Peterson

extreme than that found on many American recumbents. The bottom bracket is a full six inches above the seat base and the seatback can be reclined as far back as 25 degrees above horizontal. I rode the bike with the seatback in the middle of the five pre-drilled positions and found it very comfortable. However, riders subject to "numb-foot-syndrome" would probably prefer a bike with a lower bottom bracket.

The seat turned out to be a nice surprise once I stopped looking at it and began riding it. The seatback and base turned out to be very comfortable, helped no doubt by the reclined position which puts more weight on the back and less on the butt. And my butt was comfortable. In talking with George after some test runs, I found that he'd molded the base off of an old tractor seat. I guess those tractor designers know a thing or two about comfort.

When I finally got a break in the weather, I took the bike on some longer rides and that's when it really began to shine. First off, this bike is fast. Now different people have different criteria of fast, and for me there are two bikes I use as benchmarks. One is Rose Red, my Zipper-faired Easy Racer clone, and the other is a custom John Williams low racing SWB we call the PillowBike. Both these bikes cruise easily in the range I call "trans-mundane," speeds in the high teens and low twenties on level ground. When I'm on either of these bikes, it's a safe bet I'm at the head of the pack.

So I took the Wishbone out for a 25 mile spin and by golly, this bike is trans-mundane. Flat land speeds in the twenties, downhill as fast you like, and uphill -- well, uphill were the surprise. This bike climbs like a mountain goat. Folks who think recumbents can't climb should get on a Wishbone. The frame does not flex. Everything you put into the pedals goes into turning the wheel. Yes, the bike's fairly light, but I had it weighted down with my toolkit



George Reynolds Wishbone dual 20" Low Racer—Reynolds Weld Lab



Kent Peterson rides the Wishbone Low Racer—Peter Peterson

and snacks and George's not-for-weight-weenies 7 pound lighting system and it still scoots up the hills.

Part of the great climbing comes from the handlebars. On the Wishbone, you can heave on the side sticks and put your upper body into the climb. And up you go like a cat up a tree. This is a bike that had me looking for hills. Hills that would send me to the granny gear on other bikes became blips that would barely make me downshift the Wishbone.

When I rode with the Low Down and Laid Back crew, the Wishbone again proved itself to be a front-runner. Would I be a little faster on Rose Red? Probably so, but I've logged about 3,000 miles on Rose and that bike is perfectly tuned for me. Rose has a Zzipper and a custom tailbox. The Reynolds is bare and it's almost as fast. That says a lot.

I asked George about suspension and he and I agree on this point: the Wishbone doesn't need it. It's got a fairly long wheelbase and despite the stiff frame, the ride is comfortable. For crummy road conditions, I'd rather equip the bike with beefy tires like a V-Monster and an Avocet Cross than complicate the whole bike with a suspension system.

George sent me a custom triangular rear rack and fender combo that can form the basis for an aerodynamic tailbox. Because I've still been experimenting with seat position, I haven't gotten around to mounting the tailbox yet, but based on my experience with other bikes and tailboxes, I think that will add a bit more to the speed of the Wishbone.

And speed is what this bike is all about. Speed and climbing. George has tried different

Reynolds Weld Lab Industrial Strength Lighting System

Weight Weenies won't like it, but cars respect it. George Reynolds believes that if you're going to ride the roads at night with cars, your best defense is to look like one of them. To do this, he's built a really big light. For the front light, he uses a halogen automotive headlight, and the red tail lamp is a bright incandescent light with a built-in flasher. A massive 12 Volt, 7 Amp/hr 5.5 pound battery powers the whole system for at least an hour and half per charge. The whole system weighs about 7 pounds but George has crafted a custom bracket that holds the heavy battery at a spot right below the Wishbone's seat, so the added weight really doesn't effect the handling of the bike. The headlight is mounted to an aluminum stock that extends ahead of the crankset and the tail lamp mount extends up from the seat back.

Let me tell you, this light does the job. Yes, it's big and yeah, it's kind of crude, but it really lights up the night. Drivers give you room because they think you are something big enough to hurt them. At \$150, this light is a pricey option, but you can spend a lot more and get a lot less light on the road.

■ KENT'S HOMEBREW SYSTEM

The light George sent me didn't have anything fancy like switches or fuses; you turn it on by plugging and unplugging the lights from the wiring harness. It's a totally simple system, but not totally foolproof. Although the

charging clip was polarized, the battery connectors weren't, and when I hooked up the system, I had a fifty-fifty chance of doing it right. So the first time I went to charge the battery, the wires got very warm and my son asked "Hey, what smells like ozone?" One toasted charger, that's what.

But I'd become a believer in the "more-is-better" school of lighting. I hooked things up right and went to Radio Shack and got myself a 12 Volt, 1 Amp AC adapter to charge the battery. While I was there I got a 12 Volt, 4 amp/hour alarm battery to use in my own home-brew light. I got trailer light connectors at the auto-parts store, and at my local Target I found a handheld halogen spot light for ten dollars. So for about \$60, I wired up my own light for a second bike and I've got a charger that will work with either system.

If you don't know what end of a soldering iron gets hot, don't try a project like this. And if you want something, small, light and foolproof, buy one of the fine systems from NiteRider or Nightsun. But if you want to light the night the way the cars do, an Industrial Strength Light System, either from George's lab or your own, might be the way to go.

George Reynolds sells light systems, custom aero-bladed forks, custom frames (your design or George's), seats, seat bases (tractor contoured base) and complete bikes. □

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This is the 3rd in a series of great cartoons by Pippa Garner, drawn exclusively for People Movers and the enjoyment of RCN readers. They may soon be available on T-shirts.

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seats on his bike but keeps coming back to his custom tractor seat because it works the best for what he wants the bike to do.

Similarly, the side stick steering won me over. As I log more miles on the bike, it's gotten to feel more natural, and having those sticks to grab onto makes climbing actually fun. And for whooshing down the road, the side sticks add to the feeling that I'm piloting some kind of advanced low flying aircraft instead of a bicycle. It's a very neat feeling.

If you are looking for a bike with all the seams bead-blasted, all the rattles damped and all the cables perfectly routed, this probably isn't the bike for you. If most of your riding is on flat bike paths and speed's not your thing, buy another bike. And if you don't have at least some small part of you that likes to tinker, you probably won't be happy with a bike that's been built by an original old-school inventor.

But if you like seeing genius put into the service of speed, George has a bike for you. Yes, the final dial in will take more work than with some other bikes, but that last step is what takes it from being George's bike to being yours. I've picked a few nits in this review, but I'm the kind of fellow who likes to solve problems and see how a bright guy like George solves problems. And as I said earlier, George is a very smart man. He's built a very nice bike.

Do I like the Wishbone? You bet. It's fun and it's fast. I'd probably do a couple of things differently in terms of component choices and chain idlers, but the basic bike is brilliant. George himself does things differently from one bike to the next. In the course of doing this review, I talked with Adrian Engel, one of George's customers. Adrian had specified the components he'd wanted and had George build him up a bike. This is the upside of dealing with a one-man factory—you can get your bike your way. I think George is going to sell a fair number of Wishbones, but I don't think it'll ever be the world's best selling recumbent. And that's OK. George has to sleep sometime and even though Fords outsell Ferraris, I still think more folks dream of Testarossas than Tauruses. And if you happen to dream of a fast short wheelbase bike that can climb like Marco Pantani, give George a call. He'll nickel-plate your dream and put it on the road. □

Reynolds Weld Lab Wishbone SWB

MODEL.....Wishbone 26/20
 TYPE.....SWB under seat steer (USS)
 WHEELBASE.....48" (46.5" as tested)
 SEAT HEIGHT.....18"
 BOTTOM BRACKET HEIGHT.....24"
 WEIGHT.....25 pounds
 FRAME.....Nickel silver custom rectangular cross section curved CroMo
 FORK.....Custom nickel plated aero blade CroMo
 STEM/BARS.....Narrow aero indirect (linkage) USS
 SEAT.....Fiberglass, foam bucket base

COMPONENTS

CRANKSET.....Shimano RX100 Triple 30/42/52
 DERAILLEUR-REAR.....Shimano Deore LX
 DERAILLEUR-FRONT.....Shimano 105
 SHIFTERS.....Sachs Plus 7 Power Grip Twist Shifters 7/21-spd
 CASSETTE.....Shimano HG50 11-28
 TIRE-REAR.....559mm 26" x 1.5 IRC Metro Duro
 TIRE-FRONT.....406mm 20" X 1-3/8" Primo Comet Tire
 BRAKES-REAR.....Shimano Deore XT V-Brake w/booster and Cowhorn levers
 BRAKE-FRONT.....Generic sidepull
 PEDALS.....Shimano PDM323 Multi-Purpose SPD
 COLORS.....Nickel plated
 PRICE.....Complete: \$1650; Framesets from \$850

NOTES...Reynolds bikes are completely custom built, available with virtually any wheel size combo, ASS, USS and just about any components. George Reynolds also builds an industrial bike lighting system that will be reviewed at a later date. The light system is a \$150 option.

CONTACT: You can contact George Reynolds at: Reynolds Weld Lab
 Tel. 603-432-7327

Kent's Mission

A 'bent beat from the back alleys, garages and dumpsters where new bikes don't come powdercoated and old bikes live on with the help of duct tape, hose clamps and determination. You can find Kent on the internet at: peterston@halcyon.com or www.halcyon.com/peterston/bentkent.html

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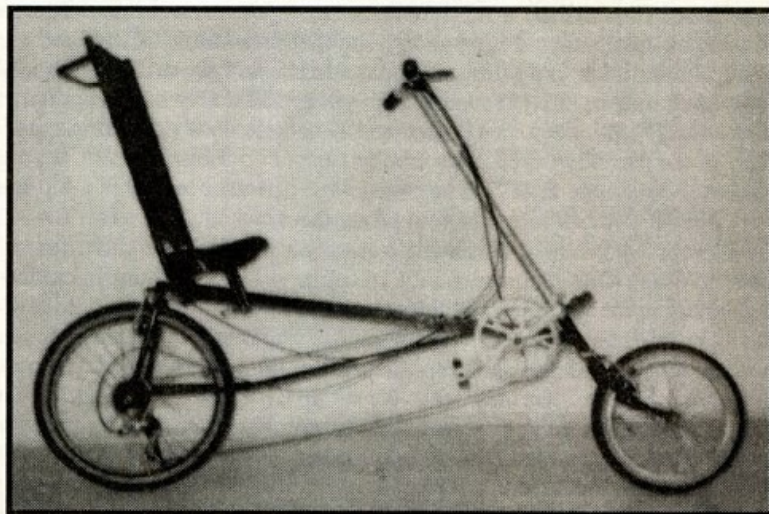
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A Tale of Two Races A Tale of Two Generations

by Sandra Sims-Martin

This year for the first time there were two major human powered vehicle races put on by two separate organizations. In June, the Human Powered Racing Association, HPR, held contests in Indianapolis. In October, the International Human Powered Vehicle Association, IHPVA, held their 24th annual Speed Championships in San Jose and Monterey, California.

The Easy Racer team packed up and headed east in June. First day in Indianapolis saw an Hour Event and Road Races at Raceway Park. Fast Freddy Markham, King of Human Powered Vehicles, was at the controls of Easy Racer's Gold Rush. Freddy chose not to compete in the hour trial. He hates long races and conditions inside the completely enclosed Gold Rush would be brutal. It's like riding in a custom fitted greenhouse. Temperatures were already over 90° in the shade, well over 100° on the track and up to 125° in the Gold Rush. Lafleur IV, a Canadian entrant, covered 35.58 miles to take first place.

The road race started around the narrow, oval, track, made a U-turn on the track, wound in tight serpentine through the infield then back onto the oval for a brief run. At the start, Lafleur IV, a Lightning and several others were out in front of us at the U-turn. Fred started pulling them back. Only Lightning was still in front of us by the 2nd lap. About midway Fred passed Lightning for the lead. Freddy got a little breathing room on the faster parts of the course, Lightning closed back up in the serpentine. Freddy gained a few inches each lap. In the end he got completely away when Lightning crashed.

That afternoon we moved across the park to the drag strip. On the final elimination we staged and then drifted a millimeter or two causing an automatic red light and giving the win to John Simon in a Moby. John covered the quarter mile in 17.942 seconds. However, it was Carl Gulbranson on a home built Tour Easy in the partially faired class who had the lowest elapsed time at 17.566 seconds.

The HPR has set up a new prize, the DeciMach, to go to the first vehicle to achieve 10% of Mach One (approximately 75 mph, depending upon altitude) in 200 meters. On the second day the 200 Meter Trial/DeciMach was at the legendary Indianapolis Motor Speedway, home of the Indy 500. We set up on pit road. The racers went all the way around the 2.5 mile banked oval and took a flying run at 200 meters on the front straightaway. We were campaigning both the Gold

Rush and the Double Gold. With the heat/humidity taking its toll on the riders, the thick air impeding progress, and a brisk headwind, speeds were slow. Freddy clocked 51.078 mph. A local racer, Tim Robison, climbed in the back of the Double Gold for 53.166 mph, giving us both first and second places.

48 vehicles raced at the HPR event. Many of them participate in a Cumulative Points Series. Both this event and the Points Series are true grass roots developments. The vast majority of vehicles are unfaired to partially faired. They are folks racing their street bikes. Racing is not their first priority, riding is their first priority. But dicing with a buddy bent rider is a pleasure made all the sweeter by official results. Most of the seriously go-fast HPV's are from the West Coast. One notable exception is Lafleur IV, designed and ridden by Robert Lafleur from Quebec. Lafleur IV recently set a new 4000 meter record at 3 minutes 29.559 seconds (42.73 mph). From the Left Coast only Steve DeLaire's Rotator team and Gardner Martin's Easy Racers made the trip to Indianapolis.

The HPR event featured a Juniors' Class. The new generation was dominated by Theron Hill, 15, son of Garrie Hill, the event organizer. Theron and Garrie designed his front wheel drive, carbon fiber vehicle, which Theron built as an 8th grade project. Steve DeLaire's daughter, Cibyl, only 11, was Theron's main competitor. Juniors' rules allowed no streamlining, so Cibyl rode a bare Rotator called Tiger. Theron edged her out in most events.

On the third day we raced at Major Taylor Velodrome where a big sign says, "Go Fast, Turn Left." So we did. Freddy and Gold Rush placed first in everything they entered: 200 meter trial, one kilometer pursuit, and a Miss and Out. Cibyl had a good day, too. She finally beat Theron in the Miss and Out. The Miss and Out is a mass start race which eliminates the last rider across the line on each lap.

The IHPVA Women's low altitude 200 meter record is an old one, 26.437 mph. It was set in 1978 on a Tour Easy. Freddy has a 12 year old daughter, Tanya. Gardner reckoned that a few minutes practice in a streamliner and Tanya could set a new record at the IHPVA Speed Championships in October.

The Speed Championships attracted more of the fast machines. George Georgiev, came from British Columbia with his Varna and set 7 brand new records including the prestigious Hour Time Trial at 49.17 miles. Paul Buttemer rode Varna at the Championships. Tim

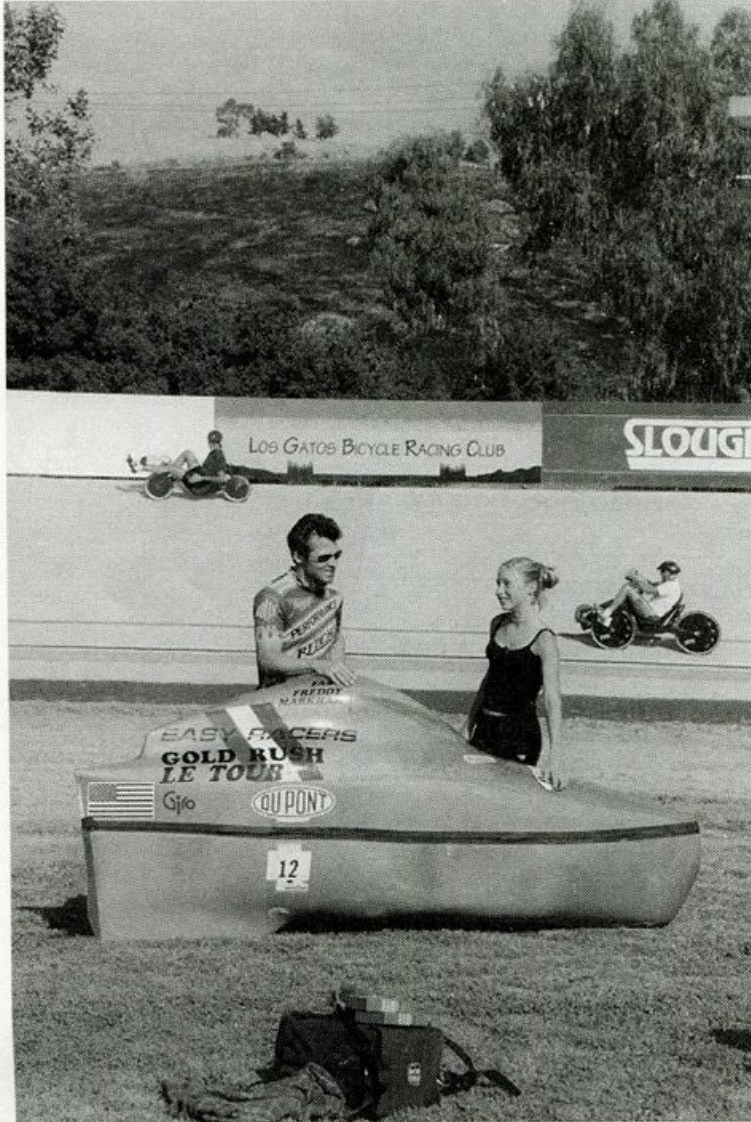
Brummer came with a Lightning F-90 ridden by Andreas Weigel. We brought the Gold Rush, the Double Gold, and Gold Rush LeTour.

Events began with races at Hellyer Velodrome in San Jose. Tanya and Fred were both looking good and won their respective 200 meter events. As there were no other juniors, Tanya rode in the Women's Class. Tanya had never ridden the LeTour, or any streamliner with the windshield in place, nor had she ever ridden on the velodrome. Despite that, she turned 32.585, eclipsing the old record. Gardner asked whether she would get recognition for it. He was told that no one had been watching the wind meter. There was no official time. Very disappointing!

The 200 meter was also used as qualifying for the 4,000 meter event. Tanya was racing Anja Van der Hulst from the Netherlands on a Yel-low. Most of the 4000 meter pursuits were run starting both vehicles in the same place. Tanya had not yet had to pass another vehicle. We figured Anja in an unstreamlined, self-starting machine, would open up a quick lead, especially as Tanya had been tentative in her starts. She's a 12 year old, completely sealed in her vehicle, being push started. Gardner and Freddy advised her to take off as quickly as possible, that Anja would get a lead but that Tanya would catch her. They coached Tanya on how to pass. All for naught. Tanya put power to the pedals and beat Anja out of the gate. And that was that. She averaged 24.945 mph for 4000 meters.

The final 4,000 meter pursuit: Varna, piloted by Paul Buttemer, and Gold Rush, piloted by Fred Markham, started on opposite sides of the track. Freddy pulled ahead quickly and soon had a track lead. Then Varna started pulling it back, little by little. A little closer each lap. The finish was so close, the timer didn't know who had won, even though they had electronic timing. We were left in suspense until the awards were made. Varna at 3'59.86" beat Gold Rush by 16/100 of a second!!! We were disappointed but not surprised.

Next day the 200 meter top speed event was held at a lonely road on Fort Ord. It was well over the limit for downgrade, so no records could be set. It was very fast on a rough tar and gravel road. One bump was so severe it sent the fastest bikes flying, literally. They got air. After his first run, Paul Buttemer on Varna declared he would not go down that course again. Since he went 64.933 mph he



Dad Fast Freddy Markham with daughter Tanya Markham and the Easy Racer Gold Rush LeTour—Sandra Sims-Martin

didn't have to. Fast Freddy came in second at 60.50. In the GT class, Coyote beat Lightning for the win. GT class bikes are as streamlined as they wanna be but must self start and stop. Tanya wisely chose to lose a little speed and steer around the flying bump. She clocked 37.722 for 2nd place, Women's category.

Paul Buttemer offered to ride the Double Gold with Freddy. With its super long wheel base and added weight it could probably take the bump in stride. Tanya also wanted to ride the Double Gold. There was only time for one run. Freddy made the decision. He chose to ride with his daughter and forego what would probably have been fastest speed of the event. Some things are more important than winning.

Next we moved to the other side of Fort Ord for Road Races. The course was 8 miles long and included a steep uphill, sharp curves, fast descents, gusting wind—and traffic! Two races were being run, a 24 mile race and a 64 mile race. Freddy started the 64 mile race.

First lap Lightning was leading with Gold Rush right on his tail. Varna was a few seconds behind with Coyote several seconds behind him. Coyote is a beautiful gold and black monocoque recumbent faired with small entry/exit openings on each side. Steve DeLaire of Rotator designed and built it for Dean Pederson. It's Dean's everyday bike.

On the second lap Gold Rush came through one full minute ahead of Lightning with Varna and Coyote falling farther behind. Next time Varna came around, Paul got out of the machine within view of the final corner (he may have crashed there) and came running down the track looking angry. Paul told of automobiles on the course and of avoiding a 50 mph head-on by inches. He felt the danger was intolerable and wanted the race stopped.



Tanya Markham in the Easy Racer Gold Rush LeTour—Sandra Sims-Martin

Gardner Martin and Tim Brummer talked it over while the officials talked to themselves. When Gold Rush came around Gardner stepped into the middle of the road and stopped Freddy and got him out of the bike. Likewise, Tim stopped the Lightning. Andreas stayed in the F-90 on the side of the road watching the race.

Several minutes later, Coyote, who had inherited first place came by. Andreas could stand it no longer and got back in the race. That mobilized Freddy. A body mount had broken. Trying to jury-rig it and get Freddy sealed up consumed minutes. After that Fred lost a little time to Andreas on each lap although both caught and passed Coyote. Gardner pulled Freddy out again on the 6th lap. Andreas and the F-90 ended up lapping everyone, even Coyote, to win the race. No fully faired vehicle completed the Road Race. Perhaps that's as it should be.

The final day was a series of criteria also at Fort Ord. Fred was set to race in the fully faired class and Tanya in the Women's class. The Women's Class was deleted. Tanya was to race her father in the criterium for fully faired and GT. A last minute problem with the Gold Rush scratched Tanya when Fred took the LeTour for his ride. A couple of laps later he pulled in and a cloud of rubber smoke billowed out. We switched him into the Gold Rush but he had lost a lap and repairs were incomplete. A couple of laps later he overcooked a corner and went down hard, demolishing the fairing, and giving himself a good bump, too. Paul Buttemer in Varna was in the lead at that time and had about 30 seconds on Lightning. During the final laps Andreas caught and passed Paul for the win.

The final race was the unfaired and partially faired run at the same time. Gardner pulled all the streamlining off the Gold Rush and we sent Tanya off in a bare bike with very little steering capacity. It wasn't set up to fit her. She looked good and got lots of cheers but pulled out early due to discomfort.

The two races had little in common except the types of races run and the types of vehicles competing. The first with professional venues and cash prizes was a day at the office for us except for the heat and humidity. The other was in our own back yard with poor venues for everything except the velodrome, and we had few wins, many disappointments, and one disaster. Gardner summed it up—"We raced until our last vehicle and our last Markham could go no more." □

Sandra Sims-Martin is co-founder of Easy Racers, Inc., along with Gardner Martin, her husband. Sandra has been a crew member on Easy Racers' team since the first race of the original 13 HPV'S in 1975. She has covered HPV'S and HPV racing for the media since 1978.

Continental Breakfast

by Matthew Ewing

red_rans_rocket@hotmail.com



Matt Ewing on his former RCN test bike red Rans Rocket—Mike Ewing

Three weeks was all I needed to decide that continental slicks will never touch another one of my bikes again.

My story starts out in January of 1998. My family had just purchased a Rans Tailwind that was equipped with 'upgraded' Continental slicks. I was quickly becoming a faster rider and was preparing myself and my bike for the Chilly Hilly, a Cascade Bike Club sanctioned ride on Bainbridge Island. The name of the ride fit perfectly, I knew from the year before. At the time, I had my bike equipped with Primo V-Monsters, and they worked okay, but they were slower tires than I would prefer. So, I performed a switcheroo between the bikes—and I got the Conti's.

For the week leading up to Chilly Hilly, I thought the Conti's were great. They added 2-3 MPH to my speed, they ran smooth and quiet, and they even gripped the road in wet conditions and hard cornering like I'd never imagined. I was stoked. I got registered for the Chilly Hilly while I was showing my bike at the Seattle Bike Expo, shined up the bike the night before the big ride so I could look good while I was kickin' major wedge butt, and I trained the week before so I could BE good and kick some major butt. I was prepared.

At 5:30 the next morning, a group of local recumbenteers met to ride down to the ferry dock. The ride starts on Bainbridge Island, though we must ferry across Puget Sound to get to the island.

On the ride to the docks, everything was going along fine until we crossed some railroad tracks and I hit a pothole. I heard a CRACK that sounded similar to that of a shotgun, and suddenly the ride got wild. I knew the inevitable had happened and I was not a happy camper. We got the bike roadworthy again, and made the ferry with seconds to spare. Upon further investigation aboard the ferry, I found that my front rim had a bulge pounded into the sidewall from impact and my rear rim had a flat spot. That pothole had a Continental breakfast with

some Sun Rim on the side.

I made it a mile from the start point, and I blew the rear tire again. This time I was fed up with continental tires and tore the tire off and put an ACS cross tire on that my dad had been carrying just for this type of occasion. I made it for about five more miles before my rear derailleur fell apart. From there I got a ride from a SAG wagon and went to a local bike shop where I got the bike fixed, and then I got a ride again to the halfway point, where I met up with the rest of the crew and ate some lunch.

I finished the ride without any more mechanical failures, but kick butt I didn't, and the wheel repair bill put me in debt to my parents, big time. When I took my bike into the shop, I had to replace the front wheel, and I will eventually have to replace the rear. I found out that the stock rims on my bike were failure prone. They supposedly start to crack down the center of the rim between the spoke holes until the wheel splits in two and you are riding on spokes. So, I bought a new front rim, new tires and new tubes. In the end, parts and labor cost me \$120. The moral of the story is: choose tires carefully. Right now, I am running Primo Comets. They aren't wearing as well as I'd like....so I'm still in the quest for the perfect tire.

Editor's Note: Matt tossed his Conti Grand Prix tires after Chilly Hilly. He rode Primo Comets through the '98 season until they wore out. He now has a combo set of wider, fatter and hopefully more durable fat tires. For Christmas, we gave Matt a set of Tioga Comp Pool tires to use in 1999. Matt has also put his Grip Shift SRT400's in the dumpster and has gone retro-friction with bar-end shifters. □

16 year old Matt Ewing rides with the NW Low Down and Laid Back Recumbent Riders with his Dad, Mike Ewing. Matt is very fast on his retro Rocket. Matt also mows the RCN lawn (and does a great job)!

A Quick Peek at the Flevo Oke-Ja Or.... It's NOT a BikeE Clone ... O.K.?

by William Volk
bvolk@inetworld.net

They're cousins: Identical cousins all the way. One pair of matching bookends, Different as night and day. (From the theme of "The Patty Duke Show.")

Why review a recumbent that's not available in the United States?

As a great explorer once said "Because it's cool." When I heard that Dan Barry was going to be visiting my town of Cardiff with the Oke-Ja, I just had to wrangle a test ride.

As you can see from the title and the pictures, the Oke-Ja looks mighty similar to the BikeE. All I kept reading on the Internet was questions like:

"Is it as good as the BikeE?"

"Does it cost as much as the BikeE?"

"Is it as fast as a BikeE?"

"Is the seat as good as a BikeE?"

And finally, "Why would anyone use a Schraeder valve?"

Ooops, that last one slipped in by mistake (and the answer is, thorn tubes). If it looks like a BikeE clone, and smells like a BikeE clone—Must it be a BikeE clone? Nope. I'm happy to say that looks are deceiving. The Oke-Ja is a very different bike aimed at two markets quite different than what the BikeE is selling to.

Good thing, too, because if nothing else, the BikeE is a very refined machine. I'd say that the BikeE is a great general purpose recumbent that offers a good mix of comfort, performance, and practicality. With a new model coming from the Giant factory in Taiwan at \$650, and the BikeE Air Tech suspension version, I'd say that BikeE has that market pretty well figured out.

So perhaps it's time this author, rider, and sometimes bike builder got down to business. Just what is a Oke-Ja and why should you care (even if you can't buy one)? Well, it's a bit complex, but here goes:

▲ OKE-JA #1

It's a "Bike in a Box." With just a simple 5mm Allen Wrench you can assemble your Oke-Ja from some surprisingly compact pieces. In fact YOU HAVE TO. Flevo ships the Oke-Ja in pieces. The frame consists of a extruded piece of aluminum that resembles a sailboat's mast. There are four slots that run the length of the tube (about 51").

Everything attaches to the main mast, I mean beam, and is secured with small stainless rectangles that slide into the slots and are secured with 5mm Allen bolts. There are four main pieces: the headset-bottom bracket unit, the rear wheel triangle, the seat, and an optional rear rack. Dan's not the greatest mechanic, and he had the bike assembled in about 20 minutes under the watchful and prying eyes of the San Diego Recumbent Riders.

The beauty of this is that you could pack the entire bike in some-



Bill's test OkeJa Compact—Bill Volk

thing other than a "That will be a \$60 bike baggage fee please" box. Something like a golf club bag. The bike was actually rattle free, once Dan realized that he hadn't tightened the cranks. I'd say that an experienced owner could assemble the thing in about 10 minutes with practice.

The coolest part is the fork/headtube/handlebar assembly. This is a great idea. The bottom bracket shell is welded to the upper part of the head tube. You can keep the fork and handlebars attached and still have a compact package. It also makes for a high bottom bracket (for a CLWB) of 21.25" (crank center to ground). The bars are steel, and quite stiff. Note the generator light mount that is brazed onto the fork.

The seat felt great, but I would need to do some extended riding to really know if it's suitable for longer riding. It does have a pretty decent back height. The rear wheel triangle is a nice well triangulated design as well. The best thing is that the seat can be positioned anywhere along the main beam. We guesstimated a wheelbase of 30" to 61." This will be a great children's bike.

Oh—about the handling. Flevo may be known for hard to learn FWD bikes, but the Oke-Ja has to be one of the best handling CLWB bikes I have ever ridden. It has less trail and therefore less "wheel flop" than most. It felt natural to ride and never gave a hint of instability.

A really pleasant surprise!

Mr. Barry purchased the frame kit and put on whatever components he had on hand. The actual 1260 Dutch Guilders (that's \$616.65 as of July '98) bike ships with a 4 speed Nexus hub with Shimano roller brakes front and rear. I'd say that Dan's bike weighed in somewhere around 30 pounds, but that's complete guesswork.

▲ Oke-Ja #2: A Great City Bike

The chain on the actual Oke-Ja is 100% sealed. There are two chain tubes and the chainring and rear cog are enclosed in plastic chainguards. After a winter of El Nino rain all I can say is ... yes. This makes sense for nasty weather riding. In the spirit of wet water cycling, I also hear that there's a version that uses the Continental Toothed Belt to provide "silent running" capabilities.

A Nexus 4-speed internal drivetrain may not be the best choice for crossing the Rockies, but I gather that most of the hills you see in the Netherlands are probably dikes. I'm sure the bike can be outfitted with a 7-speed Nexus hub. Bob Bryant tells me that he's been riding with one of these and he loves it. So you see, the Oke-Ja isn't a BikeE at all. It's a unique machine, with some unique capabilities. I love the handling, and I love the idea of an inexpensive traveling recumbent.

Now all someone has to do is import the Oke-Ja into the USA. □

cents in. I agreed with your review of trikes and felt that Mr. Sims was nitpicking. There are upsides and downsides to everything, but Mr. Sims' response was the upside only with his obvious bias. I'll be the first to admit that I have not ridden a Greenspeed trike, but I believe that the two I own (63-speed Counterpoint Presto Triad and linear reciprocating Vacuum Velocope) and 14 years of riding recumbents allows me this privilege. In summary, I always prefer riding my recumbent bicycles. The trikes are slower and more difficult to pedal uphill. Any of my 6 recumbent bicycles handle the hills more easily. The Vacuum is not geared low enough, making it much too difficult, and the Triad is geared so low that it is too slow. Also, the Vacuum is too low to the ground, which makes it an invitation for disaster, and the Triad is too wide, impeding the flow of car traffic. Both are relatively unstable, which seems to be an inherent factor of tricycles. I've had tip-over mishaps with both of them. I will keep an open mind and maybe some day I'll be able to try a Greenspeed to see if my opinion changes.

Seymour Solomon MD

◆ **EASY RACERS LOVE AFFAIR**

Three years ago I discovered your little magazine and I've enjoyed every issue since. Partially because of your recommendation, I bought a Tour Easy 2.5 years ago, and after 3,400 miles I can honestly say it has more than lived up to my expectations. Despite a 2nd rate seat and rear brake, it's been the most fun I've ever had on a bike since I was a kid and well worth every penny I paid.

Having said all that, I was dismayed by all the hyperbole (polite term here) surrounding the Gold Rush Replica in RCN#48. How long ago was it introduced? The GRR is old news. The fact remains that although the TE and GRR are great bikes, Gardner Martin really hasn't done anything new or original in years. While Rans and even Bike E have innovated, Easy Racers has stood still. Gardner's idea of innovation is taking the TE frame and having someone else fabricate it for him out of aluminum and now Titanium. This sure isn't my idea of progress.

Although I love my TE, based on your review, I don't see why I would buy a GRR. It still doesn't have a first rate seat. It has a 451 front tire. (Why? Trying buying one around here.) It won't take a rear tire wider than 32C according to you. (Don't ask me to give up Avocet 700Cx35 kevlar belted cross tires. They're bullet proof.) So I save two pounds and spend another \$1,000 or so. You've got to be kidding.

The TE and GRR are both excellent bikes, but your love affair with Easy Racers at the point of ignoring the others that are out there is cause for some concern. Get back on track and get a little more objectivity.

David R. Glass

DGlass9@compuserve.com

David, The GRR was looked at from both a performance and product refinement point of view. These are proven excellent bikes. If you don't like your rear brake, change it. If you don't like the 451mm front wheel, order a 406mm set up from Easy Racers. A GRR EX is on the way, but 406mm wheel has been an option. What bikes are we ignoring? An RCN road test requires manufacturer cooperation and a test bike. We don't have an endless budget to buy new test bikes—Bob, RCN.

◆ **WIZ '99**

For 1998, WizWheelz added a USS steering option for the TerraTrike in addition to the above-seat steering. Any '98 or later model can be upgraded to the other steering configuration. Further improvements were a TIG welding process and a powder coated finish. More recently: improved front drum brake hubs, better handling, and a sharper turning radius.

We are currently working with two groups on fairing additions including new color options, a water vehicle, and a more responsive delivery time. Watch for further developments in the spring.

Our goal has always been to provide exceptional HPV's at an affordable price. From the standpoint of the consumer, factory-direct pricing makes a lot of sense. The TerraTrike was originally offered only on that basis. A few dealers did express an early interest, and they were

engaged as the official factory outlets. Unfortunately, we have been unable to keep up with the total volume of the orders for the past two years, seeing the delivery times extend to many months. We felt that adding new dealers would be a disservice to them, as well as to those with pending orders. Everyone would end up being less satisfied. We are continuing to honor our existing agreements, but will not be adding any new dealers right now. When our production capacity does grow sufficiently to service additional dealers, we will look forward to adding more.

We do have customers in a number of areas who like to show their TerraTrikes. If you aren't near one of those or any of our dealers, we do have a 30 day return policy. If you did order one, and were unsatisfied for any reason, you could return it to us in original condition for a full refund. You would be responsible for the shipping charges, though. We intend to have a test trike for RCN in early spring.

WizWheelz, wiz@iserv.net

◆ **DOUBLE DECKER 'BENT**

How can RCN print such nonsense? I mean, really. Look at the engineering drawing of the Bunk Tandem on page 42 of RCN #48 (People Movers ad). What an utterly ridiculous design and an insult to our intelligence. Such a bike could never work. Any idiot can see that the captain must be ON TOP in order to balance such a machine.

Barclay □

THE TerraTrike www.wizwheelz.nvo.com
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WEB SITE CORRECTIONS

We mistakenly mixed up the following web sites. The corrected addresses are below:

▲ Mark Mattarella's Recumbent and HPV Info Center
<http://www.Recumbents.com>

▲ People Movers web site: <http://www.Recumbent.com>

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NEWS YOU DON'T WANT TO LOSE

▲ RCN 1999 SCHEDULE

- ✓ RCN #49 Jan/Feb '99
- ✓ RCN #50 March/Apr '99
- ✓ RCN #51 May/June '99
- ✓ RCN #52 July/Aug '99
- ✓ RCN #53 Sept/Oct '99
- ✓ RCN #54 Nov/Dec '99

▲ CHANGE OF ADDRESS

We are charged .50¢ every time you do not send us your new address, so please let us know when you are moving.

▲ CREDIT CARD ORDERS

We do not accept credit cards at this time.

▲ AD RATES

Give us a call and we'll happily mail our commercial ad rates.

▲ MISSING ISSUES

We do everything possible to ensure that you get RCN delivered 6 times per year. Sometimes the USPS misplaces an issue. If you missed an issue, give us a call at 253/630-7200.

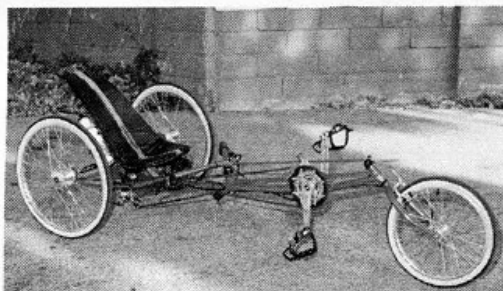
▲ BULK MAIL SUBSCRIPTION

Due to irregular delivery, we no longer accept bulk-mail subscription orders. You can upgrade your sub for \$1 per outstanding issue.

▲ RIDER GROUP LISTINGS: Will be printed in RCN#49, 51 and 53.

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GLOSSARY

ABOVE-SEAT STEERING (ASS): Handlebars above the seat, knees or frame-Above-Seat-Steering. A standard bicycle type steering similar to that of a hot rod/Stingray type bicycle of the 60s.

ALUMINUM: AL, or Alum. A lightweight ductible, tarnish resistant material.

BAR-ENDS: Handlebar extensions most often used on USS bikes to bring the controls closer to the rider.

BOTTOM BRACKET: (BB) pedal axle & bearings, sometimes called boom-bracket.

BRAZING: A frame joint is created by flowing brass around the tubing junctures. Builders then either file/sand the joints smooth or leave them natural.

CARBON-FIBER: A high tech, high strength composite material that is black in color.

C.G.: Center-of-gravity

CHAIN-IDLER: A modified skateboard wheel, derailleur pulley or custom-made wheel that carries the chain slack on SWB and some LWB models.

COMPACT: CLWB or MWB recumbent

COROPLAST: Plasticized cardboard that works great for homebuilt recumbent fairings

CLWB: Compact Long Wheelbase 47"-60."

CroMo: Chrome-moly steel.

DELTA: Two-wheels in the rear trike design.

DOM: Drawn-over-madrel. This is a type of higher quality HiTen steel.

FWD: Front Wheel Drive

GEAR INCHES: Formula used to determine range of gears: front chainring divided by rear cog multiplied by drive wheel dia.

GRIP SHIFT: A trademark of the SRAM Corp. A brand of twist-grip shifter.

HiTen Steel: High tension or mild steel.

HPV: Human Powered Vehicle.

INDIRECT STEERING: Underseat steering via a rod linkage that connects the handlebar to the fork.

KEVLAR: A high strength, bulletproof composite material that is gold in color.

LWB: Long wheelbase 60"-71"+ (crankset low and behind front wheel).

LOW-RACER: A SWB recumbent built as low as possible for HPV racing (may exceed our wheelbase range for a SWB).

MAGURA: A high quality, strong German hydraulic caliper brake.

MID-DRIVE: A mid-ship mounted, wide-ratio, two-chain drive freewheel shifted by a rear derailleur.

MTB: A dated abbreviation for mountain bike.

MWB: The same as CLWB. Formerly used to describe longer SWB bikes.

NEXUS: Shimano's internal 4/7 speed hubs.

PEDAL STEER: Pedal-induced steering input that makes the bike more difficult to track straight. This generally happens on SWB models with wheelbases of less than 39" or a very laid back head tube angle.

RCN: Recumbent Cyclist News founded by Robert J. Bryant in 1990.

RWS: Rear-Wheel Steering.

SWB: Short-Wheelbase 33"-47" (crankset high and in ahead of front wheel).

TIG WELDING: Tungsten-Inert-Gas; a proven no-lug process common with MTB's.

SACHS 3 X 7: This is the Sachs Internally geared three speed with 7-spd. freewheel (21 speed total).

STEERING ROD: The steel or aluminum rod that connects the fork to the bars.

STEERING STRUT-RISER: An ASS extension that rises from the stem or head tube to raise the bars over the legs.

TADPOLE: Two-wheel in the front trike design.

UNDERSEAT STEERING (USS): Steering via handlebars beneath the seat.

V-BRAKE: A new and strong style of cantilever brake the has high arms in a "V" formation.

X-SEAM: A measurement used for recumbent fitting. This measurement simulates the distance between the seat back/base out to the farthest reach of the pedal stroke.

ZIPPER: A Lexan fairing by Zzip Design.

Recumbent Rider Groups

▲**AL/N. Georgia:** First Sat/Mo 9am—Hokes Bluff, City Hall-Dave ☎ 205/492-3454 or burgess@cybrtyme.com

▲**AZ—Phoenix Area:** 2nd & 4th Sat/Mo @ 8am. Bike Emporium, ☎ 1-800-DrBike1

▲**CA—Watsonville:** 3rd Sat/ Mo @ 9:30am from Easy Racers ☎ 408/722-9797

▲**CA—LA:** 3rd Sun/Mo 10 am@Burton Chace Park, Mindanao Wy, Marina Del Rey. Chris Broome ☎ 310/823-2464, cbroome@usa.net

▲**CA—OC:** 2nd Sat/Mo People Movers ☎ 714/633-3663

▲**CA—Palo Alto:** Alvin Chin ☎ 650/571-5147 or chin_alvin@hotmail.com

▲**CA—SF:** 1st Sat/Mo 10am@ Mill Valley Plaza Zach Kaplan ☎ 415/381-5723 or zakaplan@earthlink.net

▲**CA—San Diego:** Last Sat/Mo Mission Bay Visitors Center Bill Volk ☎ 619/824-8323, bill_volk@lightspan.com

▲**CA—Sacramento:** Dave ☎ 916/483-4435 or SacBent@aol.com

▲**CA—Sacramento:** Gary ☎ 916/600-8312 or cookie13@pacbell.net

▲**CA—San Dimas:** Sat & Sun rides odonnell@ xsis.xerox.com or Ischeetz@cyberg8t.com

▲**CO—Arvada/Westminster:** R.C. Wild ☎ 303/426-5191

▲**CT—Yankee Pedalers:** 2nd Sun/Mo @ 9am. Dave Tipping ☎ 203/484-2937 or nz1j@juno.com

▲**FL—LASERR:** Ed Deaton@ 904/224-4767, edde@freenet.tl.fl.us

▲**ID—Sun Valley area:** From the True Wheel. Bob or Reggie ☎ 208/788-5433.

▲**IL—Chicago:** Len Brunkala, 260 S. Channing, #1, Elgin, IL, 60120 or Ed Gin ☎ 773/237-6624

▲**IL—Champaign/Bloomington:** Tom Smith ☎ 217/351-7305 or tsmith4@students.uiuc.edu or www.mtco.com/~webstwl/circ1.htm

▲**IL—St. Louis:** John Werner Tel. 618-931-0557 or bentrus@usa.net

▲**IN—Ft Wayne:** Wendell Brane ☎ 219/749-5610 or WBrane@Ctlnet.com

▲**KS—Lawrence:** John Dreiling, Box 1342, Lawrence, KS, 66044-8342. ☎ 785/832-9757

▲**KY—Louisville:** Last Sat/Mo @ 8am Central Park (6th & Magnolia). Rain cancels. Mike Reilly ☎ 502/491-0328 or mreilly@bellsouth.net

▲**MASS—North Shore:** Bob Hicks ☎ 508/774-0906

▲**MASS—South Shore:** Riders wanted for casual, fun, year-round rides. Dave Ricardo ☎ 781-826-9003

▲**ME—Falmouth Recumbents** ☎ 207/781-4637 (VM)

▲**MI—MHPVA:** Wally Kiehler 1027 Hawthorne, Grosse Pt. Woods, MI 48236 or Kiehler@Juno.com, www.lmb.org/mhpva

▲**MI—SE:** Wolverbents 2nd Sat @ 9am—Willow Metropark Pool shelter, @ 9am (Mar-Nov). Bob Krzewinski ☎ 734/487-9058, BobMich@compuserve.com. www.lmb.org/clubs/wolbent.htm

▲**MN—Mnpls: MnHPV** 2nd Wed @ 7pm Lk. Nokomis Com. Ctr. Ride 6pm - Mar-Oct. Mark Stonich ☎ 612/824-2372

▲**NE—Omaha: County Cruisers** Armand Gibbons ☎ 402/553-4472 or www.nfinity.com/~armandg.html

▲**NM—Albuquerque:** Absolutely Recumbent ☎ 505/345-7736

▲**NJ—Metro Area:** 3rd Sun/Mo—Geo. WA. bridge (NJ side) John Tetz ☎ 973/584-6481 or jgtetz@aol.com

▲**NY—Rochester:** Hank Walck ☎ 716/265-4287 or Michael Brisson ☎ 716/461-5084 or Dave Larson ☎ 716/235-4116

▲**NY—Western:** Monthly starting March 20th, 3rd Sat, 2pm@ Bikeway on N. Forest Rd.(N. of Maple Rd.) at the Amherst Audubon Golf Course ☎ Ed Weiss 716-634-9660 www.bluemoon.net/~padelbra/the_recumbenteers.htm

▲**OR—Portland:** Jeff Wills ☎ 360/254-3736 or jwills@pacifier.com

▲**PA—Philadelphia: R'bent Cyclists** John Hunka ☎ 609/662-5180 or hunka@astro.ocis.temple.edu

▲**TN/GA/AL:** Easy Chair R'Bent Bikes ☎ 423/886-1499 or easychairbikes@att.net

▲**TX—North:** 4th Sat/Mo www.rbent.org

▲**TX—Houston:** 2nd Sun. @ Katy HS. Pat ☎ 281/347-3627.

▲**UT—Riverdale:** Brett Rodgers ☎ 801/399-2447

▲**WA—Snoho Co. AARC:** (All Rec. Riders Club) 3rd Sat/Mo Harvey Field in Snoho Cty. ☎ 206/632-6955 or bradrick@serv.net or 206-632-6955.

▲**WA—Seattle/S. King County:** NW Low Down & Laid Back Recumbent Riders Email for schedule. We ride 2-8 times per month. DrRecumbnt@aol.com or www.halcyon.com/peterson/bentkent.html

▲**WA—Spokane:** 2nd Sat/Mo @ 9:30am —SIRTI pkg lot E of Fairfield Inn, E/Z RIDER Cycles ☎ 509/725-4249 or jmangini@famrc.org

▲**WA—Vancouver:** Jeff Wills jwills@pacifier.com or Gale Simpson Tel. 360/891-1947

▲**WA—SE: WRTW2*** Two Wheeled, R'bent Riding Trombone Teachers of Walla Walla. VonBruno@bmi.net

▲**WASH. DC AREA: W.H.I.R.L.** 8am Sat (9am-winter) @ Viers Mill Rec Center. www.recumbents.com/whirl

▲**WI—Madison:** Last Sat/Mo @ 9am—State St. corner of the Capitol. May-Sept. mfox@lss.wisc.edu

Calendar

▲LAKE WEIR KIWANIS 2ND ANNUAL TRI-COUNTY TOUR

March 4—Weirsdale, Florida. For more information contact ride Co-Director Glen G. Coombe "Bent for life." Tel. 352-821-4653 or email: IDDTriTour@aol.com.

▲FLORIDA RECUMBENT RALLY

March 21—Margate, Florida. For more information contact Atlantic Bicycles Tel. 954-971-9590

▲CENTRAL VALLEY RECUMBENT RALLY

May 1, 1999—Fresno, California. For more info: Bill Bruce, Tel. 559-225-3551; www.fresnocycling.com; bilbyke@psnw.com

▲MICHIGAN RECUMBENT RALLY

May 15, 1999—Michigan. For more information: SASE to Bob Krzewinski Tel. 734-487-9058, BobMich@compuserve.com or www.lmb.org/wolbents.

▲WHIRL BIG RIDE

May 15-16, 1999—Washington, DC

▲MIDWEST RECUMBENT RALLY

June 5-6, 1999—Stevens Point, Wisconsin. Hostel Shoppe Tel. 715-341-7414.

▲MICHIGAN HPV RALLY

June 5, 1999—Waterford Hill, relaxed racing on a closed course. SASE for flyer. Wally Kiehler, 1027 Hawthorne, Grosse Pt. Woods, MI 48236, Kiehler@juno.com, www.lmb.org/mhpva.

▲SLUMGULLIAN COLORADO TOUR

June 25-28, 1999—Gunnison, Colorado. Angletech, Tel. 719-687-7475.

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FOR SALE: VISION METRO 30, like new—ridden two hours. 21-speed. Folding, with case. Many extra Angletech components. Ready for touring/commuting. Seller prefers a trike. Tel. 800-793-3038 (CO/50)

FOR SALE: 1995 HALUZAK HORIZON SWB, Red, rear bulldog brake, computer with cadence, behind the seat bag, original owner, excellent condition. \$1000 OBO. Call Kevin 740/965-5621 (49)

FOR SALE: 1997 LIGHTNING P-38XT, Large, Black, Low miles, Like new! 700x20", XTR front hub and brake levers, Control Tech V-brakes, 28-132 gear inch range. This is a light (24 pound) fast recumbent that can climb! \$2,150. Contact; e-mail JCrecline@AOL.com. Tel. John @ 719-683-2713 (CO/50)

FOR SALE: '95 VISION LWB/SWB R40 16" front wheel, Shimano equipped, USS \$600. Tel. 619-562-9351 Ask for Rick (49)

FOR SALE: VISION R40 with nearly every option and accessory. Very good condition. \$900. Tel. 207-691-1065 (ME/49)

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FOR SALE: BikeE Air Tech (AT) "All Around" XL, with pannier rack, derailleur upgrade, shock pump, clipless pedals, and fenders. New \$1,400. \$900 OBO Tel. 206-937-8886 (Seattle) or jbdoherty@earthlink.net (WA/50)

FOR SALE: 1997 RANS ROCKET SATURN V, high back seat, tilt-steer, Magura brakes, EST/SRT900 Grip Shifts, 400 miles, Vetta 500 computer, seat bag, \$1700 Tel. 1-800-645-1828 (49)

FOR SALE: 1997 LIGHTNING R-84. Carbon fiber XL frame. Suspended front and rear, 17" Moulton front wheel with Machine Tech hub, White Industries rear hub, Grip Shift ESP 9.0. Truly a work of art. St. Paul Mn area. \$2200. ander03@prodigy.net Tel. 651-292-8094 (MN/49)

FOR SALE 1995 COUNTERPOINT PRESTO, 500 miles, Super Zzipper, Sachs 3x7, Titanium fork, Angletech trunk, dual pivot brakes, rear suspension, fenders. Invested \$4,000, looking for \$2,000. Call John before 9pm EST. Tel 508-291-3070. Email: drstimp@mediaone.net (MA/49)

FOR SALE: RAVEN TRIKE, FWD, lean steer, full front fender, cyclometer, large seat bag, extra tires and tubes \$1800 OBO Tel. 515-289-2097 Email: hanelsd@phibred.com (IA/49)

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FOR SALE: 1998 LIGHTNING P-38 XT, Black, 112 miles—Near New, Gripshift, Computer, Seat Bag, Time ATAC, cost over \$3000, selling for \$2100. Tel 612-951-6163 days or mtbdive@aol.com (50)

FOR SALE: '98 RANS ROCKET, New Nov. 1998, \$825 + 1/2 shipping. See www.trade-direct.com guarantee. Call evening for info. Tel. 801-225-8073 (50)

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FOR SALE: 1997 LIGHTNING P-38 FRAMESET F-40 nose mount, suspension fork, 17" Moulton front wheel & wheel cover, seat, handlebars, hydraulic brakes, fenders \$725. Tel. 925-463-8021 (49)

FOR SALE: 1998 RANS ROCKET tall back seat, seat bag 100 miles \$750 Jon Tel. 508-650-1163 calypso11@aol.com (49)

FOR SALE: 1998 RANS SCREAMER TANDEM. Like new, (300 mi.); rack, fenders, 2-leg kickstand, Flip It handlebar, high-back captain's seat, Magura hydraulic brakes + drum brake. Paid \$4,500, asking \$4,000. Tel. (509)627-0227; yangjian@aol.com (WA/50).

FOR SALE: VINTAGE EASY RACER. Gardner Martin's co-designer Nathan Dean's wedding gift to his bride. Never ridden. Great condition. Leather Cobra seat. Fairing. \$1300.00 or OBO. Important bike. Tel. 513-748-9548 (50)

FOR SALE: 1996 TURNER T-LITE FRAMESET, plus front wheel and brake. Small frame. \$275 OBO. Dave 408-249-3169 or cafe_@dave@hotmail.com

FOR SALE: New Angletech/Rans Stratus, 40; Presto SE, susp. fork; Presto Campagnolo/Phil spec; New BikeE RoadE, US made. Black; Stealth, Lg, Red; P38, Large, blue, w/Flip It. Tel. 719-687-7475 or email: Anglezound@aol.com.

FOR SALE: 1996 RANS SCREAMER TANDEM RECUMBENT BICYCLE. Less than 1000 miles, all hydraulic, 84-speeds, DaVinci Independent Coasting System & many extras. \$4425. Tel. 520-452-1777 or qrobley@c2i2.com (Southern AZ/50)

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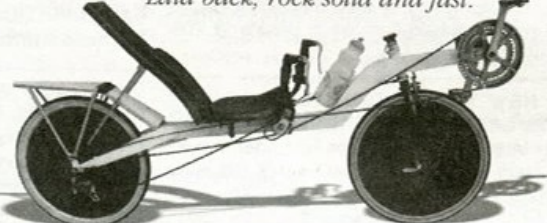
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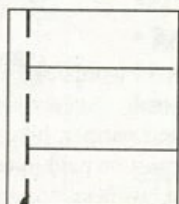
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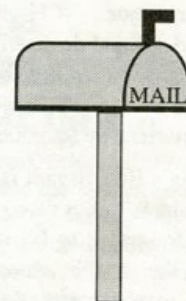


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