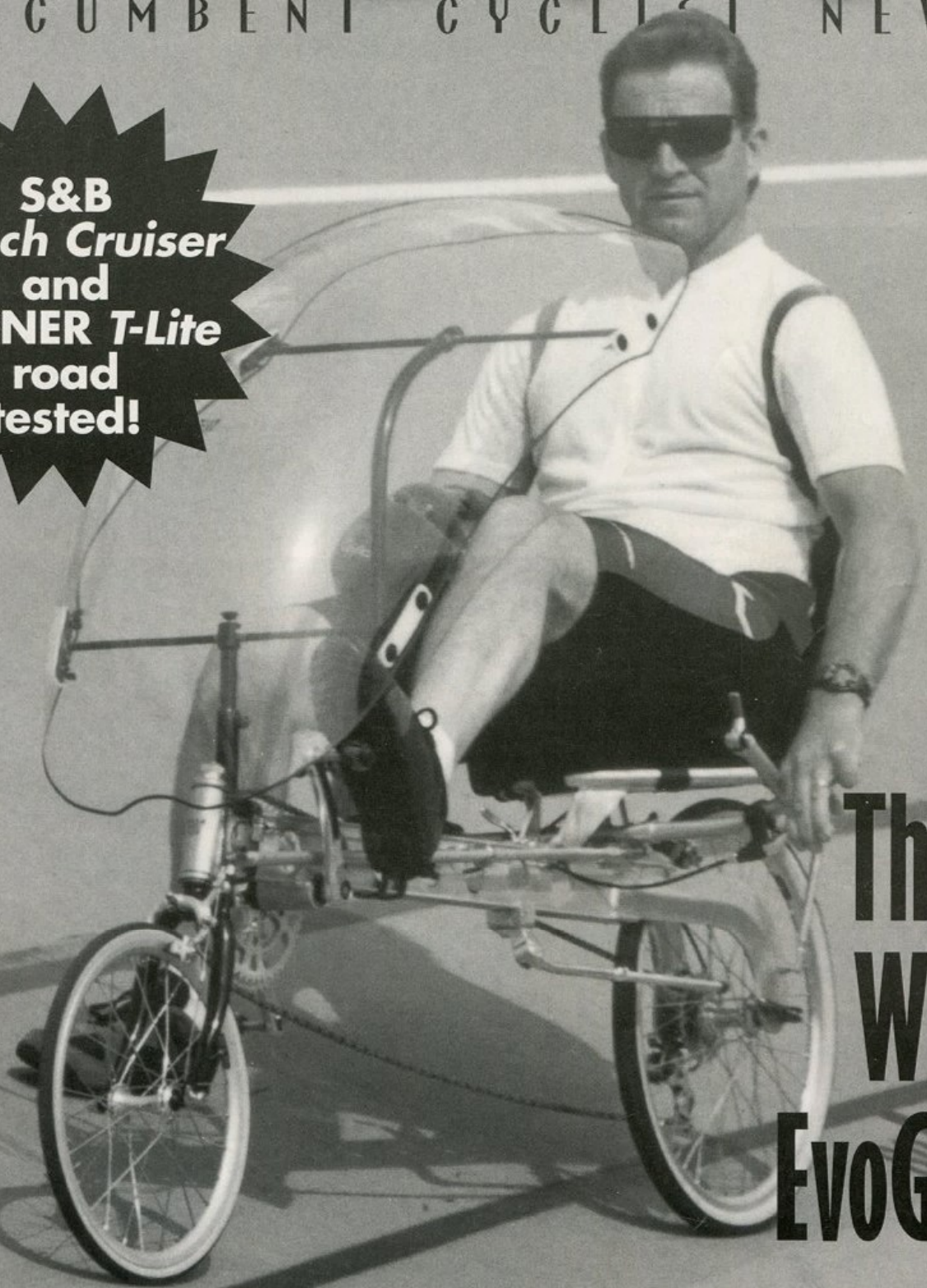


RCN

RECUMBENT CYCLIST NEWS

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and
TURNER T-Lite
road
tested!**



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Warren Bowman lifts his Tour Easy in celebration for completing the California AIDS ride 1996

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What's Coming Up!

RCN#41 September/October 1997: In this issue we will test an Angletech Altitude full suspension SWB, the Haluzak Hybrid Race and HPM Tritan trike. Look for a FWD article by Bill "WYMS" Patterson and the usual RCN columns. This issue will be mailed in late September. Also this fall, watch for an Angletech V-Rex GL63 test and Colorado Slumgullian tour article.

RCN#42 Nov./Dec. 1997 will be our sneak peak at the 1998 season and Interbike trade show report. For more information on RCN see page 33, or call 206/630-7200 for a copy of our new glossy brochure, or call 714/633-3663 to charge your order on a credit card.

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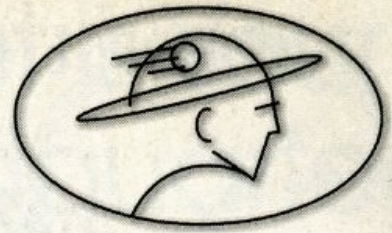
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Editorial License

by Rober J. Bryant

Email: DrRecumbnt@aol.com Voice mail#206/630-7200 Fax#206/631-5728



'Bent Bob's Roadie Quest & Coroplast Dreams

My training is nearly complete. I am a 'Bent Lycra-Headed Roadie. Old friends barely recognize me, except for my chosen steed—a 'bent! As I finish this issue, I head off for Colorado to ride the Slumgullian with 'bent friends from around the country. I am addicted to the road. My training peaked in early June at 7 days and 200+ miles per week. A few folks have told me to slow down a bit, so I will, but I'm ready for Colorado.

When you become addicted to the road many odd things happen. Your views of ride distances change, how you feel about different bikes and you know what you like and what you don't. In this issue I have tested three bikes. Two of which I would not even consider for my 30 mile daily training ride (hard shell seats), the third is a fine bike, but I wouldn't take it on a trip like the Slumgullian in Colorado: four days, just under 400 miles and 12,000 feet of climbing.

My roadie training quest has me looking at new aspects of cycling. I have become a voracious reader on the subject. I've read many tour narratives and cycling classics (I'll print the list soon). I read John Forester's "Effective Cycling" cover-to-cover in one night. Mr. Forester doesn't like recumbents much, but the book is an inspiring "bible" for the cycling enthusiast and a definite must read.

Even some of my views on recumbent design have changed. I want a fast bike, with a stiff frame (and boom) that is near bullet proof. If the bike is light weight, that's a bonus, however, stiff and light don't always come in the same package (though sometimes it does). I've tried some models that were very light, but flexed a lot during hill climbs, this seemed to slow me down. Fast hill climbing is the one aspect of recumbent performance that still eludes me. By fast, I mean like the club riders on training rides. Also, I still haven't decided whether or not a 20" drive wheel slows me down. Any ideas on this?

Recumbent seat design matters immensely. Uncomfortable recumbent seats are useless. Don't buy the pitch that a perceived performance gain means putting up with a lame seat. Excellent power-generating comfortable seats exist, the Rans and Lightning seats are perfect examples. I'd rather ride on a wedgie seat if my hiney's going to hurt anyway.

My preference for drivetrains has gone roadie too. I want to see builders adapt real roadie technologies with skinny tires, Shimano 105, Ultegra and Campy parts to 'bents. No more fat tires, BMX sidepulls or cantilevers on so called "performance" bikes. How can we expect to compete if we don't? If we do compete, recumbents may be accepted as a roadie option. This will be the trick to attracting the true performance cyclist. A perfect demonstration of this is found in the latest *Bicycling Magazine* where Ed Pavelka praised the Easy Racer Gold Rush Replica.

My new found roadieness has me thinking about wedgies. The only upright I own at this time is a Bike Friday Family Tandem, which is a peach. I started looking at road racing bikes with the idea of timing and documenting my test ride course performance in a journal for recumbent (and personal) comparison. I've looked at the gorgeous Italian celeste Bianchi's, light Cannondale's, stiff Klein's, costly Trek carbon fiber bikes, Bike Friday's and my dream wedgie, a Rivendell Allarounder. My concern is how long can I be comfortable on one of these wedgies, especially to make it worth the cost. Admittedly, I don't plan to ride it more than 30 miles at a time, once maybe twice a week. My test rides had me quickly deleting bikes that rode hard or were too race-oriented (equals even more discomfort in the wedgie world). The bikes that made the second cut where the Air Friday dual 20" Ti-beamed speedster that fits into an airline carry-on bag (expensive); a beautiful dark green Trek 2120 with 105 components and a 23.5 pound weight—all for about \$1300; or the cheapest used/demo/leftover road bike I can get for around

\$500—because I know my hiney won't like it anyway.

I then put the word out to the internet: Bob's Roadie Quest. A lot of feedback came in. Many were afraid of unfair weight vs. cost vs. performance comparisons between 'bents to roadies. You can get a sub-25 pound road bike for under \$800 (under \$600 on sale) and a sub-20 pound for under \$2000! In a weigh-in scale test, 'bents won't fare well. The true weight comparative road bikes are available for under \$600. This makes our 'bents seem outrageously expensive. One manufacturer cautions me carefully on how I proceed (and not make 'bents look too bad).

The next chapter has me actually riding some wedgies. A 30 mile tandem ride this past weekend just re-emphasized that I can ride 3-4X as far on a 'bent with less fatigue. As good a shape as I am in right now from 200 miles a week on a 'bent, my butt, wrist, arms and neck and other unmentionables are in pretty sad shape after 30 miles. My 'bent training just didn't prepare me for the abuses that a road bike delivers. The question I must ask myself is why would I want to put up with this pain? I'll need Advil by the case and a new hot tub to cure the wedgie woes.

RCN "Tech" correspondent frequent Richard Drdul wrote to heed this warning, "*Bob, Save your money! I'd question whether this comparison is really necessary, or even meaningful. I would think that anyone contemplating a recumbent purchase isn't considering the 'bent vs. a road bike — they've made the decision (or at least are interested) to get a 'bent for reasons of comfort, view, whatever. What they want to know is which 'bent to get. What could you compare between the road bike and 'bent? Coasting speed down a hill is out, as it's affected more by how low you tuck over the drop bars than by type of bike. Comfort is too subjective. Weight isn't meaningful, as aerodynamics have far more effect on speed — you get the point. I say stick to the 'bents!*"

Richard's words really struck a chord. I reread them after my painfull

30 mile wedgie ride.

The next chapter of my self defeating wedgie quest which now has my speed quest in a new and better ('bent) direction was the arrival of the **People Movers Coroplast Fairing Seminar Video**. Ed Gin of Chicago flew out to People Movers to lead a dozen guys through building a full coroplast body on Rans V-Rex in one day (actually less than six hours). The outcome is amazing! Ed should be considered the 'bent coroplast master. Every question was answered and years of wondering are outlined in this professionally done tape and set of handouts. We salute Ed Gin, Jim and Linda Wronski, People Movers and the seminar attendees who made this project such a success and so we have the unique opportunity to attend via video. This was a definite labor of love for all involved. Every recumbent owner who prides him or her self on being a 'bent *technoweenie* should buy this video. Call People Movers at 714/633-3663.

I love *all* bikes, but I am a *serious* recumbent rider. As much as I would like to have a Trek OCLV...recumbent, or have Bike Friday do an Air Friday...recumbent, I've now lost most of my zest for a wedgie. My hiney hurts just thinking about it.

This week, the new Easy Racer Gold Rush Replica Black Gold test bike comes in. It has HED wheels and Scott Superbrakes. The Angletech V-Rex fat tire GL63 test bike awaits me in Woodland, Park, Colorado. Now this performance, comfort and speed has me excited. Recumbents get me excited. I couldn't sleep after watching the People Movers Coroplast Video. All I could think about was visions of 'bent fairings and what bike to put a fairing on.

Don't forget about the **People Movers Charity Bent Bash** on Sept. 6th. The RCN crew will be there and we hope to see you!

Viva Recumbent!
Robert J. (Bent Bob) Bryant



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Have you received your RCN#39 yet?

All active subscriber issue mailings should have reached their destinations by this time. If yours has not arrived—give us a call today.

The postal service occasionally misplaces a bulk mail issue or two. Call 206/630-7200 “#” if you’ve had a problem.

DUCK BOOTS, YEAH!

I am a maker of things, an RCN subscriber and rabid reader, a BikeE owner and rider and a ZAP kit owner/designer with my BikeE.

I love your magazine and your rants, especially the more pointed ones. When I read your passate about the clip-in Duck Boots I certainly perked up! I had a similar vision last fall. I love clipless pedals and have been using the same LOOK pedals that I bought from Bike Nashbar in 1984 when LOOK only had one model and was the only brand. They worked perfectly except for a very slight wobble in one axle from a pedal to curb impact years ago.

I envisioned a platform with straps, like a soft snowboard binding that would mount to a cleat and clip into a pedal system. I want to not only wear huge hulken’ winter boots in it, but also Birkenstocks in the Summer! Imagine blowing some wedge by on the flats not only on a very comfortable recumbent, but in Birkenstocks to boot!

I built two carbon fiber platforms, added straps and mounted a cleat. Everything seemed cool, then I went out to ride and found I could clip in but never clip out, like a hotel in California....Ughh! Really, my shoes twisted too much in the platforms to securely operate the pedals.

Wes Lapp
Carbon Creations,
wesl@usa.net.com

Wes, “Hotel California” by the Eagles dates you...and me for remembering. The commercially available clip-in platforms are made

by Pedal Power/ Specialized Pedal Systems. They are made for Triathletes. They are available from Anteltech or Colorado Cyclist.

RANS STRATUS BELIEVER

Your May/June issue of RCN had a picture of my bike on the cover! In the fall of 1996 my husband and myself became the proud owners of Rans Strati (plural for STRATUS). We have had very good success with them and a whole new world has opened for me in the world of cycling.

I was one of those wannabe cyclists, however, I couldn’t get past the whining of an abused posterior. We rode with our children, but just a few miles. At 50 years of age, we became serious and joined a bicycle club. This spring we rode with the Washington DC ‘bent riders’ and were bitten by the recumbent bug. I retired this past February and now have time to ride. This month I will be riding across Michigan and camping along the way with others from our club. At 57 years of age, I am beginning to reach out and enjoy bicycling. I would recommend others not wait this long, but better late than never.

Our STRATI draw many comments and all of them are positive. I am a completely satisfied customer and carry business cards for Recumbent Sea in Moline, Michigan to hand out. RANS, PLEASE continue to make this fantastic bicycle, and to RCN—good job, we enjoy catching up on the latest and the tips you have.

Jan & Terry Teesdale

STRATUS FAN MAIL

I enjoyed your favorable article on the Stratus very much. I have enjoyed mine immensely so far. But I do question tires. With the LWB, would the Conti GP be a good or bad choice? Will I really notice a difference between it and the FasGrip? I am at 220 lbs of pure strength (oh, to be so lucky)!

Peter Lewis
plewis@execpc.com

Peter, At 220 pounds, the Fasgrips are probably your best choice for comfort and the Primo V-Monsters for durability, the skinny and hard 406mm Conti Grand Prix’s are great performers, though pricey. Watch for the new Primo 406mm 20”x 1-3/8” “Comet” coming soon. These were ridden on a Rans Rocket Saturn-V on Slumgullian—they maybe the perfect mix of comfort and performance—Bob

RCN RANTS PAY OFF

I like the new rag—who is the babe by the waterfall? You are getting to be like the big guys, with things stapled in the mag that I can tear out and throw away. My favorite rant: almost all the pictures had captions. Keep it up. The only downside is that every issue shows me a bent I just have to have. I just got July 97 *Bicycling Magazine*. It had three articles on bents—all your rants did some good.

Francis Celino
Francis.Celino@maf.nasa.gov
The *Bicycling* article was indeed excellent. Our hat is off to Jim Langley and the gang who made

recumbents look so appealing to the mainstream masses. The one thing that did get to me is what is a “Bender?” Wade Nelson must be the only person on the face of the earth to use this term. I haven’t heard it in the ten years I’ve been into ‘bents.

DIMENSION EDGE BIKEE

I just received my new BikeE with power-assist from Dimension Edge. It’s been about 2 weeks now and my legs and knees are somewhat sore on the way to getting used to their new requirements.

I’ve been bike commuting to work for about 12 years now and always trying to find some way to make riding more comfortable and less painful. Recently, my shoulders and wrists couldn’t recover from the shock and stress from even daily commutes to work. I got a little concerned recently when bottom numbness didn’t go away until the day after a long ride. I figured it was time to give serious consideration to a recumbent.

I haven’t had a single mishap in learning to ride the BikeE. In fact the worst problem has been that I keep forgetting the kickstand is down. I thought I would be able to ride faster on the recumbent. Sadly, such is not the case, at least for now. Hopefully my speed will improve once my leg muscles are trained. I’ve used a Zipper fairing for years on my road bike, so maybe a fairing on the BikeE would help.

Why did I choose the BikeE? I came across two accounts of people who had done long distance tours on

BikeE recumbents. They seemed to hold up well for those tours. I also noticed the shoulders and head of the BikeE rider were a bit higher than other recumbents—very important for commuting. It seemed like the little extra height was a good idea. I liked the simple 2x4 (beam) design.

Then I ran across Dimension Edge which offered a motorized adaptation for the BikeE, that pretty much clinched my purchase decision. Why the motor? 1) My son started driving this year. 2) I like to adventure to far off places, but can't go that far in three hours under my own power and my local rides were getting boring. 3) If my knees start hurting, I can get home under full engine power.

Fred Lenk, lenkf@anacapa.net

JOHN GETS 1300 MPG!

I just got my RCN#39. I read BJ's article (on auxiliary power), but it has an error in it. He says I used \$11 worth of gas on a trip from Florida to New Jersey. That is way off by a decimal point. I used slightly less than one gallon of gas, about one dollar and eleven cents worth (\$1.11) at 1300 miles per gallon. My system is designed to be used only for the steeper hills, not for cruising. On that trip I did 1500 miles from Florida to New Jersey by way of the Blue Ridge Mountains through Washington D.C. and up through the Pocono Mountains in Pennsylvania and then home.

Thanks
John Tetz

SUPERBIKE BEATS PACK OF RACER DUDES!

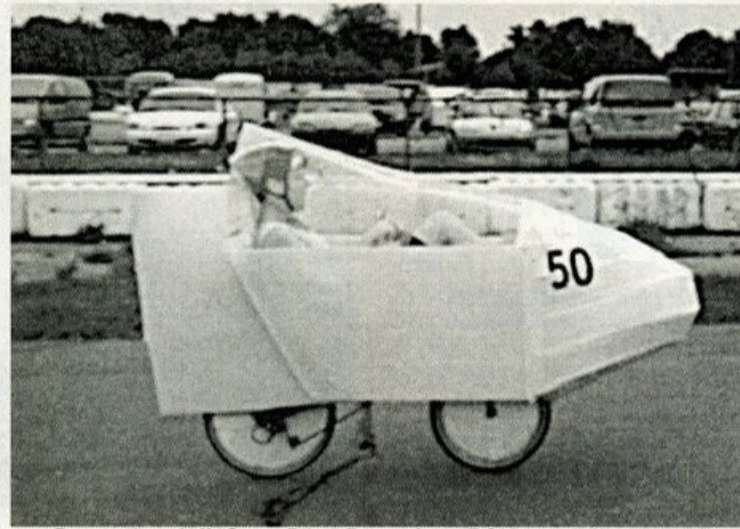
As mentioned in the previous article in RCN, I still had one more test to face in the proving of my SuperVision—my fully faired coroplast 20/20 R-40 wonderbike. One more mission to show the world—go on the big club ride with the racer dudes.

So I finally went out for one of the legendary Wednesday Nite Rides. This is a famous ride I used to do well at when I was a racer dude myself, but with scarcely a hundred miles in my legs, out I went with my SuperBike to face the test. What the heck. For this ride, 50 racers and 50 ultraheads meet at a parking lot like they have been doing for 25 years. Then they trash each other for 50 miles (civilized cyclists also meet at the same time for gentle ice cream rides. It's a huge scene.)

I took off with the gang, amidst some teasing from old pals and quite a few bug-eyes, and eventually merged in with the rotating paceline.

I got some coldness at first, but rode very steady and had nice chats with various speed addicts. After the warmup was over a series of 5 mini-races ate up the next two hours of jamfest....

Basically I was my own peloton



Remember Jeff "SuperBike" Potter from RCN#37. Jeff's back at it again on his coroplast fairing equipped, reverse fork dual 20" wheel ATP Vision! Photo courtesy of Out Your Back Door

and windbreak...but I still had to stay with my own 'pack'...and with the others. Sure, I had aero-help, but I still had to ride 33 mph to bust these guys! The top five riders got strategic on me once and gapped me on an uphill and I had to die to haul them back. It was no free lunch. Heck, I eventually realized I was in for hours of riding whether I was fastest or not! Could I hack it? I was nervous. And many of THEM were using aerobars and tri spoke wheels! Overall, it was quite a thrill being in with that tight semi-pro pack. I couldn't make a single mistake or the image of SuperBikes I was building would be shattered. Plus I'd probably be dead! (This is really intense midwest-style bike racing action—in the heat of one sprint one long-time vet was brought down hard by a youngster and got a broken clavicle! I was very relieved I rode a perfectly straight line despite crosswinds.)

It was fun acting as windbreak for weaker riders. I even brought back to the bunch several who got dropped during a sprint windup. But after several outright jamfests and city limits sprints, the verdict was obvious: the SuperBike wasted all.

Twice, though, top sprinters hung in my draft. It was cool seeing them in my mirror, hugged right along the tail fairing. They thanked me for helping them waste the others. I was part of the gang!

After several whoppings, the supreme Cat 2 leaders rolled by and

grabbed my tail section and tugged me around a bit: "Cool bike... This is all right..." "You do good in this thing..." "Hey, it's the rider... Not many would have the nerve to get in with us like that." And I was in. "It's great for hauling groceries, too!" I

added, trying to freak 'em with versatility. —The SB ain't perfect, but fast, comfy, dry, quiet, fun and a big trunk aren't too shabby!

When I finally wheeled back into our driveway after three hours of hard riding, I thought: Whew! That was fun. Once. I made my point, but I was wasted. What a way to rest after a day's work! Those guys are nuts. Tough...but still crazy. I think I'll stick with fun errands and fun rides.

Sometimes people complain about RCN for various reasons, but from my point of view as someone with experience in big magazine publishing as well as specialty and zine publishing, I can only say 'benters are lucky as heck to have as nice a mag as RCN helpin' 'em out! The scene can hardly fund anything more than a newsletter but we all get a thing of beauty instead! So there!

Thanks
Jeff Potter

BENT QUESTIONS

I have been going through the '97 Buyers Guide, and although it has provided a lot of information, it has raised some questions.

I want a SWB, USS bike and funds are limited. I weigh 250 pounds and am 6' tall; which bikes should I consider under a \$1400 limit? Strength is the big concern!

In some specs you give frames/forks as being 4130 CroMo/CroMo, what is the difference?

I do not consistently get your numbers when using your "Gear Inch

Range" formula. Am I missing something important here? I'm trying to get a comparison to my mountain bike for reference purposes.

Thanks,

Chuck, chuckles@mcn.net
Chuck, I recommend a bike with a lifetime frame warranty, at least a 40" wheelbase and frame triangulation. You might want to clear your weight with the mfr. to see if there are any limits. You will also need a CroMo frame with a CroMo fork. Some mfr's use hi-ten steel forks. Our gear inch formula is correct. Manufacturers submitted their own gear inch ranges and we proofed them. Wheel diameter is not an absolute in this formula. Tire selection can change the number. For some 26" wheels, this could be 24," for some 24" wheels, this could be 22" and for some 406mm 20" wheels with small tires, this could be 18.5 to 19.5." The truest wheel diameter number is one that is measured in front of your own eyes. Hopefully this will explain your query—Bob.

STRATUS FEEDBACK

Your recent article on the Rans Stratus prompted me to write you about my experiences with the Stratus, V-Rex and other bents. For the record, I am 6'3", 220 pounds, and have been riding bikes for 36 of my 49 years. The last 13 years of riding have been on bents. I ride to have fun and maintain what sanity I have left after four kids.

In the early eighties, numbness problems had me wondering if I was going to have to choose between bikes and sex. A doctor I consulted, said that making something numb is not good and will lead to permanent numbness. A friend who owned a bike shop found the Stratus for me.

The Stratus was a great bike. The only problem I had was that I had to remount the seat to get an extra 1" of leg distance (Rans now has a larger frame), that I had to find a longer stem to get the bars closer to my body, and that I had to keep the brakes perfectly adjusted to have adequate stopping. Going downhill on a LWB is a great thrill. I was never brave enough to let loose on a wedgie. Almost every bike accident of mine that I can remember occurred while the biker was going fast downhill. On the Stratus, you feel safe enough to enjoy the speed. I did feel that the bike was slower going up hills, but I have never been a good climber or a particularly fast rider. With experience, you can go up very slow hills (3 mph) without wobbling

Continued on page 36

The Wheel EvoGLIDE & Linear "compact"

by Robert J. Bryant

The Linear compact Wheel/EvoGLIDE is a bike that is making a big splash this season. Since its introduction a few months ago, the bike has become a best seller and Linear, the manufacturer, is reporting record demand.

The bike is an easier-to-ride and shorter version of Linear's popular LWB USS design. The primary design intention of the new CLWB was to easily fit on a regular bike bumper rack and to be light enough for average folks to lift up to that rack. The bike has a high quality aluminum frame, impeccable fabrication and the recumbent drivetrain gift-from-above—the Sachs 3x7. On top of all these goodies, this new bike is readily available and is priced right,—at around \$1000.

The bike is sold in Wisconsin and consumer direct worldwide through Wheel Recumbents in Hales Corner. The bike is also sold as the Linear compact. Since the Linear model doesn't really have a name, we'll call it the EvoGLIDE in this article.

THE DESIGN

Linear's main claim to fame is the unusual, underrated and innovative modular aluminum I-beam frame. The design and custom extrusion were developed by an industrial design/fabrication firm, Kann Manufacturing, in the early 1980's.

With the original LWB folding Linear, the I-beam had rear stay and front head tube/fork quick release attachments that folded to make for a fairly compact package (as compact as a recumbent can be). The new "compact" frame is even simpler with no front derailleur post (it has a Sachs 3x7 hub/3 internal x 7 external=21 speeds) and the rear stays and head tube are TIG welded to the beam. With the new design, the



formed Linear aluminum stays that are considered flexible on the LWB model, are noticeably stiffer on the CLWB EvoGLIDE. For the most part, this is a positive change, though some frame size/rider combinations will notice an extremely stiff ride.

The EvoGLIDE has a CroMo 16" fork that is a shorter version of the 20" fork and very similar to most forks available on recumbents today. We did notice a problem with fork dropout spacing that was too narrow (wheel entry was difficult), though Wheel said they usually check this on bikes before they go out (our test bikes came directly from Linear).

The manufacturer supplied weight on the EvoGLIDE is 25 pounds. Our 40" test bike weighed in at 29 and our 42" at just under 30 pounds (with bar-ends). A 37" frame, non-3x7 performance model with optional frame holes weighs in at

25.75 pounds, according to Wheel.

Linears are sized by the measurement of the I-beam. LWB Linears are available in sizes 36"-45" and custom lengths. The new compact is available in 37" (small), 40" (medium) and 42" (large). We found the sizing to run small, even though a 6' person can ride a 37" or 40" the weight distribution is not ideal.

Riders who purchase the shortest frame that they can fit on will find a harsh ride. This comes from the shortened stiff aluminum stays and the rearward seating position. The front of the EvoGLIDE frame flexes both vertically and torsionally more than most triangulated or steel monobeam frames. The rear stays don't flex much and cause the stiffness. With a minimally sized bike, the rider c.g. is just too far back. The way to resolve this is to order the correct size (not the smallest one you

can ride). This will guarantee that your EvoGLIDE ride will be smoother, more comfortable and more predictable.

This bike is probably best suited for riders under 6' tall. For anybody taller, this means that there is too much weight on tail end and the bike behaves funny in anything but flat terrain. Riders over 6' tall may be able to do controlled "bunny hop" wheelies when climbing steep hills.

We have a section of our test loop that is a sidewalk along a state highway (although we don't make a habit of riding on the sidewalk—at least not very much). The reason we do this at all is that there is a series of driveway ramps or bumps cut into the walkway and a great bump-correction test. This can tell you how smoothly the bike goes over the bumps, how controlled the bump entry and exit are and how

quick the recovery is. The 42" frame really made a big difference in the smoothness of the ride. On steep climbs, the front end was still light, but the weight distribution was much better. Wheel Recumbents says most EvoGLIDE customers are under 6' tall, and those taller are directed toward a Linear LWB.

The theory of trying to make a LWB as short as possible may be flawed, though is mainly dependent on your height, riding style and how bad you'd like to hang the bike on a car bumper rack (or how wide your car is). We have experienced similar heavily loaded rear-ends on the BikeE, EZ-1 and Metro, though all three offer a second frame size.

SEAT & ERGONOMICS

In 1996, Linear modified its seat to include a lumbar bend and a more stretchable ventilated seat mesh

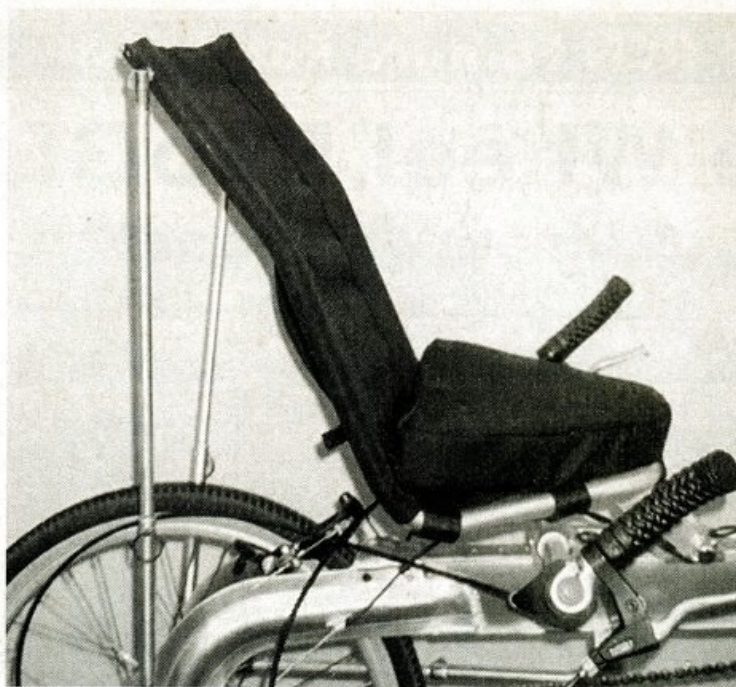
material. The lumbar is odd and not very effective, though the seat is comfortable. With the more stretchable material, the rider seems to push through the lumbar, though the seat comfort seems to have improved. With the tall back and upper horizontal support, the end result for most is an improved seat.

For the new EvoGLIDE they have chosen to make a smaller seat by shortening the back (18" of usable vertical rise) and the seat has a mini-lumbar curve. The shortened seat lacks the firmness, stiffness and upper-back comfort of the taller seat, at least for taller riders. The tensioned fiberglass rod upper horizontal brace seems to be the culprit. It's also a poor place to hang accessories such as a hydration system or seat bag. The aluminum plate seat base with two section foam base is surprisingly comfortable, though not an ergonomically contoured seat base. The seat is comfortable for hour long rides, though minor recumbent-but did set in after two hours. The stretchy mesh seat back absolutely will effect performance. A denser, higher quality seat foam would make the seat more comfortable. The entire seat quick releases off of the bike in less than a minute.

Linear seats have fixed seat recline angles at 70 degrees, which is fairly upright. After our first test bike arrived, we were told that an adjustable seat recline option with telescoping seat supports is available. Our #2 test bike had an adjustable seat recline. This is a recommended option as seat recline is a very personal issue. The more upright the seat, the better the chance that you'll get the dreaded "recumbent-butt" after an hour or two. The more reclined the seat, the more upper back seat-support that you need.

The rider ergonomics are excellent as USS recumbents go. Most riders can reach the handlebars and controls, and bar-end controls are optional. As with most USS 'bents wider riders or those with short arms will find the reach more difficult, though the bar-ends are a solution.

Our bar-end control option included 7" long "L" bend bar-ends with the brake levers mounted on them. The Sachs twist grip shifters were left on the handlebars and there were matching grips on the bars and bar-ends. We recommend that you mount both brake and shifting controls on either the handlebars or bar-ends and do not separate them, Linear/Wheel will do it any way you like. Unfortunately, you cannot use bar-con bar-end shifters with the



The EvoGLIDE seat with adjustable rear stays—RCN

WHAT WE LIKED

- User friendly/compact size
- No-Idler drivetrain
- Sachs Neos 3X7 drivetrain
- Great companies/warranty
- Excellent price point/value

WHAT WE DIDN'T LIKE

- Seat upper back support
- Rough ride for tall riders on short frame sizes
- Brake pads need a boost
- Bikes are sized small

WHAT WE'D LIKE TO SEE

- A large seat bag
- Fenders
- Waterbottle cage/computer mount on Linear modular slider
- Front derailleur option (42 or 63 speed capability)
- Brake options (drum/V-,hydraulic?)
- Folding option (rear stays and front headtube)
- Bike storage/transportation semi-hard case
- Tall seat option

EvoGLIDE as they do not work with the Sachs 3x7 (or so we're told).

The EvoGLIDE handlebars are a very wide—28.5" and another inch or two with the bar-ends (they flare out). The bike is a rolling recliner with arm rests—seemingly right out of your living room.

DRIVETRAIN

The EvoGLIDE has a very smooth and easy shifting drivetrain thanks to the Sachs equipment. Our test bike had the Sachs Neos single crankset (46-tooth with chainguard), 3x7 rear hub (3-spd. internal/7-spd. external), and rear derailleur matched with Sachs twist grip shifters. The whole combination works marvelously well. RCN BG specs call for a Dotek crankset, which we recommend upgrading due to it's mediocre chainring quality, though neither of our test bikes came equipped with the Dotek.

The EvoGLIDE's Sachs shift throws are shorter and crisper than the similar and lackluster Grip Shift

SRT 400, though not as good the Grip Shift SRT 600/X-Ray or ESP. Shifting the 3x7 is an absolute joy, especially after having so much experience with the wrist wrenching SRT400's on our test Rans Rocket (if you have these on your bike, one of the best upgrades you can make is to get rid of them). It's not that the SRT400's are poor quality, it's just the throws are long and the front derailleur shifts take a lot of effort and after awhile you'll resent them.

The EvoGLIDE can be geared rather low. We've seen three stock variations, two differ from the published specs. Be sure you discuss gearing when ordering this bike. Adding a double or triple crank (42 or 63-spd.) would be an ideal upgrade. Using it for manual shifts to utilize two different gear ranges would work great, though a front derailleur is an available option. The bike does not have a chain idler, nor does it need one. The drivetrain runs free and the lack of an idler is a definite positive. This is truly one of the

best benefits of the compact design style.

BRAKES

The brake combination is nothing to brag about to all of your riding buddies, that's for sure. However, we were favorably surprised at the effectiveness of this seemingly blasé combo. The front brake is a plain-jane alloy medium reach Dia Compe sidepull with no quick release feature and mediocre pads. The rear brake is a Dia Compe Bull Dog BMX sidepull, equally mediocre, but has a quick release. Incredibly, the easy EvoGLIDE cable runs and CLWB USS design allow the brakes to do a pretty fair job of stopping this new compact.

Our second test bike came equipped with the Kool Stop brake pad option which offers a noticeable increase in braking power. With the aftermarket pads in place, our only brake rant is the lack of a front quick release. The answer is an optional matching Bull Dog for the front.

20/16 COMPACT COMBO

The 20" rear and 16" front are the key to the "compact" recumbent design. It works exceedingly well and keeps the bike short enough so people don't complain too much about long recumbents. The road feel of the 16" front wheel is not as good as the 20," though for the moderate speeds that a compact is designed for, it's fine. We find that anytime you add a 16" front wheel into the picture, the handling quickens and more attention is needed to the road, though compact recumbents are really user friendly and the 16" wheel is not as much of an issue as it is on SWB models. 16" wheels seem more susceptible to flats and accelerated tire wear as well.

The stock EvoGLIDE wheels are a nicely built medium grade 406mm 20" rear and 349mm 16" x 1-3/8" front built with stainless spokes. A 451mm 20" x 1-3/8" rear wheel is optional and will increase the high gear from 101/110 to 104/114. The optional 451mm Primo 1-3/8" tire is a near perfect match to the stock Primo 16" front tire, and when performance is considered, will be the way to go. The wheels on both of our test bikes stayed perfectly true the entire test.

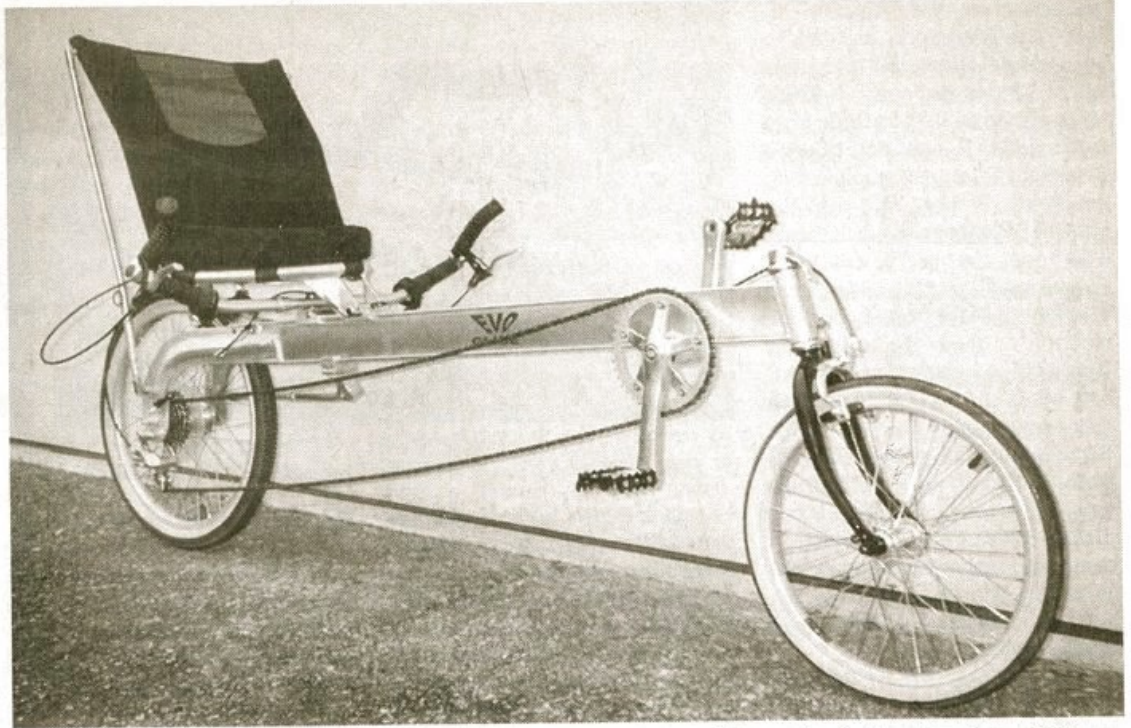
OPTIONS

As part of our frequently updated testing procedure, we like to see as many options as the manufacturer will send. There is nothing quite as frustrating as being unable to take

a single waterbottle or find a place to stash your keys and wallet. Without a seat bag or rear rack the bike is destined for life as a bike trail cruiser or as a short trip only recumbent, limited to two hour rides from home.

The EvoGLIDE is so new that the options are still being developed. Linear recommends that you mount a water bottle cage on the seat supports, though we didn't have any of those small diameter water bottle bolt-on clamps. We suggest you order water bottle cages with your new bike, rather than try and retrofit after the fact. I stashed mine in the velcro seat back pocket (not recommended).

Wheel Recumbents is the best source for optional equipment. They are offering upscale treatment for the EvoGLIDE. We've seen a custom drilled out frame, and heard of 42 and 63 speed models, V-Brakes, disk-brakes and there is a new Zzipper fairing. Wheel will ship anywhere, so you don't have to live in the Cheese capitol of north America to



Our 42" framed EvoGLIDE test bike #2 has bar-ends and a reclining seat adjustment option—RCN

So what's not to like?

Linear recumbents have been considered a bit passe and not too exciting by some enthusiasts. Maybe this isn't so much due to the bike, but because it's an established design that hasn't changed much over the years. Linear seems to have lost popularity since Rans and ATP Vision have come on so strong, though interestingly enough, Linear seems to have its own dealer base outside of the recumbent mainstream (if there is such a thing). Probably the biggest black marks against Linear in the last few years are the SWB and tandem. These are very poor offerings that have probably done more to detract from the Linear name than anything else. We rode the SWB and tandem last year at People Movers (for the first time) and were duly unimpressed. Both use a very steep head tube angle that has to be near 80 degrees, thus making the handling very odd. The SWB and tandem are currently on the back burner and hopefully Linear will make some updates to these lackluster models.

The EvoGLIDE is the *BEST* new Linear mode since the original LWB. Dealers and riders who are ignoring the modular potential of this bike should take note. Even our resident Linear critic liked this new compact!

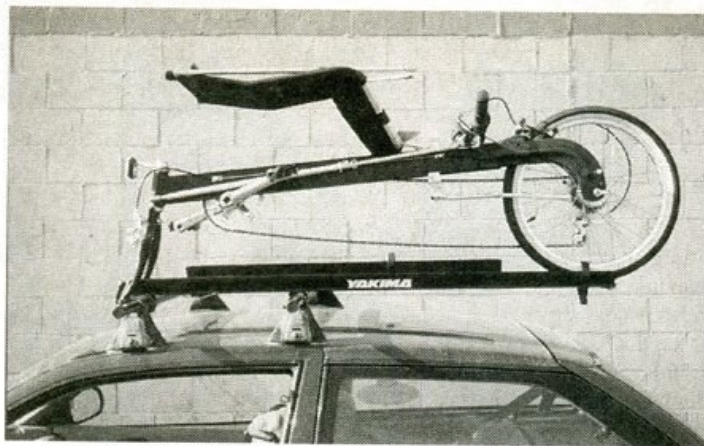
SPEC SHEET

- **MODEL:** EvoGLIDE
- **PRICE:** \$999-\$1049 (Linear).
- **TYPE:** CLWB USS
- **DIMENSIONS:**
 - **Wheelbase:** 56.5"
 - **BB height:** 17.5"
 - **Seat height:** 23"
 - **Boom length:** N.A.
 - **Chainstay length:** 13.5'
 - **Seat recline:** 70°
 - **Head tube:** N.A.
 - **Weight dist.** 70°/30°¹
 - **Weight:** 29/30pounds²
- **FRAME:** TIG welded Alum. I-beam. Rear rack mount boss, front fender mount bosses.
- **Fork:** TIG welded CroMo Unicrown.
- **WHEELS:** 20" 406mm (rear); 16" x 1-3/8" 349mm (front)
- **Rims:** Sun
- **Tires:** Primo 16" x 1-3/8" 349mm 85 psi (Front); ACS
- RL Edge 20" x 1.75" 100 psi (Rear)
- **Spokes:** 36 SS 14 gauge (Front); 36 SS 14 gauge (Rear).
- **Builder:** N.A.
- **CRANK:** Dotek 46-T. alloy with chain guard.
- **DERAILLEURS:** Sachs Centera (rear); none (front)
- **COG CASSETTE:** Shimano Hyperglide HG 11-28 Freehub.
- **CHAIN:** Sachs Sedis
- **BOTTOM BRACKET:** Suntour Greaseguard.
- **HEADSET:** Suntour Greaseguard.
- **GEARING:** In inches (based on a 20" drive-wheel) Test bike#1: 21-102 (42-T); Test bike#2: 23-110 (46-T).
- **SEAT:** Linear Custom.
- **Back:** Aluminum frame, suspended mesh back.
- **Base:** Aluminum with two layers of open-cell foam, nylon fabric cover.
- **Adjustment:** Sliding seat/Q.R. pin and allen bolt h'bar adjustment.
- **BRAKES:** Dia Compe Bull Dog (Front); Dia Compe 730 sidepull(Rear).
- **Handles:** Tektro.
- **PEDALS:** Resin platform.
- **BARS/STEM:** Linear aluminum with optional MTB bar-ends.
- **PAINT:** Anodized Gunmetal.
- **SOLD BY:** Wheel Recumbents 5722 S. 108th St. Hales Corner, WI 53130 Phone# 1-800-362-4537 Fax#414/529-6605 Linear Mfg. (Dealers) Ph#319/252-1637 Fax#319/252-3305

take advantage of the EvoGLIDE. They know what works, and they've been asked all of the questions before. The bar-end option is \$20; a series of custom 2" holes drilled into the frame \$75 (limited time offer); a Blackburn front rack (mounted on the rear) works best on the EvoGLIDE, though the rack mount will be an exercise in creativity (Wheel installs them). You may need to torture-twist the front support and mount it on the brake bolt; a rear fender will be a chore to mount. Your best bet is the rack with a splash guard or two, again from Wheel; the BikeE seat bag fits on the EvoGLIDE perfectly. Harry from Wheel says two size 13 shoe boxes will fit inside one of these babies. Linear is working on their own seat back bag option, and Wheel has mounted bags on a stem coming out of the head tube (over the front wheel) as well.

In conjunction with Zzip Designs, Wheel has developed a small Zipper fairing (\$299) that sets above the frame. Our first thought was whether the full size Zipper would fit on the bike (it does, and it's \$399), as the small Zipper's coverage is limited, though it does match the "compact" personality of the EvoGLIDE.

The Linear could really use an



ABOVE: The EvoGLIDE on a Geo Metro roof rack
RIGHT: The EvoGLIDE is a wide bike with USS and bar-ends.

I-beam computer/water bottle cage mount. This could be easily adapted from other modular parts. Currently, the only way to mount anything on the I-beam is to drill and screw or clamp. The new kickstand designed for the EvoGLIDE works very nicely, though one of ours broke. It slides on the I-beam just ahead of the rear wheel.

LINEAR LWB vs. COMPACT

If you are in the mid-upper five foot range and looking for a casual under-seat-steering easy-to-ride recreational recumbent, the Linear/Wheel EvoGLIDE may be the trick.

If you have dreams of open road travel and world tours, or even any ride that requires a load carrying capability, get the LWB. The LWB has the taller seat, better weight distribution, a 26" or 700c rear wheel choice and you can even order it with a Sachs 3x7 as a 21, 42 or 63 speed. Linear now offers a full size travel bag and wheel bag option for the Linear LWB folding model.

LINEAR vs. EvoGLIDE

The two bikes are virtually identical. Harry Wozniak



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and the guys from Wheel Recumbents/Wheel and Sprocket actually commissioned the design, thus it's labeled as a Hansel/Wozniak design. The Linear compact can be purchased from any Linear dealer as long as it isn't located in Wisconsin, USA, where Wheel has an exclusive.

ROAD NOISE

The Linear LWB folding recumbent has a reputation for being a noisy bike. We all thought the culprit was the folding joints squeaking against the I-beam (keeping them cleaned and lightly greased helps). That is one of the reasons for our enthusiasm for the EvoGLIDE concept: take out the folding joints and no more squeaks(?).

Well, the squeaks are gone for the most part, though the EvoGLIDE is noisier than some recumbents. We experienced the steering rod ball-detent adjustment pin rattles on the frame, though Linear has just introduced rubber coated ball-detent pins that really quiet the rattles. Another issue to deal with is the constant clicking noise of the 3x7 hub. This is part of the wonder and karma of the 3x7 and you will eventually get used to it. Ours seems to get quieter after it's warmed up, though the hubs are noisy by comparison.

RECOMMENDATIONS

The new Linear rides and steers very nicely. One RCN correspondent said it was the best handling compact he'd ridden, and he isn't known to be a Linear fan. He also noted that the bike seemed fast, something that a few Wheel riders have also acknowledged.

On our local 22.4 mile test loop timed rides, we found the bike to be slower than the Rans Rocket, BikeE RoadE, Haluzak Hybrid Race, Gold Rush Replica or our Trek 1220 road bike. The bike has rather quick handling, more so than other compacts. There is pedal steer and wandering at speeds of 16+ mph. This seems to be caused by the super wide USS bars, lightly loaded 16" and upright head tube angle/neutral steering geometry. Most "compacts" are designed to behave best at low-medium speeds, so this was no surprise.

The EvoGLIDE is a casual recreational bike not really meant for technowecniecs, hammerheads, hot-rodders or high performance gurus seeking the end-all recumbent speed experience. The Linear I-beam frame can twist and torque more than a triangulated frame or steel monotube, though unless you are a real hammerhead, you probably won't notice this. At this point, the

EvoGLIDE is not much of a tourist either, unless you plan to tow a trailer. Adapting panniers would be tough, and then there is that rearward c.g. This bike is best suited for new recumbent riders, preferably those interested in a user-friendly USS low-bottom bracket (BB) design for recreational use or day touring. For extreme riders, the new Linear has too much weight on the hind end. This can be resolved somewhat by moving up to a larger/longer frame size.

If you are in the mid-high 5-foot range, this is a compact user-friendly machine that is equal in quality to the BikeE and Vision Metro, yet is the only "compact" to offer under-seat steering. The Linear compact/Wheel EvoGLIDE is a welcome addition to the "compact" fleet and a great value. Our only word of warning is to be sure to get the correct frame size.

Whatever model of recumbent you choose, keep in mind that there are dealers and specialists. Wheel Recumbents is the EvoGLIDE specialist and has bikes in stock. They can handle custom builds and offer a full line of EvoGLIDE optional equipment via in store sales or mail order. The Linear compact is available through Linear dealers everywhere but Wisconsin.

Steve Hansel and the Linear crew have a well established reputation of excellent customer service and fabrication, though the quality of the Linear design can vary greatly between the different models. The new compact/Wheel EvoGLIDE is the best new Linear to come down the pike since the original LWB.

EVOGLIDE UPDATE: Harry from Wheel called just before press time to let us know more about Wheel custom options:

- A non-3x7 high performance model is available.
- A 451mm rear wheel (20" x 1-3/8" is optional. This would allow for a matching Primo 1-3/8" tire set—the best performance choice.
- A 42/63-speed model using a 3x7 and a double/triple crankset is optional and costs \$150 including a front derailleur and post.
- The tall Linear LWB seat will fit the EvoGLIDE and is optional.
- Telescoping seat stays are available on request (recommended).
- The bottom bracket can be placed higher on custom order.
- The EvoGLIDE fairing is \$299; the larger Linear Zipper is \$399 and will fit.
- B.O.B. trailer Nuts for Sachs 3x7 bolt-on hubs are now available. □

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The Turner T-Lite

by Robert J. Bryant

Turner Enterprises is a one man company that was started after the demise of Hypercycle¹ back in the early 1980s. Milton Turner has had a long history in recumbents, though the Turner name can be a controversial one, or can bring about the most devoted of fans.

Turner is a very personable guy, fun to talk to and one of the best recumbent pitch-men for his product. His bikes, however, have not enjoyed a reputation that is on-par with the pitch. Turner is talented at pitching the superiority of his design, yet tends to overlook problem details in his own bike. There is always at least one glitch or problem with each bike we've seen over the years. Whether it be a crooked derailleur post or idler mount bolt threads (common on Laid Back 90's circa 1990), old stock components (we once received a ten year old NOS tire on a Laid Back E) and thin dropouts that have plagued Turner bikes for years. The T-Lite is Turner's newest bike, and we were hoping to be pleasantly surprised.

In years past, Turner has sold primarily budget frame-kits for "10-speed" conversion in the under \$500 range. In 1996, Turner went upscale with the introduction of the T-Lite. We have been anxious for a T-Lite test bike since it's inception. Given our past experiences, we requested that Turner not send us a T-Lite until it was *refined and dialed* and he could supply us his *best*.

TURNER "DIAL-IN" WOES

After six weeks of testing and countless times on the workstand for more dial-in, the T-Lite has become one of the most problematic test bikes that we've had here at RCN. There is nothing monumentally bad about this bike, it's just a long list of dial-in snafus that can be very frustrating. When a Vision, Rocket, Easy Racer, Haluzak, BikeE or any number of other recumbents come out of

the box and are road ready and dialed within thirty minutes, spending a full day just to diagnose the T-Lite's problems, becomes the overshadowing theme of the event. At

The T-Lite itself is a variation of Turner's lower line bike which originally was the "Laid Back-E" ("E" for Economy), and quite possibly the best Turner design³ given the

R & D and updates take longer to incorporate. The craftsmanship on the T-Lite is the best we've seen from Turner, yet the bike has many of the same drawbacks that we've seen for

years. The dropouts are reverse (wheel enters from the back) and the spacing is incorrect. The rear stays are pressed (squashed) onto the dropouts (ala low-end department store bikes). Yet, the main tube is nicely pressed (ovalized?) to a nearly flat form just ahead of the rear wheel. With the incorrect rear dropout spacing and reverse dropouts there is no one 'correct' centered and aligned position for the wheel and guesswork is required. The bike is available with a 24", 26" or 700c rear wheel, so the axle position varies,⁵ as will the handling, steering geometry, braking and brake selection. We saw no printed data that discussed the benefits or component changes as varied by the rear wheel change.

Some believe the laid back head angles that are common on the Hypercycle Turner and S & B offer an improvement in high speed stability. This is an arguable point. What is certain is that these same laid back head angles take away from low-speed stability, create fork/wheel flop and make new riders uncomfortable. Our T-Lite's 26" rear wheel is the best choice given the alternatives as the situation worsens with the 24" rear wheel and an even more laid back head angle.

An upgrade for the T-Lite is the new Kalloy UNO MTB stem (looks like an Aheadset stem, but it's not) and bar which replace the old Turner one-piece system that had a soft/thin metal plate/stem welded to the bars, and was positioned too far away from the rider. The new bar/stem combo brings the controls closer and the bar-reach was very much improved once dialed.⁶ Mounting MTB bar-end extensions with bar-con (bar-end) shifters and the brake



times we felt like the Turner R & D department, rather than critics. Discussions of our findings can be found throughout this article.

T-LITE DESIGN

The design is your basic SWB under-seat steering (USS) recumbent, utilizing a 26" rear wheel and a 16" front wheel. Turner has been consistent over the years in using only 16" front wheels, even when tires were in scarce supply. The rear frame is and always has been triangulated. Initially, the front end was a version of the Hypercycle's tri-tube frame² design which was found in the original Turner Laid Back Bicycles of the 1980's and the Laid Back 90 in the early 1990's, and finally the Laid Back/Turner 2000 ceased production last year.

The E was a square-tube steel version of the Hypercycle/Laid Back Bicycle. Turner sold these primarily as 'frame-kits' so riders could be on the road for around \$400⁴ after taking parts off of their own bikes. The T-Lite is an evolution of the Laid Back E with cross breeding of the best of the Laid Back/Turner 2000.

With its fairly low stance (16" front wheel) and shell seat, the USS bars are a fairly narrow 24." This makes for a fairly aerodynamic SWB USS machine.

T-LITE FRAME

The T-Lite frame has a sleek and sexy original look all its own. The frame has a 2" CroMo main tube that is TIG welded. The build of Turner frames is subcontracted, so quality has varied over the years and

levers fitted would be the ultimate Turner setup. The bar/stem problem is the clearance over the seat.⁶ The stock spacers and bolts don't work with all seat positions, and the bolts aren't long enough when you recline the seat.

Our T-Lite had rear wheel spacing woes from the start. The cups, cones of the rear hub were completely loose. When it did work, the hub bearings would seize on the test stand. The bike was seemingly knowingly shipped with this problem. Luckily for us Turner was straightforward about it and set us up with his wheel builder, Winkel Wheel, here in Kent. Winkel went way beyond the call of duty and repaired the problematic bike. The bottom line is that the T-Lite dropouts are too thin and they don't match the spacing of the rear hub, so Turner tried to respaced them which made matters worse. Our hope is that other customers won't have to deal with this situation, though it seems that until he changes the dropouts or has his wheels spaced by the wheel builder, the problem may not be eradicated.

Our test T-Lite was shipped to us with a straight bladed CroMo fork which made for very quick handling. Several weeks after we received the test bike, Turner called to say that he had decided to offer the straight bladed fork on the small frame size only and that he would be sending another fork soon.

The replacement was an equally nice CroMo fork powdercoated black to match the bike. This fork adds an inch to the wheelbase, though our measurement of 38.25 inches is still shorter than the advertised 39 inches from Turner's information. The new fork appears similar to the J & B CroMo fork used on many SWB 'bents, though we are not sure of its origin. The new fork created yet another new problem.

BRAKES

When we replaced the fork, we found that the ACS Boa long reach BMX sidepull would not mount on the front of the fork as done on the original fork. This brake had to be mounted on the back of the fork with an improvised cable routing that looped under the brake and came into the brake from below and on the chain side. It was amazing that this setup even worked at all. We were sure it was incorrect and that we needed a different brake. We requested the *correct* brake from Turner, and he replied that we had it

already. With this odd cable routing and back-side-of-the-fork mount, we estimated front braking efficiency loss at 20+%. Given the already mediocre braking of the BMX ACS Boas, there's not much room for this

DRIVETRAIN

We were unable to make Turner's optional tall gearing work properly. According to spec, it's supposed to be a 32/50/56, but our test bike was delivered with a 28/50/55.



The T-Lite's wacky front brake cable routing and noisy bearingless chain idler. Both are badly in need of updating.

loss. It's not that the Boa's are such a bad brake, but recumbents tend to be ridden harder and faster and the brakes are used differently than BMX bikes and the Turner has ballyhooed the T-Lite as a performance machine. The Boa's stop okay and are very similar to stock Bull Dog's or other BMX brakes,⁷ and as we found out, cable routing is critical.

The jump from 28 to 50 is just too large. While climbing, I shifted down into the granny low gear. The chain crosses the teeth of the middle chainring, snagged the teeth of the middle chainring, and sucked up into the upper chain creating a *drivetrain crash* that left me stranded in the middle of a steep hill on more than once occasion while testing to see

what was going on. Experiences like this lead us to wonder if anyone does R & D on component compatibility or do they just order parts from a catalog. We then changed the gearing to a 28/42/50 and the bike shifts in all gears and all are usable—the chain suck is gone, though now the gearing range is not wide enough.

After the spacing and gearing woes were corrected, Turner's Sachs Neos rear derailleur shifted clean and crisp. The front shifting on the Turner wasn't so hot. While trying to make Turner's incorrect gearing setup shift, the front derailleur cable bolt arm snapped off during an adjustment.

The Sachs twist shifters work really well. We found that the level of effort required to make front shifts with the Sachs twist grips is noticeably easier than the equivalent, yet lackluster GripShift SRT400. We've noticed this on the BikeE and Linear compact test bikes as well.

The biggest problem with the drivetrain is the chain idler. It's the noisiest recumbent idler/drivetrain that we've experienced. The Turner idler doesn't roll on bearings, it's a delrin-like idler that spins on a bolt. There is some play in the bolt/idler mounting, so the idler wobbles as well. It's a constant noise that could eventually drive the rider crazy. Turner claims that the idler doesn't need bearings, however, the bearings are what keeps the idler quiet and smooth running, whether they need it or not. We readjusted the idler many times. This quieted it somewhat, but there is still that constant drone from this completely unacceptable loose fitting, bearingless idler. We were vindicated when it became known that the T-Lite featured in the buyers' guide was equipped with an ATP Vision idler.

With the gearing and chain-idler woes the Turner chain management gets two thumbs down.

WHEELS/TIRES

Now here is a place where the

SWB DESIGN AND BOOM LENGTH

Boom length is one aspect of SWB design that is often overlooked. It is a direct derivative of wheelbase and heel/front wheel interference, though the equation often brings surprising information to light. Some manufacturers go for a minimal heel interference with a 36"-39" wheelbase, others are not concerned with heel interference and offer wheelbases of 40"-46."

Riders over about 5'10" +/- tall can benefit from a 39" or longer wheelbase. SWB design wheelbase and head tube geometry directly relate to boom length which effects boom flex,

ride and handling. Compare these boom length numbers (measured from the top head tube/main tube connection out to the bottom bracket shell) for fun:

BIKE	WHEEL BASE	BOOM LENGTH
Turner T-Lite	38.25"	21.5"
Haluzak Traverse	40.5"	20.5"
Rans Rocket	39.75"	14.75"

The Turner has a long boom, primarily due to the laid back head angle and shorter wheelbase. The Haluzak's boom is shorter than the Turner, though still quite long given the wheelbase. This is due to the forward seat position (and c.g.) as well

as the laid back head tube angle (though not as laid back as a Turner). The Rocket has no more heel interference than the Haluzak, yet the boom is shorter and stiffer.

"Pedal steer" is steering input that makes the bike harder to track in a straight line. This generally happens on SWB recumbents with wheelbases of less than 39" or a laid back head tube angle. Short, stiff booms dispel pedal steer which in turn provides easier more predictable tracking and high speed stability. Our Rocket or V-Rex test bikes have no pedal steer, which is what makes them such desirable bikes. □

Turner stands out. The wheels are built in Kent, Washington, by Winkel Wheel. I spent an hour or so discussing wheels with Winkel while they respaced and repaired the hubs. The Sachs 5000/7000 hubs are not particularly exceptional, but the build quality is and the wheels have been trouble-free since the Winkel hub repair job.

The tires worked great throughout our test, though they are not the best match. The front was a 16" x 1-3/8" ATP/Primo 85 psi which was smooth and fast. The rear tire was a 26" x 1.75" Tioga City Slicker 90 psi, which is a good tire, though too wide to be matched with the front Primo.

Our 26/16 handled very nicely. SWB recumbents with 16" front wheels offer quicker, less forgiving handling all stemming from the sheer diameter of the wheel. Every road hazard, rock or pebble feels harder on a 16" front wheel. We are not against the use of 16" wheels, though we generally we find them *not* as fast as their 20" counterparts, however they can make the bike lower and more aerodynamic which could make the bike faster, though at a cost.

WORLD'S MOST ADVANCED RECUMBENT SEAT!?

Recommended by a leading sports medicine doctor!?! The Turner seat is stiff, one of the stiffest, at least from the base to the mid-back. It hard-fastened to the stiff frame (with full rear-triangulation) just ahead of

the stiff rear wheel. I cannot remember when I've been jarred so much on a test ride. And we aren't even talking about seat comfort yet.

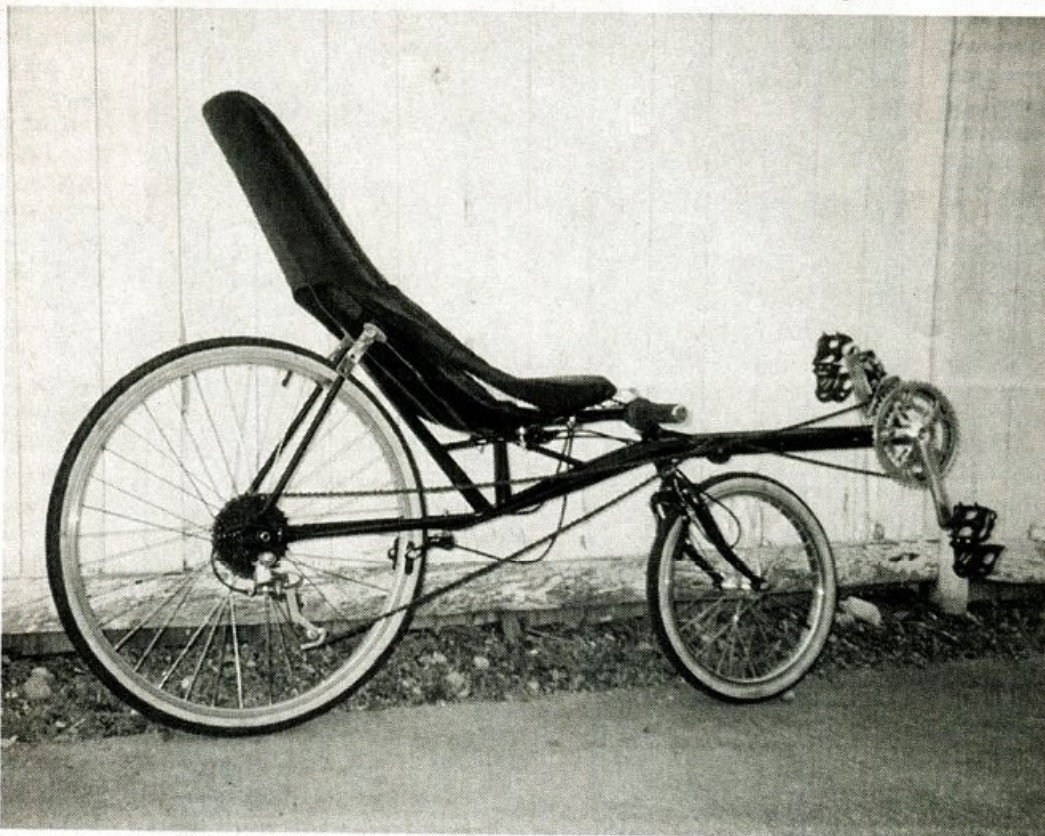
The Turner tall seat shell comes up to my shoulders. The seat has a slip-on vinyl cover that has some

with the lumbar pad. The seat base is small and best suited for riders in the 160 pound range. Where the seat back meets the base there is a sharp bend that my tailbone and lower back became quite intimate with and anything over an hour became a painful

not long enough. To get the proper clearance height, we tossed the stock seat-base spacers and stacked washers to get the correct seat elevation and ultimate recline angle.

There are just three seat settings on the seat base. Certainly more can be drilled in the fiberglass seat should they be needed.

The seat-back mounts are "L" brackets that bolt to the frame and seat. There are just three recline angle settings which is not enough. There wasn't a locknut in the bunch. Liberal amounts of lock-tite are necessary when building up your T-Lite. The easy defense to this scenario is that any hardware store can supply upgraded nuts and bolts, however, it is my feeling that for \$1250, Mr. Turner ought to be doing the shopping. After mounting and re-mounting the seat a half dozen times (very time consuming), our Turner seat started to develop star shaped stress cracks at the four seat bolts. Turner said these were just in the gelcoat, though



mesh sections and layered foam. Sewn-in pockets on the underside of the cover slip onto the top of the seat back and forward edge of the seat base. The cover is not wide enough to cover the sides of the seat and there is no side fastening which exposes the layers of foam, mesh, vinyl, and the seat shell itself.

The seat back has one angular bend, and past bikes have come with a movable lumbar (foam that you tape on the seat back under the seat cushion). This T-Lite did not come

event.⁸ Turner's seat sales pitch includes quotes from a sports medicine doctor who, we are told, *does not* ride a Turner recumbent.

The seat mounts are among the worst we've seen. The seat mounts via two base bolts and two back bolts. This is basic hardware store stuff that looks crude and most of the bolts were either too short or too long. The base bolts were long enough to clear the plastic washers that lift the seat above the handlebars, but when we tried to recline the seat, the bolts were

only time will tell.

The upper seat mounts are approximately 60% up the back of the seat. Because of their placement, the upper back of the seat flexes pretty good, however, the lower part of the seat is too stiff.

The allure of the simple fiberglass seat design can be a strong one. They are simple, mount lower and can be easily customized with layered foam. However, today's riders demand more comfort which calls for a more advanced seat, of which the Turner seat falls short. Turner does offer an upgraded carbon fiber seat shell, though this won't do much for comfort.

BOB'S SIMPLE RULE OF SEAT COMFORT

"Let your hiney be your guide"

Recumbent bicycle seats have never been better.....and in some cases—worse. Some of the best offer 0-pressure point all day bicycling seat comfort, others offer recumbent-butt that can be nearly as bad as a wedgie (upright).

My simple rule of recumbent comfort is as follows: Go out for a two hour ride and see if your butt hurts. If it hurts, try another bike.

If a seat is uncomfortable around a parking lot, the odds are that it will hurt you even more after two hours. If a seat is initially comfortable, that's when you

want to consider it for the two hour (or your normal ride) test.

I detest poorly designed recumbent seats. Really, why bother? I can be comfortable for an hour or two on a wedgie. An uncomfortable recumbent seat can really shoot down an otherwise great design and the ultimate argument against the recumbent as a viable and *comfortable* cycling alternative.

Keep in mind that sometimes it's not the seat, but the pedal angle (seat back and base relationship). When there are problems in this area, it's usually the inability of an individual rider's body to deal with these ergo-

nomics (high bottom bracket/upright seat). This situation can require a longer learning curve, or be as simple as a recline, strap or velcro fastener adjustment.

Comfort test results will vary between riders, but the famously comfortable seats are widely known and include: Rans, Lightning, Haluzak and Vision. For those who don't have comfy seats or offer other excuses, I suggest going back to the drawing board or offering a proven comfortable seat like that from Rans that is available to other manufacturers. □

Okay, we admit that the Turner is a decent performer—*once dialed in*. In windy conditions it did roll farther than our test Rocket in a coast down, though we've had the opposite results in a windless coast down or in a Rocket aero-tuck (sliding down and forward in the seat while raising your knees and coasting). Once dialed, the T-Lite could be a good performer, though still not in the league of dedicated performance bikes.

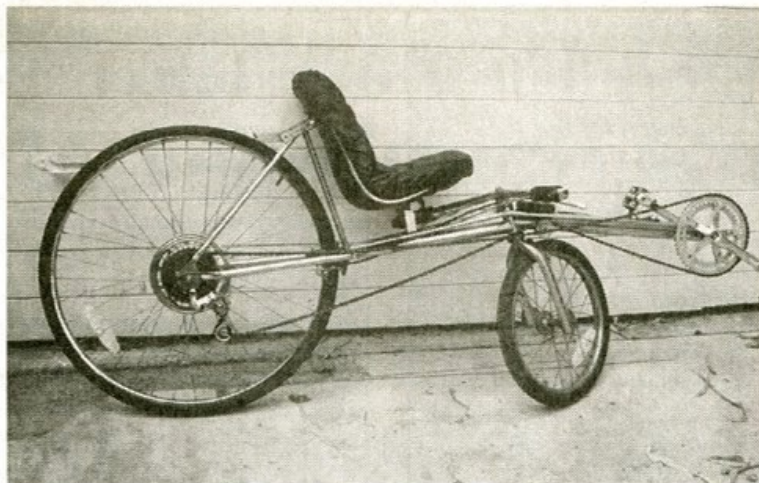
The T-Lite's handling is quick and precise, though the bike shows lack of refinement and feels undialed—like something is missing. The handling refinement is also worthy of mention given that the bike is available with a 24", 26" or 700c rear wheel. Maybe we chose the best wheel combo for the T-Lite or was it the luck of the draw?

The Turner does seem to coast and roll quite fast, though once pedaling, the noise and imperfect chain management brought me back to reality. I found myself wanting to coast more to keep the drivetrain racket to a minimum, thus affecting the performance.

The allure of fantastic performance is part of the pitch, though we found no discerning performance benefit between the T-Lite and other SWB machines.

OPTIONS

One of the aspects of recumbent bicycles that has improved by leaps and bounds is manufacturers designing model/make-specific options: seat bags, fenders, racks, computer mounts, chain guards and fairings. Unfortunately, the Turner is sadly lacking in this department. There are no braze-ons, no place for water-bottles, hydration systems or computers, and you must be creative to mount a rack. Again, owners are left to their own ingenuity to make things work. A rear rack can be mounted to the upper seat supports, though it may require some twisting and bend-



Milt Turner's Hyper Cycle circa 1983

ing of the rack mounts. Bolt-on water bottle cages can be added and you can always drill-mount them to the fiberglass seat.

mented, "every other rider is pleased" and that pretty much was the extent of his response.

Turner has devoted customers, those who love his machine. I won't try to dissuade these devotees, but I



The Turner Laid Back "E" circa 1991

TURNER ENTERPRISES

Turner did not like hearing about the problems with our test bike. We sent several detailed letters requesting updates to no avail. In Turner's correspondence he com-

can say that the Turner T-Lite doesn't do well in product comparisons with comparable machines. The problem as I see it is Turner's inability to accept standard bicycle or even recumbent theories of design. He

chooses to debate and defend his choice of frame dropouts, idlers and what is acceptable on \$1250 bikes. If these problems were corrected, the T-Lite could be a contender. The bottom line for us is the difference in what is deemed acceptable. We feel a recumbent should setup/dial-in like a new Trek upright. This bike leaves too much to the unknown which could turn into a frustrating mess for the newbie 'bent owner.

In years past when Turner "kits" were inexpensive, the critical details that have overshadowed this article are less important. With a \$1250 bike, Turner is in the league of the Vision, Rans, Haluzak and others, all offering refinement to a much higher degree. The T-Lite Deluxe is a very poor value. At \$2195, it offers nicely upgraded components with a mix of Sachs New Success, Ritchey and dual pivot brakes, however, owners will have many of the same problems as we've experienced.

There are reasons why you may want this bike. The riding position is user-friendly, the bottom bracket is lower than the competition, the riding position less extreme and, of course, there are a few devoted owners who may not agree with RCN.⁹

If you're intrigued by Turner's design theories, you may want to buy a frameset and have a bike mechanic carefully set up one specifically for you; but have them read this article before they order parts or reach for the tools.

Riders who have enjoyed past Turner recumbents should appreciate the ride and handling of the new T-Lite, though it's unfortunate that this bike comes with so much unnecessary baggage.

For more information, contact: Turner Enterprises, 1350 E. Flamingo Rd., #73, Las Vegas, NV, 89119. Ph#520/290-5646. (Turner's business address is in Las Vegas, NV, however, his phone, office and warehouse are located in Tucson, AZ.) □



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TURNER TEST NOTES

1 THE HYPERCYCLE was the first mass marketed SWB back in the early 1980s. Taking the market by storm, it quickly got a bad reputation for frame breakage and a flexible frame. Many believe the Hypercycle single-handedly gave recumbents a reputation as being poor climbers because it was only available as a 6-speed with no front derailleur. Many owners installed an upside-down seat post to the boom's tri-tube design and added a double crank and front derailleur. This resulted in a very flexible boom. The corporation finally went out of business in the early 1980's, but the design lives on in both the S & B and Turner recumbents, both of which are far superior to the original Hypercycle.

2 Tri-Tube Frame: A standard size main tube with two smaller secondary tubes above and side-by-side.

3 Turner Laid Back E: The simplest Turner with square tube main frame that sold for \$599 and less complete and was available through 1995.

4 LOW COST: Even though the low-cost aspect of the Turner recumbent is missed, the slack has been taken up by S & B, who actually build a more dialed and trouble free bike at a much lower cost.

5 DROPOUTS: There is no "one" spot for the axle to rest regardless of wheel size. There are actually several spots where the wheel could rest and the bike would work. Most of today's recumbents have dropouts that only allow for one correct position for the axle to be placed.

6 SEAT BASE SPACERS: With the stock plastic seat-base spacers, the seat is too high, cannot be laid back enough and the controls are too far away. We tossed the stock spacers and stacked hardware store washers for the ultimate dial-in. It was annoying that we had to go through this, but easy enough to do. We just stacked washers until the bars missed the seat, though the clearance is tight.

7 BRAKE UPGRADES: See RCN#37 and this issue for BMX caliper brake upgrade tips. The best way to improve the Boa brakes is by adding a set of Aztec/Kool Stop brake pads front and rear.

8 COMFORT: My tailbone "butt-o-meter" (previously broken tail bone, in the line of duty) is the first indication of soreness. On the Turner seat, soreness arrived within an hour. Turner says some riders need more base padding. Another Turner owner says the base is too small. I agree with both, though it was the angle of the back/base bend that did my tailbone in. On the S & B seat, I could ride longer than an hour, but the arch of the seat back

TURNER T-LITE

DESIGNER: Milton Turner/1994

TYPE: SWB/USS

WHEELBASE: 38.25" (RCN)¹

SEAT HEIGHT: 21.25" (RCN)

BB HEIGHT: 19.25"

SEAT RECLINE: 3 adjustment positions

WEIGHT: #29

ADJUSTMENT: Sliding seat 3 positions

FRAME: 4130 TIG CroMo

FORK: 4130 TIG CroMo

SEAT: Turner FG shell/foam/cover

DERAILLEURS: Sachs Neos 21 speed

SHIFTERS: Sachs Pro Shift (twist)

CRANK: N.A. 30/48/53 or 32/50/56²

CASSETTE: Sachs 13-30

CHAIN: Sachs Sedis

GEAR INCHES: 26-106 or 28-112³

BRAKES: ACS Boa long reach sidepull⁴

BRAKE LEVERS: N.A.

WHEEL (rr.): 26/Sachs 7000/SS 36⁵

WHEEL (ft.): 16" x 1-3/8"/Sachs 5000/SS 36⁶

TIRES (rear): Tioga City Slicker 85 psi

TIRES (front): ATP/Primo 85 psi

BB/HEADSET: N.A.

PAINT: Black

M.S.R.P. \$1250

1 Our Turner had a 38.25" wheelbase, Turner specs call for a 39." Small size uses a different fork and has a 1" shorter wheelbase.

2 The optional stock gearing 32/50/56 would not shift correctly. When Turner would not supply updated gearing, we ran the bike as a 30/42/50 which worked fine.

3 Gearing of a stock Turner. Our RCN modified gearing was 26-100.

4 Frame sizes other than small require Boa brake to be mounted on the back of the fork with a very odd cable routing that is inadequate.

fatigued my upper back as the first indication of soreness. In comparison, I have ridden the Rocket virtually all-day and it's more ergonomic and comfortable than any piece of furniture in my house.

9 TURNER DEVOTEES have been known to be a bit of a separatist crowd. Turner markets and sells mainly by word of mouth. In many cases buyers are not aware of what is available in the recumbent world. We received a letter from one such owner who read our buyers' guide and RCN#37 Rotator test. He borrowed a Rotator, rode it on a long ride, and when it didn't hill climb well enough for him, decided that RCN was wrong and bought the only other recumbent he had ridden, a Turner T-Lite.

T-LITE PROBLEMS AT A GLANCE

-Cheap dropouts and inadequate dropout spacing

Solution: Change to MTB or road dropouts and properly set the spacing to match chosen components.

-Poor seat quality Our seat developed star hairline cracks around bolt holes after two adjustments, though Turner said these were in the gelcoat.
Solution: Fiberglass is not always strong enough by itself. This is why many builders use carbon fiber or kevlar.

-Poor seat comfort

Solution: Recontour the seat and/or offer aftermarket (Rans) seat as option. This seat would easily fit the bike, resolve the seat mount problem and simplify the design.

-Poor seat mounts

Solution: Use bike industry parts like quick releases or at least high quality locknuts and bolts. Certainly parts that offered a quicker adjustment would be appreciated by customers.

-Slow seat adjustment

Solution: It's time to change the seat mount brackets, spacers, nuts and bolts. A Q.R. should be used.

-Needs new front brake (rear mount is ineffective with bizarre cable run)

Solution: This should be an easy fix. The J & B CroMo fork used by Rans, ATP Vision, Haluzak and others allows easy front caliper or cantilever brake mounts for SWB bikes.

-Poor preassembly

Solution: Hire a bike mechanic.

-Poor gearing/component R & D

Solution: Road and bench test shifting before custom gearing optionally equipped bikes go out the door. This was an easy problem to detect and solve. Why we had to do this should be the question. SWB gearing combinations are more difficult to dial in, especially in the higher ranges. A good builder will spend time finding out what works best and set the bike up that way.

-Poor Chain Idler This idler is responsible for the bike's poor chain management and extensive noise.

Solution: Some T-Lite owners are retrofitting other (better) idlers. The bike needs a cartridge/skate-wheel idler.

The problems with the T-Lite were the fine details that can make or break a bike. The frame design, handling and performance are all fine. □

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 ductile, tarnish resistant material.

BMX: Bicycle-Moto-Cross: A tough (generally) kid bike that uses very tough steel or sometimes alloy components.

BAR-CONS: Bar-end shifters.

BAR-ENDS: Mostly used on USS bikes to bring the controls closer to the rider. They are similar to those found on MTB's.

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

BRAZING: A frame joint is created by flowing brass (usually) 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 short and some long wheelbase recumbents.

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.

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

FWD: Front Wheel Drive

GEAR INCHES: A 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.

GRR: Gold Rush Replica

HiTen Steel: High tension or mild steel.

HPV: Human Powered Vehicle.

INDIRECT STEERING: Underseat steering via a rod, linkage or cable 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, two-chain drive freewheel shifted by a rear derailleur offering very wide gearing.

MOULTON: An English full suspension conventional bicycle using 17" & 20" wheels.

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 harder to track in a straight line. This generally happens on SWB recumbents in with wheelbases of less than 39" or a 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.

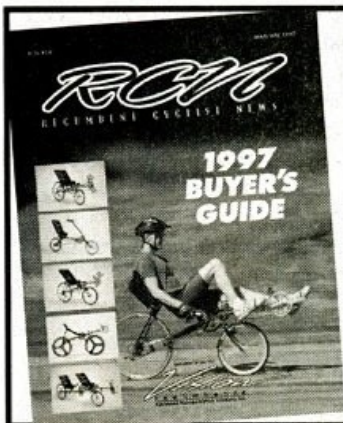
UNDERSEAT STEERING (USS): Steering via handlebars beneath the seat.

V-BRAKE: A new very strong (and controversial) 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.

ZZIPPER: A Lexan fairing by Zip Design.

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The S & B Beach Cruiser

by Robert J. Bryant

The S & B Beach Cruiser is the lowest priced "enthusiast" SWB recumbent model built today. If you've found our discussions of so-called inexpensive \$1000 recumbents a bit lame, pay attention. S & B TIG welds SWB recumbents in Compton, California, USA, a suburb of L.A. The bikes are TIG welded from mild steel and CroMo (optional) and the prices start at just \$595. A SWB single with alloy wheels and stainless spokes starts at \$715. Our test bike was a stock Beach Cruiser, with a double crank, alloy wheels and some chrome fenders and fat whitewall tires.

DESIGN

The S & B short wheelbase is the closest design available today to the original Hypercycle SWB. The "S" of S & B is "Smitty" who was a partner, along with Milton Turner (Turner Enterprises), in the Hypercycle company. S & B's bikes have matured over the years, though riding them definitely reminds me of a Hypercycle without the flaws of a weak frame and a drastically heavily loaded front end. This isn't necessarily a negative comparison as many of today's SWB recumbents are Hypercycle inspired.

The Beach Cruiser frame is basically that of a simplified S & B single. It's true and functional, though the mild steel frame's TIG welding is not at the same level as Rans or ATP, in fact the beads are a little rough. S & B uses a tri-tube main-tube frame design in a triangular format. The boom is stiff enough, but it definitely flexed more than our Rocket or Turner SWB. The main reason for this is the sheer length of the boom. With the laid back head tube angle and 37" wheelbase, the boom is long and long booms flex more than short booms.

The Beach Cruiser's steering works well. The V-underseat-steer-

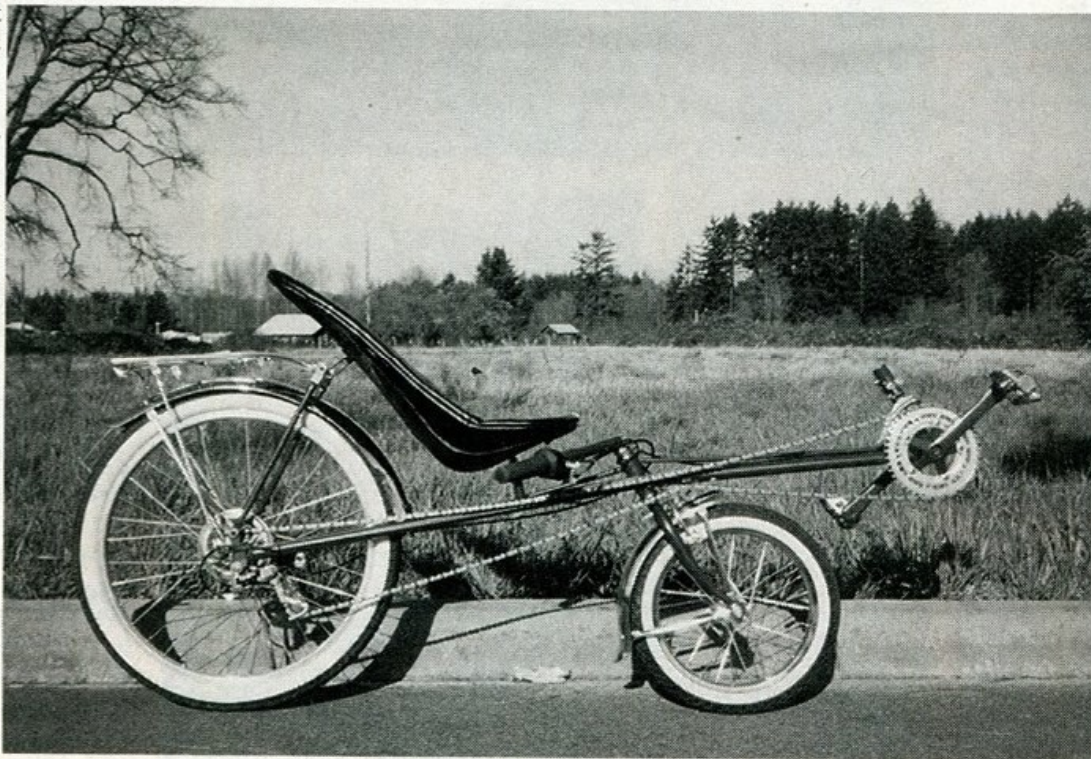
ing bars are quite nice, though not finished as nicely as some we've seen. The V-bars bring your hands back to a very ergonomic position.

theory, though if not done properly or if done to extreme, the laid-back angle makes for initial low speed instability and wheel-flop (steering

though still attractive. As powdercoats go, it's not exceptional. It looks like some we've seen on British imports (they call powdercoat Stove Paint.....). Our Beach Cruiser was pin-striped and had a matching purple-painted alloy crank. The stick-on chain slap-guard didn't even make it around the block before it came un-stuck and fell on the ground.

DRIVETRAIN

The stock Beach Cruiser comes with a single chainring six-speed drivetrain. Our test model had an upgraded (!?) Sachs twist grip shifter 10-speed that included a 175mm 34/44 alloy double crank and a 13-30 freewheel shifted by a Sachs Centera alloy rear derailleur. The only defect on the bike was a broken de-



All of our test riders were able to reach the bars without problem (bar reach is common on USS models). The "V" bars were originally used in the last version of the Hypercycle built in California by Milt Turner, though Turner has never used them on subsequent Turner recumbents.

Aside from the severe upper arch of the laid back seat, the S & B SWB is a decent ergonomic package. The seat is low, the bars are close to the rider and the bottom bracket and pedals are lower than most SWB models.

The Beach Cruiser with hi-ten steel frame is a bit on the heavy side at 36-pounds, even with the aluminum upgrades. Much of the weight is due to the optional cruiser accessories, though the mild-steel frame is not as light as the CroMo single.

The S & B trade-secret head tube angle has to be in the low-60 degree range (they won't tell us what it is), more laid-back than any other SWB. The theory is that this helps to achieve better high speed stability. There is something to be said for this

wants to fall away from center and it needs steering input to track straight). The USS, V-bars, 16" front wheel and heavily loaded front-end all contribute to a very quick-feeling machine. If the laid-back geometry does offer more stability at speed, these other traits counteract the effect. Most test riders who tried the S & B found it quicker handling and less predictable than other SWB models. It can take longer to get accustomed to this type of handling, though the low seat, bars and bottom bracket do accelerate the learning curve. A benefit of the laid back head tube angle is the close proximity of the handlebars to the rider, though don't get any ideas about adding above seat steering—for a moment just imagine where the stem would arise.

The Cruiser has some *pedal steer* (see pages 12 & 15) as is common on many SWB models with this wheelbase and steering geometry.

The paint is a powdercoat attempt at a metal flake purple. The finish is a bit on the thick and textured side, and the hue is a bit dull,

railleur barrel adjuster. S & B replaced the derailleur. Though this took longer than we would have liked, it did arrive. Rear shifting with the Sachs Centera is excellent, though it's been some time since I've tested a 5-speed drive (it's not listed in S & B specs, either?). The stock steel components won't last in day-to-day use and they are cheap and heavy. Our upgrade alloy wheels were a good choice, though our upgrade ten speed (5x2) was annoying and is not recommended. In retrospect, a 6 or 7-speed is perfectly adequate for this cruiser. Don't mess with a double crank. If you're going to have multiple chainrings, get a triple, or better yet a 3x7. The S & B 3x7 option is pricey at \$325. For this reason, it's not recommended for this model. The chain is a KMC—our least favorite component, though it worked just fine in this application.

All SWB recumbents need lower-chain idlers to direct the chain over the fork and front wheel. Models from Rans and S & B use cartridge-sealed bearing skate-wheel

type idlers that are custom designed for the bike. The S & B idler works pretty well, but it's definitely not at the same level. S & B's idler is made of a delrin-like plastic. It looks like a spool for sewing thread. The idler has no bearing, and like the Turner, rotates on a bolt, thought there is a bracket to keep the chain from hopping off the idler. Even though we don't approve of these kinds of idlers, at least the S & B was quieter than the one on our \$1250 Turner T-Lite.

BRAKES

The stock rear brake is a Shimano band brake and the stopping power is quite good though a bit like an on-off switch. The optional front brake is a mushy Dia Compe 810 alloy sidepull with no quick release feature. Any decent BMX brake or a set of Aztec/Kool Stop pads would be an improvement.

TIRES

The Beach Cruiser benefits (!?) from all of the Low Rider accessories available today. The bike has matching HWA 24" x 1.75" (50 psi) and 16" x 1.75" 305mm (40 psi) fat whitewall tires. They do add to the bike's appearance (if you like cruisers), and make for a really cushy ride, though performance does suffer.

SEAT

The S & B seat is a medium-back fiberglass shell with a slip-on black vinyl cover with an optional white stripe. The seat and cover are of fine quality and quite durable. The cover is mainly held on at the top of the seat back with a sewn-in slip cover. The base of the cover easily and annoyingly slips off the shell. This will be taken care of on upcoming models with a velcro fastener.

In the spectrum of the cycling world, the S & B seat is comfortable, though hard. The seat works well with the bike, and keeps the seat height fairly low. Unfortunately, the S & B seat is not as comfortable as other state-of-the-art recumbent seats. The S & B seat's fiberglass shell is just too hard and there is virtually no foam padding, which really gets to you after a few hours. The back and base are small and the upper-back of the seat arches way back making for a really laid-back position that caused me some upper back discomfort (6' tall test rider with a long torso). Keep in mind that shell/foam seats are the easiest to customize with foam and upholstered covers. S & B has a new "tall seat" option that is now available.

In contrast, Jack Baker has



many stories to tell of Lightning and Easy Racer owners purchasing S & B seats and loving them. This leads me to understand even more completely that the comfort of one's hind quarter is definitely to be left up to the beholder, or in this case, the besitter.

S & B's come in three frame-sizes and the seat base has three base adjustment positions, and two recline adjustment positions: laid back, and very laid back. The S & B seat mount hardware is better than that of the \$1250 Turner T-Lite (very similar

mounting system), though the adjustments are painfully slow, limited and not infinite as on most designs today. Even in the most upright position possible, this is still one of the most laid-back riding positions in the industry. A longer upper seat mount could be ordered or fabricated, but the seat shell's design is part of the reason for this. Not since the Greenspeed trike have I experienced such a laid-back sensation.

Will you be able to develop more power from this hard-shell seat? I don't think so. It's a

minimalist seat that works well with the design, though I noticed no marked superiority in power output.

RCN occasional correspondent, Bill Volk, rides a brand new and customized S & B single SWB. Bill has adapted a Rans seat to his bike, though he remains S & B's biggest fan. Bill's article can be found in RCN #25 (\$6 postpaid from RCN).

PERFORMANCE

The Beach Cruiser isn't really designed for performance, though other S & B models are more performance oriented. In fact, the Beach Cruiser's added weight, fat tires and 305mm 16" front wheel are a definite performance detractor. In a coast down test, it was slower than our Turner T-Lite, Rans Rocket or Trek 930 mountain bike with fat slicks, placing it in the slow range of our test bike loop. If you can adapt to the seat, the upgraded S & B CroMo single 14 or 21 speed model would be the better choice for performance.

ACCESSORIES

Our Beach Cruiser came with optional Pletscher-copy rack, chrome-steel fenders, matching 24" and 16" white-walls. S & B will build one in any variation that you want.

BEACH CRUISER PRICING

Our test bike was outfitted with the following options:

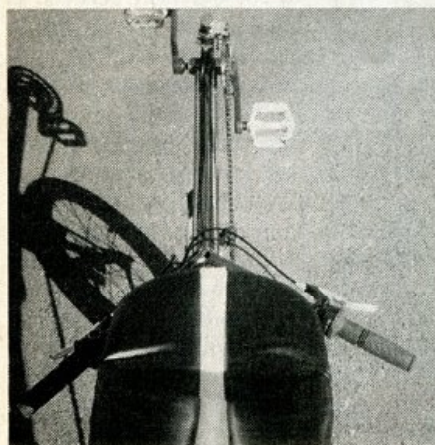
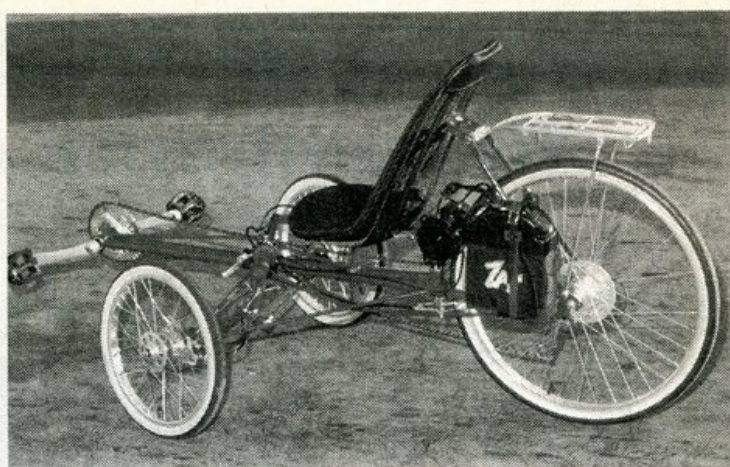
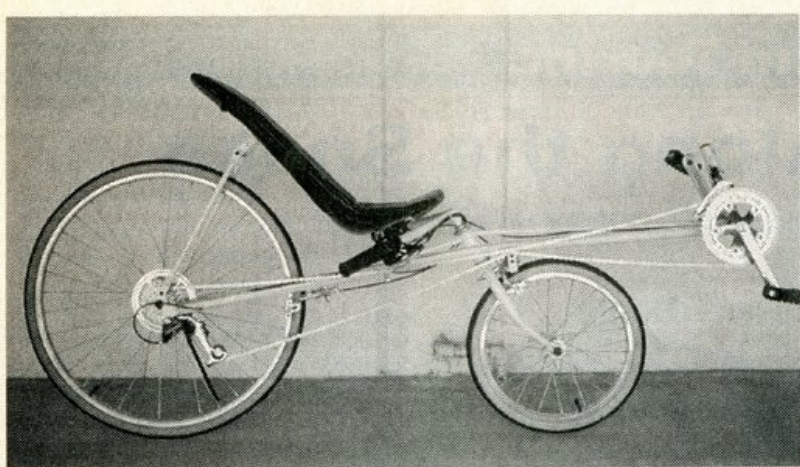
Standard 6-speed.....	\$595
Double Crankset.....	\$90
Alloy wheel option.....	\$55
White-Wall tires.....	\$16
Chrome-steel fenders.....	\$32
Rear rack.....	\$15
Total Cost:.....	\$818

At \$818, our Beach Cruiser seemed expensive in comparison to a BikeE, EZ-1 or Vision Metro, all of which are more refined products. The beauty in the Beach Cruiser is its \$595 price point, though the heavy steel parts will not satisfy the enthusiast. The double crankset is definitely *NOT* worth the upgrade. The alloy wheels are a good idea, however, we recommend upgrading to the S & B single instead with as many speeds as you can afford.

Keep in mind that S & B's pricing is in a modular/menu format, so be sure to understand what components will come on your bike. Small manufacturers tend to change spec more often based on availability, whereas larger manufacturers order parts up to a year in advance.

RECOMMENDATIONS

This is a recumbent for cheap-



skates. The S & B is low-tech and really not suited for technoweenies. Don't count on getting a V-Rex or Vision equivalent for \$595. S & B recumbents are low-budget fun. You'll get a decent frame and as good of components as you pay for and you can upgrade as much as you like.

What we do like about the S & B is the low seat height, simplicity, V-handlebars and their willingness to customize to no limit. In many ways, the S & B SWB is a better machine than the more expensive Turner T-Lite. Many of the details are better, but best of all, the S & B was much more trouble free—it was dialed right out of the box. We don't like

the bearingless idler, but would choose the S & B seat over Turner's. Seat adjustments are time consuming, but the mounts are much nicer than Turner's, and even painted to match.

Heck, Wild Bill Volk chose a second S & B to trick out after the Las Vegas races last summer and he's

ridden a few recumbent bikes. Maybe there's something to this.....

If this sounds like the bike for you, give Jack and Smitty a call. They will custom tailor an S & B just for you. S & B Recumbents, PO Box 3061, Compton, CA 90222 or give them a call at ph#310/608-0008 or ph#310/762-2243. □

BEACH CRUISER SPECS

Wheelbase: 37" (we measured the bike)
 Weight: 36 pounds (we weighed the bike)
 Seat height: 20"
 (RCN comparative measurement)
 Bottom Bracket height: 20.25"
 Handlebars: S & B steel "V" USS
 Seat Shell: Fiberglass shell
 Seat Upholstery: Black and white vinyl.

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Recumbents Along the Snake

Story by Monte Crippen. Photos and graphics courtesy of Monte Crippen

The genesis of this ride started several years ago, in the summer of 1992, when some of us rode the length of the Columbia River from Columbia Lake, British Columbia to the Pacific Ocean at Astoria, Oregon. The goal of this trip was to do a similar ride down the Snake River from Yellowstone Park, through Idaho to its confluence with the Columbia at Pasco, Washington.

The group was small but unconventional in several ways. I road a Ryan Vanguard (long wheel base, under-seat steering) with the Zzipper faring. I carried 2 rear panniers and a rack trunk as I had for many previous trips. Dave and Becky road their Counterpoint tandem (recumbent front for stoker and diamond frame back for captain) and used the body stocking on several windy days. They had similar baggage plus 2 front panniers plus spare tire cases. We were self supporting the whole way, but did use the Iron Box, with a trailer for the bikes, to get us some 800 miles to the starting point at Yellowstone.

Some of the statistics are: total distance was 1,036 miles in 17 biking days. With travel time, a rest day, and exploring in Yellowstone it was a three week vacation. The minimum and maximum days were 40 and 82 miles and were solely controlled by motel availability in sparsely populated areas. The starting and finishing elevations were 6,870 and 390 feet. The high point near Jackson Lake, WY was 7,440 feet and the total elevation gain was 28,060 feet! Good thing the river ran "down-hill all the way." The average saddle time was about 5.6 hours each day, but of course that doesn't mean much to recumbent riders. With several scenery stops, many camera opportunities, and eating breaks it should be obvious that we were relaxing and not in any hurry.

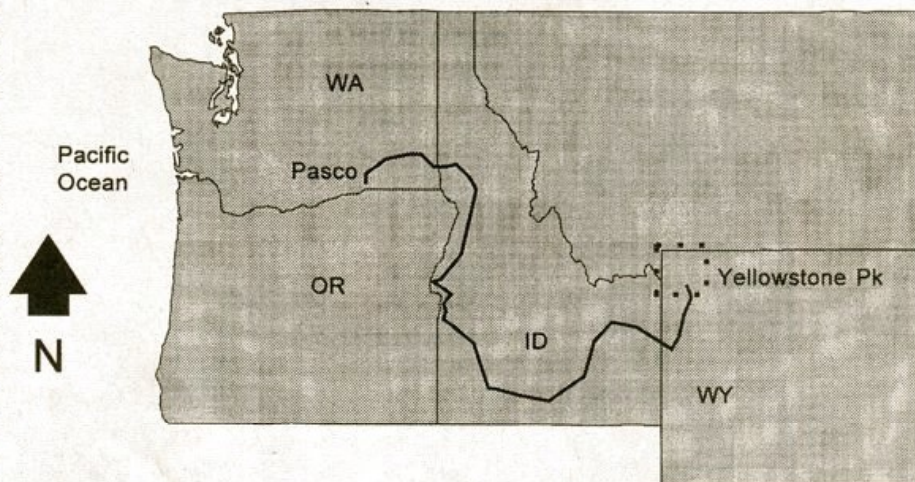
We must admit to enjoying the car for the side trip to old Faithful. The road crosses the Continental Divide THREE times EACH way. But we cheered the several bikers

onward that we saw out "enjoying" the grades. That was the majority of bikers we saw on the whole trip. Weather was a major factor in planning this trip. At these altitudes and latitudes the last snow is usually in early June. The first one almost never occurs before Labor Day. Most years. Bring your warm-ups and rain gear. We started on bikes the second of July and managed the whole trip without any real rain but we did need those jackets on several cool mornings.

The Snake River starts at the Continental Divide and runs generally southward through very mountainous terrain. In fact, the scenery is so spectacular that this area was designated as the first national park in the United States. The texture of the river is milky and the color of the several lakes it traverses is green from the glacial till. Several of the lakes are artificial impoundments which are the start of a huge irrigation system from the Idaho-Wyoming border on westward. Through southern Idaho it crosses an arid sagebrush steppe, much of which the white man has converted to irrigated farming. There are numerous lava formations which make the route rugged and numerous climbs of 500-1000 feet are the norm.

At the Oregon-Idaho border the river turns northward to form Hells Canyon, which at 6,000+ feet is North Americas deepest canyon. There are no roads along this section of the river so one must climb a se-

Snake River Route



The first day through the Tetons, Jackson Lake, Moose, on to Jackson was absolutely gorgeous. The mountains on one side, the river on the other and the woods and plains between we sighted elk, moose, ducks, pelican, and assorted small birds and mammals. Some of the wild life was even more interesting. Bison, of which I saw hundreds, have now replaced bears, of which I saw none, as the threat species to tourists. We had an especially good view of one full grown male buffalo on the road. He was ambling quietly in his lane and we tried to do the same in

our lane, having the safety of that yellow line in between. My, they are impressive from a low recumbent!

We arrived in Jackson mildly tired but full of excitement from the day and looking forward to exploring the art and T-shirt shops of the town. We also arrived about 30 minutes before a multi-state power failure that included us. The good news was that the beer stayed cold. The bad news was that all the kitchens were closed. The power did return that evening just as we were at the grocery store buying emergency rations to get us through the night, the next morning, and on to somewhere that the lights were on, we hoped.

Considering the turmoil it caused in that town we were fortunate to not be badly impacted. The route lead through Hoback Jct, Alpine, Irwin, and Swan Valley. Near Ririe we met the Mormon crickets. While there were usually bugs of some sort visible in the air we knew it was serious when we heard them hitting the fairing. Tnk..... tnk..... tnk... tnk... tnk.. tnk. I can report that they have black and red bodies about 2 inches long, long legs, and reddish wings about 3 inches long when folded. Since one of them caught in the temple of my glasses I had some opportunity to inspect them closely but did manage to get him on his way before he stuck a foot or wing in my eye or ran me off the road. That evening it took some time to clean up the fairing.

The route continued through

ries of rugged lava mountains. The canyon also starts the series of 7 large hydroelectric dams which produce several hundred megawatts each for the Pacific Northwest and California. The last hundred miles is a westward run through southern Washington with terrain similar to southern Idaho except that the irrigation usage is minor.

The pre-ride started with a little hike of a few miles up the Snake River from the Flagg Ranch at the south entrance of Yellowstone. It is already a large river at this point with many rafters and other traffic in a near constant stream. The actual source of the river is a lake that would require a 25 mile hike each way, which was beyond our scope. The Park Ranger was also very pointed that the area we would traverse on such a trip was prime bear country and that we would be the FIRST people of the season on that trail. Dave allowed that he could give the bears another week of peace and quiet so he and I adjourned to the bar for the afternoon and drank to the health of the unseen bears.

Like many bike trips this one started with repair work. The vibration and high road speed of the trailer transport had broken the rear fender clip at the point where the stay attaches. Actually, had we known of the possibility a little foam padding would have prevented the problem. A few rubber bands and duct tape held it together just fine for the next thousand miles.

Idaho Falls, Shelley, Firth, Blackfoot, Moreland, Rockford, Pingree, Springfield, Aberdeen, and American Falls. The highlight of the day was meeting a group of 5 young bikers with camping gear who had left Florence, Oregon and were on their way to New Hampshire. They were really enjoying themselves because of their 20 mph tailwind. The low-light of the day was that we had 82 miles of 20 mph headwind. Recumbents do help, but we would not look forward to a repeat of that day.

Traveling through Massacre Rocks, Declo, Burley, Hansen, to Twin Falls one sees a great change in the river. At the dam there is a very large irrigation canal leading out from the south side and a similar one from the north shore. What is left to continue as the normal river is

about the amount of water one gets from a leaky kitchen faucet. All of this irrigation water is used several times and accumulates silt on each cycle. All of it re-enters the river before Weiser where the water is very dark and looks semi-solid; the farmers here really need to update their techniques and usage to the late 20th Century. With nearly endless fields of potatoes, sugar beets, potatoes, and more potatoes someone had asked, "Isn't that boring?" "No, I look upon the situation as a visit to the birthplace of tonight's baked potato."

Oregon Trail, toward Hells Canyon and beyond

We followed much of the Old Oregon Trail route to Buhl, Hagerman, Bliss, King Hill, and Glens Ferry for one of the nicest events on the trip. On the first Monday of the month the Senior Citizens have a potluck dinner and since we were strangers, we were invited. We were the youngest, being only middle aged, and they all had grown up or been in the area for decades. We learned all about the local history, how farming had changed over the years, how many trains used to come through King Hill (now a virtual ghost town), and the coming of the freeway. A thoroughly enjoyable evening! Glens Ferry residents also, on the first weekend of August, re-enact "The Crossing" which is the original reason for the town as the Snake is shallow around several is-

lands and the bank gradient is modest on each side. It was the best place for freight wagons, settlers, herders and horsemen to cross for many

sockets and bigger for tractors and will NOT have a freewheel removal tool. Neither is importing parts or tools a sure thing. In the 3 weeks we



miles in each direction. The locals dress in period costumes, get out the old wagons, hitch up oxen and mules, and herd cows and horses across. They were proud that they had only lost 2 horses in 8 years. They now post some power boats down stream to recover errant animals and equipment. I can't imagine what a US Coast Guard approved life jacket for a horse looks like.

We continued to Hammett, Bruneau, and Grand View, where my front derailleur cable broke. No problem. I always buy the long tandem cables for everything so I just uncoiled the extra, ran it back down through the housing to a bare run on the frame. Then I tied a neat square knot and trimmed the ends after adjusting the tension. A little duct tape on the ends keep from scratching either you or the bike frame. Takes about 15 minutes for the whole job and its good for another 5,000 miles.

Let me pass on some experience on breakdowns in areas like this. Most bike tours are conducted in areas where you pass a bike shop at least once a day. Even without sag support, you can usually get going again in a few hours. But in much of the Western U.S. (and we were right in the middle of it) bike shops come a couple times a week. The local hardware stores usually carry a few tires, cables, and accessories but don't count on much. Likewise, maintenance shops are common and will try to help you but they have 1"

were gone there were only 3 days where we were at major airport areas to use UPS, FedEx, or similar services from Nashbar, Performance, etc. UPS does cover the area but takes several days, especially on weekends. What will save you is Greyhound package express. With one instructive phone call to my wife, she can get the right gizmo from the garage, into a shoe box, and down to the Greyhound depot (or detour via the local bike shop to get the part or tool needed). There are two buses a day, seven days a week serving southern Idaho, so even with the layovers it hardly takes 24 hours before you can walk to the local flag stop, pick up your gizmo for immediate installation, and be on your way.

Going through Murphy, Marsing, Homedale, Wilder, Parma, Fruitland, Payette, to Weiser was more of an ordeal as we were now saturated with sagebrush, potato fields, alfalfa and cows. But occasionally there were very nice main streets and neighborhoods. But it was a chance to see real America.

For those of us who have jobs in bureaucratic organizations it is comforting to see real people doing real work, in a simple and efficient manner. A breath of spring through the musty red tape. Weiser is the start of Hells Canyon and began many climbs around the river that took several days.

The hills between Midvale, Cambridge, Council, New Mead-

ows, and Riggins gave many chances to go slow, enjoy the green, watch the birds, and study the geology. One enters the Salmon River canyon, which is a tributary to the Snake and shares much in common geology and history. Riggins is a small town on the Salmon that is a mile long and half a block wide, owing to the narrow canyon it is in; and don't sell them short, they DID pick the WEST place for the town. It is also River Float Capital, USA. A gravel road extends many miles up the Salmon and so provides Riggins as an excellent put-in/take-out place to give trips from a few hours to a few days in length.

We had the fortune of a second story motel room with air-conditioning and iced drinks. We observed 10 man rafts, 4 man rafts, one and two man kayaks, canoes and others by the hundreds and all of them right-side up. It looked like the salmon spawn of the wildlife shows except in reverse. The road continues past Lucile, a typical 10' x 10' convenience store with a trailer park full of retirees and day workers who are just barely hanging on.

Then the White Bird Hill, much commented upon and dreaded by bikers in the Northwest. Pshaw! It is only 12 miles to gain 2700 feet and took a fat 2 hours with only 3 cars on the road; hardly got up a good sweat. But what a panoramic view and time to enjoy it! You can see 50+ miles except for the hill face to the north; eastern Oregon, most of central Idaho, and every inch of the last several days of our journey. Plus the rock outcrops, springs, pastures and forest that one can reach out and touch. If you are even close to the area, don't miss it.

The next leg was a route with personal Roots. When my father was a young boy he and a friend had ridden their single speed balloon tire bikes from their home in Clarkston, up the Clearwater River, and visited relatives in Greer, Kamiah, Nezperce, and returned down the original Winchester grade. That was 70 years ago. I wanted to re-trace their return leg, having already been up the Clearwater to Lolo Pass. So I skipped the Hwy. 95 route of Fenn, Cottonwood and Ferdinand and went straight north from Grangeville to

Nezperce. It is right out of your 3rd grade reader; Elm Street personified with Dick, Jane and Spot and all the rest of it. The old road winds through the rugged farm land to Craigmont and Winchester. Then down the winding grade, a 3,000 foot - 38 mile drop to Lewiston but it starts with 1900 feet in less than 8 miles. Then past Culdesac, Sweetwater, Lapwai, Spalding, the pulp mill, and finally the industrial section of Lewiston. The bike computer read 88.2 miles for the day. Since I am striving to ride 100 Centuries in my biking career this was too good an opportunity to pass up. So I continued a scenic leg through the water front park along the Snake up to Asotin and back to complete Number Ninety One, almost all of which have been on recumbents.

A series of small farming towns form the rest of the route. Unfortunately, many of them are 1% character and 99% function. The Les Schwab tire store (with tractor tires that are as tall as a semi) is the biggest business but they do have the necessities of motel, restaurant, and tavern. One only of each and each of only marginal quality. No museum, no historic sites, no non-agricultural industry or business, no past,

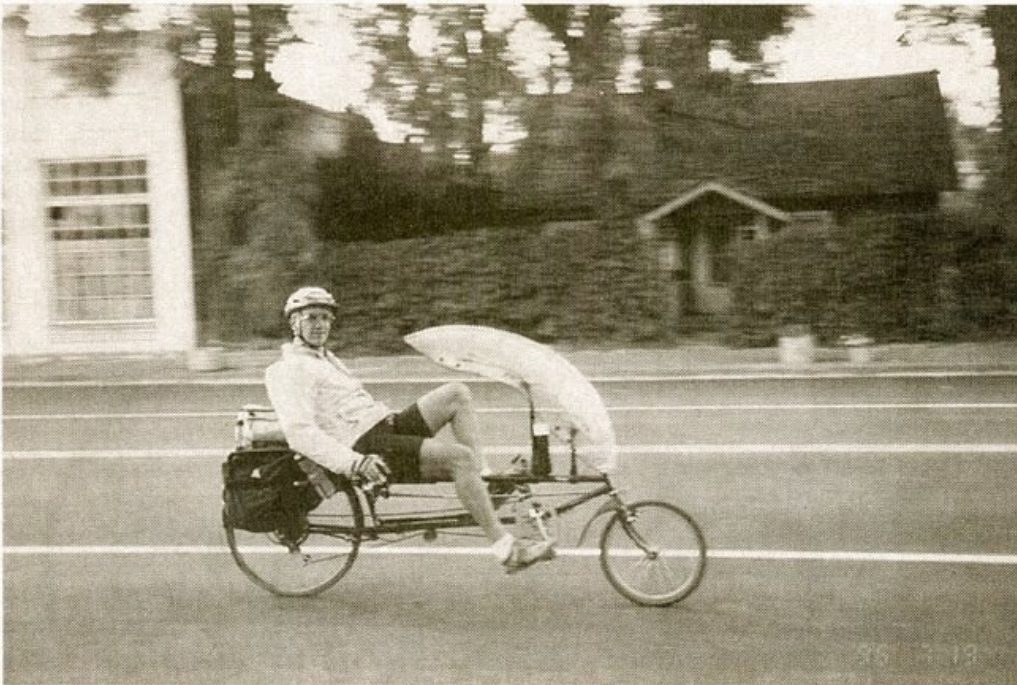
no vision, and no future. And so through Uniontown, Colton, Pullman, Colfax, Dusty, Hooper, Washtuchna, and Kahlotus. Pullman is certainly an exception since it is the location of Washington State

and sighs of satisfaction. A goal reached and a job well done.

So how was the bike? Arrived with a clunky freewheel, broken fender, broken shifter cable, a hole in the rear tire, and a hole in the front

Bikes, of whatever kind, are neither slow nor fast going uphill. You are the engine and you are slow or fast depending on your physical and psychological capacity to convert glucose and glycogen to mechanical work. Period! The bike is only the power transmission, frame, and other functions which can increase your efficiency should you be intelligent enough to take advantage of the pertinent factors.

A recumbent has noticeably less aerodynamic drag than a diamond frame. And even more so with a fairing. If one wades through the mathematical hand-waving and then makes the obvious speed tests on the road you will find that: given equal work input (nearly impossible to achieve given the psychological factors) one can measure the faster speed of a recumbent up hill on a 5% grade, but it takes a good stop watch and objective techniques. On the level, an alarm clock will readily show the difference. And going downhill, a calendar and sloppy book keeping are more than sufficient to show the superiority of recumbents. Besides, any idiot knows they are more comfortable! ☐



The author, Monte Crippen on his Ryan Vanguard

University. It has a flavor of youth and culture unique to the area.

Finally, after three weeks the great moment arrived as we turned in at Sacajajea Park outside of Pasco. No dipping wheels into the water for the same reason we didn't do it at the other end — too many big, sharp rocks. But photos of us with the end of the river amid placid surroundings

tire. Other than that, just fine. I consider those conditions just fair wear and tear and besides, the bike shop really needed that \$100 from me for parts but I did the labor myself and cheated them out of more dollars. But how did the bike perform? Being a professional engineer I hate to bring up the reality of physics, chemistry, conservation of energy, etc., BUT

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A Project of the Center for Appropriate Transport

The Draftmaster Rack

A Rack Built for a Bicycle Built for Two

Story & photos by Linda Smith-Weinberg

My quest for the perfect bicycle rack came with the acquisition of an ATP Vision recumbent tandem. Our previously owned-and-installed roof rack (which worked for a short-wheel base – SWB) on neither our truck nor our car was long enough nor would either be all that accessible, especially to me. I did not think it would be easy to lift the tandem over my head, even with my Wheaties for breakfast.

In my rack quest, the DraftMaster system offered all the options I was looking for: a 3-bike rack with an optional tandem mount accessory rail. The system could hold the recumbent tandem and another recumbent, two recumbents, or three recumbents without the tandem rail. The DraftMaster looked like a system I could manage myself, as a 5'4", not-too-athletic, 44-year-old woman.

The DraftMaster arrived in two boxes: one for the 3-bike rack system (retail: \$299) and a long box holding the tandem accessory, which is a long rail 76" long (\$225). For the tall and strong, the Tandem accessory could be attached to most standard roof racks and could accommodate a long-wheel base (LWB). The DraftMaster is an American-made rack system made of steel and aluminum, all in black: 32" wide, 54" high, 25" deep, and weighs 28 lbs: with a 2-year warranty. Depending on the bikes mounted: the width moves to 52"+, height is 102"+, and depth 48"+.

The name DraftMaster comes from the company's claim that better gas mileage is accomplished by using the draft behind your vehicle rather than having roof racks.

Let's Get Hitched

Before you run out to get this particular DraftMaster system (see the last paragraph for other choices), you need to make sure you have or can get for your vehicle a 2" hitch receiver.

One truck shop wanted to install a custom-made hitch receiver, which would take two weeks to order, and would come to about \$200. I thought I already had one attached to the back of our truck, until I looked for that 2" square open hole: I was wrong, but the problem was easily

remedied. A trip to Grand Auto found the item on-the-shelf and ready for attachment with two large bolts under our Ford truck's back step platform (\$50): the "S Reese #81378" fits most full-sized trucks and matched perfectly to the DraftMaster

system for storage. It worked in a pinch, but I will probably get a shorter hitch receiver bolt, cut the one I have, leave the rack there always, or fiddle with the DraftMaster bolt and the hitch receiver bolt each time. The DraftMaster bolt has a hole in the end

height from the ground for the bottom of the tandem tray? While driving up a San Francisco hill with the rack in place and tandem on board, the rear bike wheel bumped against the street; no damage was done, but it was a little scary.

There are so few pieces to this assembly and there are photos in the brochure, so even without instructions, installation could be figured out eventually.

Racking the Tandem

First you remove the front wheel from your recumbent to attach the front fork to the DraftMaster system. The front wheel is stored on the wheel carrier. Once the front wheel is off, you insert the front stem into the top piece, reset the quick release, roll the bike forward, guide the rear wheel into the wheel tray, strap the rear wheel into the tray with the 1" nylon strap, buckle it, and push forward on the assembly crossarm. It's an easy push: no lifting or muscle required. The locking pin is put in its place and you're ready to drive away.

Even when the rack is attached to the back of our truck and its camper shell, you can remove the locking pin and the rack easily pulls back to give you access to the shell door to get bike helmets and supplies.

Once the rack was in place and some adjustments were made after a maiden voyage, my husband and I could begin to appreciate the pivot system: we didn't need a ladder, box or to hang off the edge of the top of the vehicle to struggle with the rooftop. We were able to load and remove the tandem with very little time and effort: we are getting more adept at removing and replacing the front wheel.

Although the tandem is on an angle on the rack on the rear of your vehicle, while driving and parking, you do have to account for height (under low overpasses) and for the extension from the rear you now have on the vehicle (48"+). This is a big one.

Taking the bike off the rack is as easy as it is to put on. You just reverse the steps. You do need a little room behind the vehicle when you pull the lower crossbar or another



Looking at two Visions: on the right one SWB (UBS) and one LWB set up as a SWB (with above bar steering – ABS): my husband Terry pushes gently up on the two backs of the seats to pivot the rack into place. There are two front wheels attached: one 16" and one 20".

system color and look (flat black). Our step platform was already drilled where it needed to be, but you may have to drill two holes. Grand Auto had quite an assortment of this type of item for other vehicles. If you have a 1-1/4" hitch receiver, DraftMaster makes an adapter (\$48) to get it up to 2."

Once you have the hitch receiver in place, you can begin putting the other five pieces in place. I had a little bit of a problem with the main bolt of the DraftMaster system hitting against the bolt of the Hitch Receiver, so I reversed the bolt so I can disconnect the DraftMaster sys-

so you can secure with a padlock, but you also would have to secure the hitch receiver or that security doesn't work. We went back to the auto store and got "The Receiver Lock" also made by Reese #74172.

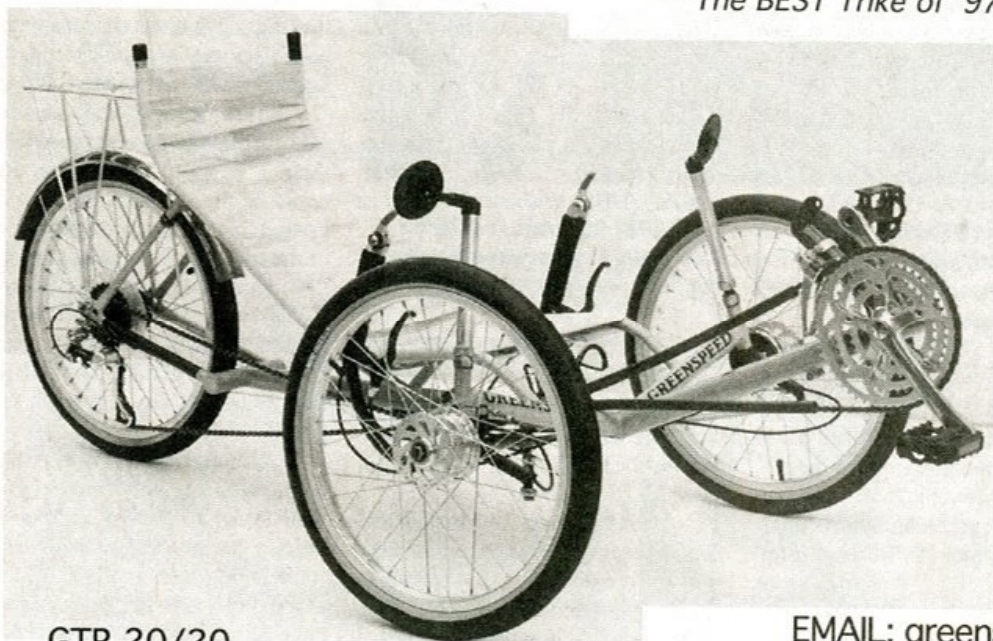
The instructions to install the DraftMaster system included looked simple: five steps. But they left out a few things, which took me a little figuring to decide how to proceed (by the way, I've never mounted a bike rack before). For example, exactly how does the tandem accessory rail attach to the 3-bike system? That involved an additional 3-step instruction sheet. What is the recommended



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GREENSPEED RECUMBENTS



Vision tandem attached to rack and sitting on ground. Next step is to push forward on central bar and entire system will close up next to the truck. Locking pin is inserted.

part to lower the whole system to the ground once you pull the pin. If you have the tandem accessory attached, the rear tire touches the ground first. If you do not have a tandem attached, but a single or two to three bikes attached, those rear tires touch first. When you remove the strap attached to the rear tire in the lower tray, the bike rolls out and then you remove the front fork from the skewer. Then of course you reattach the front wheel, which you have removed from the rack.

I put the tandem mount accessory on the center section, but you could put it to the left or the right on the 3-bike system (did I mention there is a 4- and a 5-bike system?), which might prove to be more versatile. I think that if you want to transport a Vision under-seat steering recumbent, you could only mount one with a tandem, but your own experimentation might prove different.

Alternate Racking

Because of the width of the

USS handlebars I can only place two SWB Vision bikes on the rack when I have the tandem mount accessory in place. I placed a LWB Vision, set up as a SWB on the left and a SWB with UBS rides the right side. If you wanted to mount a LWB, you would either put it on the center tandem accessory tray or order another tandem accessory tray, if you planned to haul the tandem and the LWB together. If you remove the tandem accessory, the front fork mount is slightly lower which displaces the location of the middle bike, making it possible to carry three bikes.

Rather than leave the rack permanently attached to our truck, we removed the bikes, removed the main bolt on the hitch receiver, with the rest of the system intact, and then we slid the lower support arm out. The entire unit sits flat on the floor in the garage and takes about 10 minutes to load up and off we go.

If we think we are going to be going a long distance, over particularly bumpy roads, or through windy



The DraftMaster system attached to the truck's hitch receiver, balanced on the tandem accessory rail base, with one 20" front wheel attached. It stores in our garage just as it is, until our next outing.

areas, we double secure the top arm of the rack to the top of the camper shell with straps. We sometimes forget that we have those straps tied. When there's any kind of struggle to get the rack down, then we remember. Otherwise, getting the bike down is smooth and easy, even for me, alone. You don't have to have a tandem to get racked.

There are other DraftMaster configurations to meet most needs. For example, at the high end, you can get the five-bike rack which could be outfitted to carry three tandems,

eight pairs of skis or snowboards. They also have a trunk/hatch mount system (\$150), which would carry two bikes, which uses 6 hooks and stores in the car when not in use. There are children's bike fork mounts, too.

If you contact DraftMaster, please let them know you read about their product in Recumbent Cyclist News. DraftMaster is located in Hillsboro, OR: fax: 503-693-1057, phone: 800-659-5569 or 503-693-1962) □

RCN 1997 PRINT SCHEDULE

RCN is printed bimonthly on a six issue per year schedule. We have added one issue to our line-up this year by making the '97 Buyers' Guide a single issue instead of a double:

- RCN#37—Jan/Feb '97
- RCN#38—Mar/Apr '97
- RCN#39—May/June '97

- RCN#40—July/Aug'97
- RCN#41—Sept/Oct'97
- RCN#42—Nov/Dec '97

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RIGHT: The new DraftMaster CLWB adapter.

CENTER: Draftmaster SWB/standard adapter

LEFT: From behind the rack, the DraftMaster 3-bike system, balanced on its tandem tray or rail base.

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The Rans V-Rex Zipper (Ryan type bubble) photo courtesy of Richard Drdul

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Tires and Things that go around

by Richard Drdul, drdul@mindlink.net

For twenty years I've ridden a wedgie road bike, and for twenty years I've accepted certain things as truths. Take tires and wheels, for example. I've always assumed that narrow tires are faster than wide tires — after all, you don't see guys in the Tour de France riding on balloon tires.

So when I bought a recumbent a couple of years ago, I ordered it with narrow 25mm (one inch) tires, just like my road bike. I wanted to go fast, after all. I pumped the tires up to 100 psi, and off I went.

My front tire lasted a week before it blew apart. I replaced it, and only pumped it up to 85 psi. Then I got a pinch flat when I hit a pothole — it hadn't occurred to me that the 20" wheel would go further into the pothole than a 700C wheel would. So I replaced the tube, pumped the tire back up to 100 psi, and rode for three weeks before the tire blew apart.

Now I was getting annoyed. I wanted to go fast *and* I wanted to be able to finish a ride on the same tire I started with. I wouldn't have thought that was asking too much.

Around this time, there was a discussion on the hpv mailing list on the Internet regarding tires for recumbents — particularly, the question of fat tires *versus* thin tires. The discussion got me thinking, and I followed up with some of my own research. I learned a lot about tires, and in particular, I learned that for small wheels, wide tires are best.

Tire Construction

Before I explain why wide tires are so wonderful, it's useful to examine how tires are constructed. Essentially, a tire is comprised of a casing, a bead and a tread (forget tubular or "sew-up" tires — only masochists use them).

Each tire has two beads, one on each side of the tire. The bead is what holds the tire on the rim and prevents it from blowing off. Beads are made of steel wire or some other material which won't stretch under pressure. When you pry a tire off a rim, what you're doing is pulling the bead over the edge of the rim.

The tread is the rubber part on



The Continental Grand Prix 20" x 1.25" 406mm 115 psi

the top of the tire, where the tire meets the ground. The tread can be smooth, patterned or full of knobs.

The casing is the guts of the tire — it holds everything together. The casing is made of "plies" — layers of woven material, usually laid over one another at a 45-degree angle. The plies in higher-quality tires have more threads per inch — the tire equivalent of 200 thread-per-inch percale bed sheets. With my tires, the threads in the casing separated under pressure, which caused a blow-out in each case.

Rolling Resistance and Drag

In terms of speed, your choice of tire depends on two things — rolling resistance and aerodynamic drag. Of course, there are other factors to consider, such as weight, tread and durability, but these factors don't directly affect speed.

Rolling resistance is created when the casing of the tire flexes as the tire contacts the ground. Energy is lost as the tire flexes, and for a given pressure, a narrow tire must flex more than a wide tire to create the same size contact patch — the area of the tire that contacts the ground. This is compounded by "scrubbing," which occurs because the diameter of the tire is smaller at the edges of the contact patch than in the center. As with casing flex, scrubbing is more pronounced on a narrow tire. What this means is that all other things being equal, a wide

tire will have a lower rolling resistance than a narrow tire.

Of course, it's never that simple. One of the reasons Miguel Indurain rides on very narrow tires is that the narrower the tire, the lower the aerodynamic drag. At the speeds Miguel rides, that's important. At the speeds I ride, however, aerodynamic drag isn't as big a deal. The reason is that aerodynamic drag increases exponentially as speed increases. For example, aerodynamic drag is four times greater at 50 km/h (Miguel's speed) than at 25 km/h (my speed).

Other Things to Consider

Speed isn't the only reason most people ride, and consequently there are other things to consider in buying a tire, including:

•**Weight:** Narrow tires are lighter, and consequently a bike with narrow tires will accelerate faster for the same amount of effort as a bike with wide tires. However, small wheels weigh less than large wheels, so a more effective way to reduce rotating weight is to reduce the size of the wheels. A 20" front wheel with wide 37mm tires might weigh only 1000 grams, compared with 1300 grams for a 700C wheel with narrow 23 mm tires.

•**Tread:** Most tires have some sort of a patterned tread, often an "all-weather" file or herringbone pattern, or sometimes angled grooves. I was

surprised to learn that it's all cosmetics. On a bicycle tire intended for road use, a patterned tread really isn't necessary. You need grooves on an automobile tire because of the flat cross-section — the grooves push water out the sides and prevent hydroplaning. But a bicycle tire has a round cross-section, and the water gets pushed to the side automatically. Most people don't realize this, however, and are reluctant to buy smooth tires (known as slicks). Consequently, tire manufacturers add patterned treads, which can increase weight and rolling resistance.

•**Kevlar:** Many tires incorporate kevlar, the same stuff used in bulletproof vests. A tire with a kevlar *bead* is lighter than a tire with a wire bead, and can be folded like an innertube. A tire with a kevlar *belt* between the plies in the casing is more resistant to punctures — I've pulled shards of glass and metal from my kevlar-belted tires without a puncture. When buying a kevlar tire, be careful to determine whether it's a kevlar *bead* or a kevlar *belt*.

•**Valve:** Rims are drilled to fit either Presta or Shraeder valves. If you have a choice, go with Presta valves. They're the skinny ones with the knurled nut at the top that has to be loosened before you can pump up the tire. I've never had a Presta valve leak or fail on me. Shraeder valves belong on cars, not on bicycles.

Tire Size

Okay, so far everything's pretty straightforward. Wide tires are good. Slicks are good. Kevlar is good. Presta valves are good. But what tire size is good?

For me, the answer depends on what sizes I can find at Wal-Mart. If I'm riding out in the country somewhere, and I puncture a tube or my tire disintegrates, I want to know that I can find a replacement at the nearest bike shop or hardware store. I don't like having to carry a pannier full of odd-sized tires and tubes, which is what I had to do on a tour through the Cascades last year.

Traditionally, tire sizes are mea-

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sured as the outside diameter of the inflated tire. However, this can lead to confusion. For example, a wide 26" tire has a larger diameter than a narrow one. And only the widest 26" tires are actually 26" in diameter — some are as small as 24.5." Think that's bad? It get worse. If you have 20" tires on your 'bent, you have to be *very* careful when buying tires, because there are three 20" tire sizes. There are also multiple sizes of 16", 24" and 26" tires.

To avoid all this confusion, it's best to refer to tires using ISO sizes.

ISO is the International Standards Organization, and they measure rims and tires based on the diameter of the bead (in millimeters). This makes sense, because the bead diameter is what determines whether or not a particular tire will fit on a rim.

On my V-Rex, the rear 24" tire has an ISO size of 520 mm. The front 20" tire has an ISO size of 451 mm. Neither is a common tire size. Wal-Mart doesn't stock these sizes, and neither do 99% of bike shops (these statistics are based on an informal and frantic telephone poll of local bike shops conducted the day before I left on tour, after yet another tire committed hari-kari).

From now on, I've decided that my recumbents will use only 26" and/or 20" wheels (ISO 559 mm and 406 mm). These are mountain bike and BMX sizes, respectively, and you can find a tire in either size almost everywhere. Sure, you may only find knobbie tires that really slow you down on pavement, but if your last tire has a three-inch gash in it, a knobbie is better than nothing.

Wouldn't it be nice if everyone rode recumbents, and wide, slick, kevlar-belted tires were available in every size imaginable? Ah well, no harm in dreaming. In the meantime, watch for glass and nails on the road, and pack a spare tire and tubes. □

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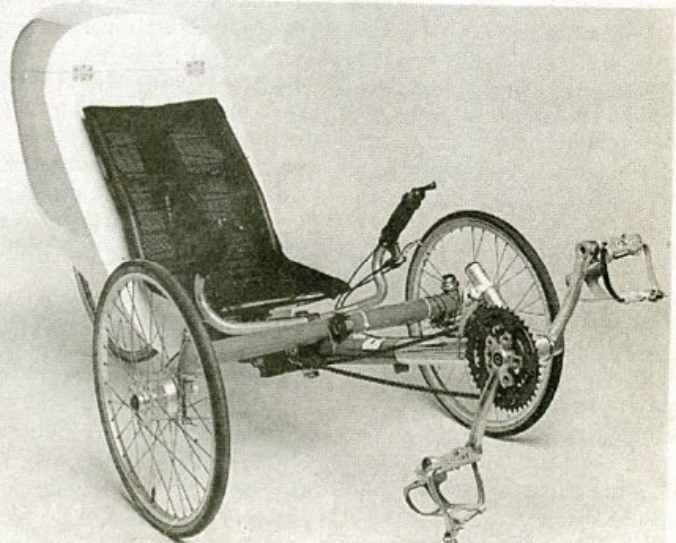
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How to Make a Fast Pig

"You can't make a pig into a race horse, but you can make a really, really fast Pig"

by Kent Peterson, peterston@halcyon.com

Last September a fractured collarbone had me questioning my wisdom of riding around on an upright bike, I began to seriously look at recumbent bikes. I was looking for a commuting bike and after riding a few different bikes, I decided on the 21 speed BikeE. I liked the way it handled, the way it looked and the way it fit into my budget. The only remotely negative thing I heard about the BikeE was that it wasn't an especially fast recumbent. The BikeE puts the rider in a more upright riding position than what you find on many 'bents and while this is great for visibility and handling in traffic, it doesn't do a lot for the aerodynamics of the machine. I figured I could start with the BikeE and if I felt the urge to go really fast, I could always do a bit of tweaking to make it go faster.

I've affectionately dubbed my customized BikeE "The Fast Pig." The name comes from a slice of internet wisdom forwarded to me by Brad Teubner (an EZ-1 rider). The line has stuck in my head and has been my guiding principle in building up the bike: "You can't make a pig into a racehorse, but you can make a really, really fast pig." In this article I'll describe the processes I went through in converting my stock BikeE into a "Fast Pig" of a machine.

The first task in the evolution of the Fast Pig was to just ride the bike every chance I got. It really does take time to build up recumbent muscles and in the past six months I've logged about 2,000 miles. A bike is only as fast as its engine and I know I still have quite a ways to go before I figure my engine is in tip top shape.

STOPPING THE FAST PIG

Back when I was a USCF racer my coach told me that "if you want to go fast, make damn sure you can stop fast." It was then that I first learned about Scott-Mathausser brake pads and I still swear by these things. The stock BikeE brake pads are okay

but Scott-Mathausers are much better, especially when stopping in wet weather. While I was working on the brakes, I decided to replace the front cantilever brake with an old Dia Compe center pull brake (also equipped with Mathausser pads). The Dia Compe gave me a bit more stopping power but it's main advantage was that it had long brake arms that would let me experiment with using a different size wheel up front.

WHEEL/TIRE COMBOS

The standard BikeE front wheel has an ETRTO size of 305 mm and comes with a 16 x 1.75 inch fairly low pressure tire (45 psi). My first effort at experimenting with different tires involved replacing the front wheel with a 349mm wheel with a 16 x 1 inch 110 psi Primo racing tire. On the back I installed a similar high pressure Schwalbe City Marathon 20x1.25 inch tire. This combination was very fast, but it had one serious downside: lousy wet weather traction. I found this out on one very exciting soggy commute last November. These skinny high pressure tires just didn't have enough contact area to hold the road under adverse conditions. Since I'm not racing but just trying to ride quickly and safely

through the real world, I went back to the stock BikeE front wheel and I'm now riding a Hwa Fong Rubber Duro up front and a Continental Top Touring 2000 in the back. I'm running both tires at 80 psi. This seems to give me the best combination of speed and safety. Since I still have the option of switching the front wheel back to the 349 mm wheel I will probably check out the Primo 16 x 1-3/8 inch front tire some time in the future.

CHEAP FRONT FAIRING

Next I turned my attentions to the BikeE's aerodynamics. This wound up being the area where I did the most tweaking, had the most fun and found the biggest speed gains. Let me say right here that everything I've heard about Zzipper fairings has been positive but it would take me a few months of savings to purchase one and I wanted to get faired in time for the winter. I decided to try building a fairing myself first. If I wasn't pleased with the results, I could always buy a Zzipper later.

I wound up building a couple of different styles of fairings and doing various tests where I rode around and found out what I liked or didn't like about a given design. My cur-

rent fairing has remained pretty much unchanged for the past few months and I'm very happy with it.

The fairing is made mostly from 4mm coroplast. 2mm coroplast would be lighter but at the time I was making the fairing, I couldn't find the 2mm stuff locally. At my local Ben Franklin craft store I bought 4 sheets of 20" x 30" 4mm coroplast poster board. In addition to the coroplast, the fairing is built from polyethylene sprinkler tubing, a clear plastic safety faceplate from a hard-hat, wooden dowels, PVC pipe fittings, zip-ties and duct tape.

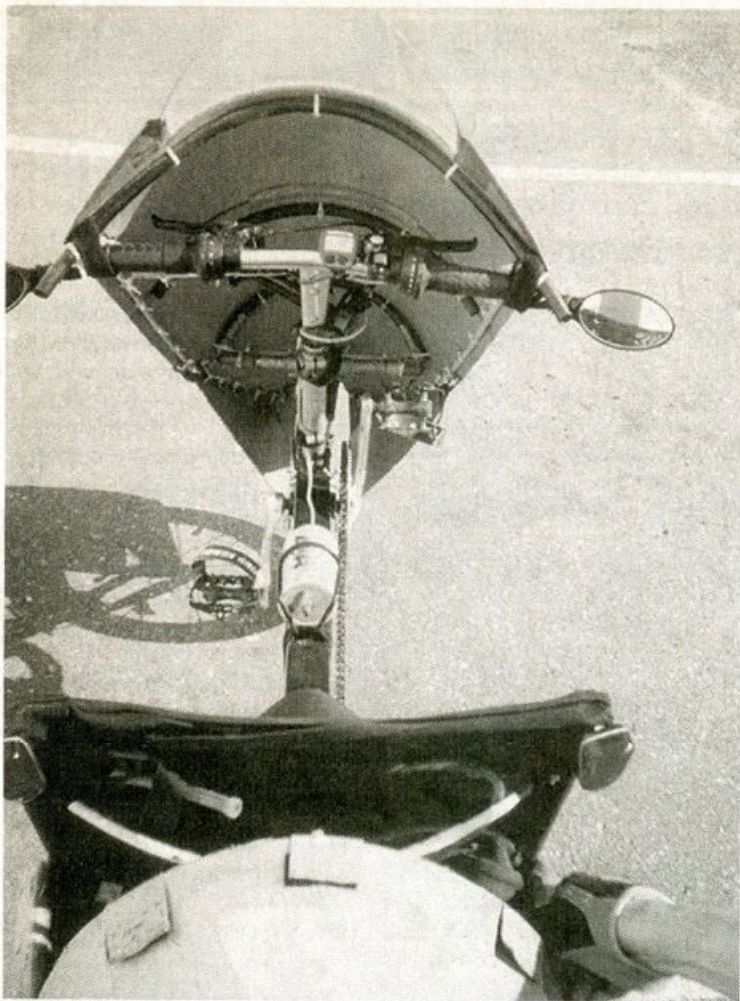
The windshield is an industrial face shield. It's made to snap onto a hardhat. It's made from clear polycarbonate and cost \$4.47 at my local Eagle hardware store.

The polyethylene sprinkler tubing is about 5/8" in diameter and it's more flexible than PVC pipe. A 10' roll was about \$3 at the Eagle hardware store.

The main body covering is a 26" wide piece of coroplast with a notch cut in the top that is wide enough for the clear shield to fit into. I used 5/8" diameter wooden dowels 36" long as coroplast stiffeners. To secure pieces and fair in rough joints, duct tape was used liberally. My local Target store stocks 7" nylon zip-ties in hundred piece packs for 64 cents. I used about 100 zip-ties in this project. Target was also where I got my color coordinated duct tape. For this project I used blue coroplast with color coordinated blue duct tape.

The key to making the coroplast into an actual fairing comes in the attachment to the ends of the BikeE's handle bars. I had previously mounted Rhode Gear Multi mirrors on both ends of the BikeE's handlebars and these mirrors gave me a convenient place to attach a couple of zip-tie loops that the pipe could slide through. The BikeE bars are about 20" wide so the whole fairing bows





out forming a nice smooth 1/2 cylinder. The front fairing did a lot to improve the BikeE's aerodynamics and foul weather comfort, but I still wasn't done.

AERO TAILBOX

For carrying a lot of gear, the BikeE under-seat pannier racks are great but aerodynamically, they are terrible and for my relatively small commuting loads, they are overkill. My first tailbox attempt was a Rubbermaid Roughtote that I attached behind the BikeE's seat and made "swoopy" by adding coroplast. This worked OK, but I wasn't quite happy with the way it affected the BikeE's balance and handling in a crosswind. Then one day I was in the Eagle hardware store and I saw something that looked like it would be just the right shape for a tailbox. What I found was a wire basket that was designed for holding a floral arrangement up against a wall. This basket was made of stiff steel wire (like piano wire) and shaped like a 16 inch dia. half-cone. It cost \$4.79.

I used the wire basket together with duct tape, an old pair of racing bike handlebars, a chunk from a foam backpacking mattress, some double sided velcro tape, a couple of leather thongs and one bungee cord to make a tailcone that is aerodynamic,

weatherproof and big enough to hold my tools and other stuff.

Here are the details of how all the pieces fit together. The first step was to stretch some kind of skin over the surface of the cone. Since I don't have a big research budget and all kinds of cool substances like Kevlar to work with, I used duct tape. Duct tape actually works quite well for this if you treat it like those math exercises where you build a curved surface up from a series of straight lines. It's also useful to remember that duct tape bonds to a variety of things but bonds best to itself.

I covered the cone with duct tape but I left the mouth of the cone open. Then I traced the mouth of the cone onto a piece of 5/8" thick closed foam mattress pad. When I cut out this tracing, I had a 16" diameter half circle of foam that just covered the mouth of the cone. I completely covered this foam semi-circle to the flat edge of the cone by using layers of duct tape to form a hinge. I made three little flaps out of duct tape and attached velcro to make latches that would hold the door closed.

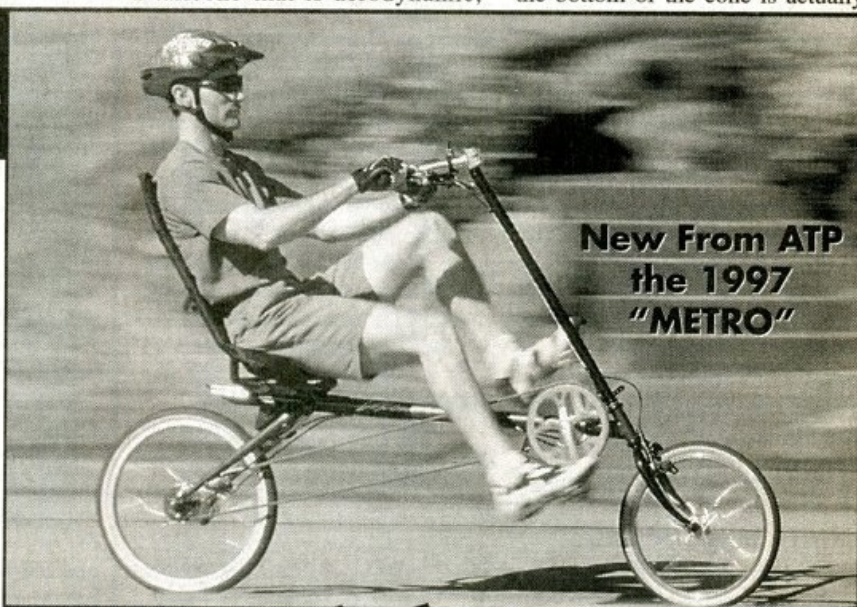
The idea was that the tailcone would sit in the wind shadow behind the BikeE's backrest. But the backrest tilts back a bit so if the top of the cone is touching the backrest, the bottom of the cone is actually



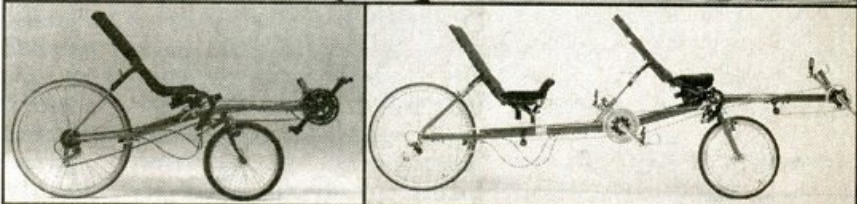
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back a few inches. And a couple of test rides told me that I didn't want the cone touching my back, I wanted room for the backrest to flex.

This is where I got the idea to use the old racing bike handlebars as a spacer. The bars are the same width as the BikeE's backrest. I used hose clamps to attach the bars to the bottom of the backrest. The ends of the bars point down and the flat cross-section of the bars rests on the back section of the BikeE's main beam.

I fashioned a couple of loops from velcro tape and attached them to the bottom of the tailcone. These loops wrap around the rear beam of the BikeE and this lets the whole tailcone slide back and forth on the beam. With the tailcone slid back I can open the door at the front of the cone to put gear into it. When the cone slides all the way forward, the closed door presses against the handlebars. I use leather loops and a bungee cord to hold the cone in the forward/closed position.

I covered the edges and bottom of the racing handlebars with duct tape to smooth the edges and make a little hammock in the dead space behind the BikeE's backrest. This space is just right to hold a Camelbak. The Camelbak is placed horizontally and I use an extension hose to route the water up to my mouth.

LOW BUDGET WHEEL DISCS

My last aerodynamic modifica-

tion was making the rear wheel into a pseudo-disk by making a coroplast wheel cover. This was really very easy. I took a couple of old campaign signs (but any coroplast would do) and cut two circles just big enough to cover the spokes on each side of the rear wheel. I had to cut smaller circles out of the center of each disk to allow space for the hub and free-wheel. I also cut small pie-shaped wedges going from the center to the edge of each coroplast circle. These wedges let me slide the disks over each side of the wheel and then once in place, I pressed the back edge of the wedge-shaped slots together. This makes the disk snug down over the spokes to follow the dish of the wheel. When I had the disks roughly in place, I cut a notch in the edge of each disk above the tire valve. This notch lets me pump the tire without having to remove the disk covers.

I then punched little holes in each disk and threaded zip-ties through the spokes and tightened everything down. I smoothed the wedge seam with a layer of duct tape and then to make things look better, I used a black magic marker and reflector tape to make the disk look more professional. The final result looks good, works great and the overall cost of my rear "disk" was about \$1. If I ever need to true the rear wheel, I'll have to snip a few cents worth of zip-ties, true the wheel and put the covers back on.

MORE UPGRADES

This is a continuing series of little things I've done over the past six months that seem to have given me little improvements. But little things add up. These little tweaks include:

- Getting rid of the chain tube.
- Replacing the derailleur pulleys.
- Installing a Sachs chain.
- Installing a 47 tooth chainring.
- Installing PowerGrip pedals.

Okay, this sums up what I've done to my BikeE. Now it's time for the real questions.

How damn much does all that weigh? The short answer is "I don't know and I don't care." I tried to keep things reasonably light but I don't even know what I weigh, much less what my bike weighs. But I can tell you this. Once a month I ride around with the Northwest Low Down and Laid Back Recumbent riders. Every month there are two guys who always leave the rest of us in the dust. Their bikes each weigh close to 90 pounds. I figure my bike is less than half that.

Yeah, but is your bike fast? I tend to be number three in our local rides after Joe and Nick on their full streamliners. Bob Bryant has called the Fast Pig "the world's fastest BikeE." I'm not so sure. I think Andrew "Midnight" Letton on his BikeE Racer is faster. I do know that I'm faster now that I've done all of this stuff, but some is aerodynamics, and much is training.

But you are faster? Yep, a couple of mph on the average. I averaged 16 mph on last night's 19 mile stop and go commute. I can cruise in the low twenties on flat land and I can do a flat sprint up to 35 mph when I'm chased by a big dog. I don't know yet how fast I can go on a downhill because terrain and my lack of nerve have kept my maximum speed at 38 mph so far.

What about hills? On rollercoaster hills I'm faster because of momentum. On my commute I have one big hill that I have to climb from a dead stop, and I have to just sit and spin up it. But what doesn't kill me makes me stronger and I find that over all the fairing and tailcone are more than worth their weight.

How about wind? My current fairing/tailcone/wheel disk combo is very good in headwinds, crosswinds and tailwinds. Some of my earlier attempts presented too much "sail" area to crosswinds and they were spooky. In a stiff headwind I can scrunch behind my windshield and make good progress and with a tail

wind the fairing acts a bit like a spin-naker. I can feel the crosswinds but because the center section of the BikeE is still open, the side pressure isn't too severe.

What's next? I'll continue to commute and I'm going to be riding the STP (Seattle-to-Portland ride). I may get around to making a Lycra bodystocking. I'll see you on the road. I'll be the guy on the Fast Pig. **PIG NOTES:** Kent is a member of our local recumbent rider group and his bike draws a lot of attention. He is extremely speedy on the "Fast Pig." When he's riding with the group, we always feel like he's holding back. He can accelerate into the lead at most any time. So far, I haven't witnessed any drag races between Kent and Nick or Joe, both riders of Kochanowski designed and built 90 pound homebuilt streamliners, but I know that Kent puts a lot of \$3,000 recumbent riders to shame.

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tooeasy1@aol.com
<http://www.easyracers.com>

Calendar/Rider Group Listings

1997 EVENTS

LOW DOWN & LAID BACK 'BENT RIDES
Every Saturday (thru 8/30/97), 9am from Bicentennial Park (Southcenter area) I-5 to I-405 to W. Valley Hwy., west on Strander Blvd., one block, right into park, back parking lot. We will be going back to the Black Diamond Bakery rides for the fall starting Oct. 4th. 9:30 am Lake Meridian parking lot in Kent. Ph/Fax #253/631-5728, DrRecumbnt@aol.com

HPV WORLD CHAMPIONSHIPS
July 26-August 1
Cologne, Germany
Contact: We have not been supplied with contact info for this event.

EASTERN CANADA RECUMBENT RIDE
August 3, 1997
Mahone Bay, Nova Scotia, Canada
This ride will be part of the Atlantic Canada Bicycle Festival. For more information: Kevin Baker, 902/827-2019 or fax 902/468-6480.

NORTHBROOK 100
August 1, 1997
Northbrook, IL
Contact: HPR¹ event see below¹

MT. AIRY BENTEVENT
August 23 & 24, 1997
Mt. Airy, MD
Larry Black @ 301/854-6876 or email: abikie@aol.com

MICHIGAN RECUMBENT WEEKEND
September 5, 6, 7
Moline, MI (south of Grand Rapids)
Recumbent rides, demonstrations and Vineyard Classic Bike tour on Sunday.
SASE to Bob Krzewinski, 706 Dwight Street, Ypsilanti, MI 48198-3036
Email BobMich@Compuserve.com

INTERBIKE INT'L BIKE EXPO
September 4-7, 1997
Anaheim, CA
Contact: Interbike @ 714-376-6161
Dealer/industry (ONLY) trade show

PEOPLE MOVERS BENT BASH CHARITY Event and Ride to the Beach
September 6, 1997
Orange, CA
Contact: People Movers @ 714/633-3663

12TH ANNUAL TOUR de POSSUM
September 20th, 1997
Texarkana, TX/AR
Contact: 903/793-7010
Email: Pengr@compuserve.com
<http://www.bkx.com/tourdepossum>

BOB GALLOWAY MEMORIAL AMISH COUNTRY TOUR "a great bent event"
September 20th
Aurthur, IL.
Contact: Dennis Cunningham @ 217/767-2730. (leave address).

LOW DOWN & LAID BACK RIDE TO THE BLACK DIAMOND BAKERY
Sunday September 21, Noon
Kent, WA Lake Meridian Park parking lot.
Cookie, round powerbar (doughnuts) &

coffee run.
Contact: Bob 206/631-5728

LOW DOWN & LAID BACK RIDE TO THE BLACK DIAMOND BAKERY
Saturday October 4, 9:30 am
Kent, WA Lake Meridian Park parking lot.
Regular lunch ride
Contact: Bob 206/631-5728

LOW DOWN & LAID BACK RIDE TO THE BLACK DIAMOND BAKERY
Saturday November 1, 9:30 am
Kent, WA Lake Meridian Park parking lot.
Regular lunch ride
Contact: Bryant 206/631-5728

LASERR RECUMBENT RALLY
December 6 & 7, 1997
Daytona Beach, Florida
Contact: SASE to Fred Ungewitter, 1964 Forest Ave., Daytona Beach, FL 32119-1591. fredu@america.com

USA RIDER GROUPS

•ALABAMA/GEORGIA (North state): First Sat. of every month, 9 a.m. from Hokes Bluff, AL City Hall-Call Dave @ 205/492-3454 or Email: burgess@cybrtyme.com

•CALIFORNIA, EASY RACERS (Watsonville): 3rd Saturday of each month, 9:30am, ph#408-722-9797.

•CALIFORNIA, (LA area): Third Sun. of every month, 10 a.m. at Burton W. Chace Park, Mindanao Way, Marina Del Rey, CA. Chris Broom Email: cbroome@arco.com

•CALIFORNIA, PEOPLE MOVERS, (Orange County): Monthly rides to the beach in Orange County, Ph#714/633-3663.

•CALIFORNIA, (Palo Alto): Call Alvin Chin ph#415-571-5147.

•CALIFORNIA, (San Diego): Last Sat. of every month from the Mission Bay Visitors Center. Bill Volk, 2348 Lagoon View Drive, Cardiff CA 92007. Ph#619/824-8323, Email: bill_volk@lightspan.com,

•CALIFORNIA, EASY RIDERS (San Dimas/25 mi. E. of LA): Casual rides most Sat. 20-50 mi. and Sun ~10 mi. Call Leo Ketterman @ 909/599-0698 or leok@usa.net

•FLORIDA, FOOLS CROW CYCLES, (Tallahassee): Call for schedule and Sunday "Bike Church" ride. Call Ed Deaton ph#904/224-4767 or email: edde@freenet.th.fl.us

•FLORIDA, LASERR, (Daytona Bch, FL, GA, AL): SASE to Fred Ungewitter, 1964 Forest Avenue, Daytona Beach, FL 32119-1591, Ph# 904/767-5768, fredu@america.com

•ILLINOIS WISIL HPVers, (Chicago area): Contact: Len Brunkala, 260 S. Channing, Apt.#1, Elgin, IL, 60120-6619.

•ILLINOIS WISIL HPVers, (Chicago area): Contact: Fast Eddie Gin ph#773/237-6624

•ILLINOIS, (Champaign/Bloomington area): Tom Smith at ph#217/351-7305, Email tsmith@s.psych.uiuc.edu for info.

•MICHIGAN: Michael Eliasohn, 2708 Lake Shore Dr., #307, St. Joseph, MI 49085. Ph#616/982-4058.

•MINNESOTA, MnHPVA (Mnpls.): Meets 2nd Wed. 7:00 PM Lake Nokomis Community Ctr. Pre-Meeting Ride 6:00 PM - Mar.-Oct. Contact: Mark Stonich @ 612/824-2372

•NEBRASKA, County Cruisers (Omaha): Ride on the 2nd Sat., 6-30 mi. Contact: Armand Gibbons, No fees, no dues, just lots of fun! Ph#402/553-4472. <http://www.nfinity.com/~armandg.html>

•NEW MEXICO (Albuquerque) Ride one Sunday morning per month. Contact Hester at Absolutely Recumbent Ph#505/345-7736

•OREGON HPV ASSOC. (greater Portland): Meetings rides and a bimonthly newsletter. Ride contact: Jeff Wills @ 360/254-3736 Email: jwills@pacifier.com OHPV, PO Box 614, Beaverton, OR 97075

•TEXAS: R-BENT (Recumbent Bicycle Enthusiasts of North Texas): Monthly group ride, 4th Saturday. Call for time and location, Ph#972/329-1225, Web: <http://web2.airmail.net/imbent2/bentride.htm>

•WASHINGTON, LOW-DOWN & LAID BACK Recumbent Riders (Seattle, So. King Co.): Meet very Saturday (thru 8/30/97), 9am from Bicentennial Park in the Southcenter area. I-5 to I-405 to W. Valley Hwy., west on Strander Blvd., one block, right into park, back parking lot. We will be going back to the Black Diamond Bakery rides for the fall starting Oct. 4th. 9:30 am at the Lake Meridian parking lot in Kent. Info#253/631-5728, DrRecumbnt@aol.com

•WASHINGTON (SW) Vancouver Bicycle Club recumbent rides meet on the 3rd Saturday of the month from the Old Holland Bakery. Ride starts at 9am. Gale Simpson @ 360/891-1947

•WASHINGTON (SE) WRTW2* (Two Wheeled, Recumbent Riding Trombone Teachers of Walla Walla., Bill email: VonBruno@bmi.net

•WASHINGTON DC AREA: W.H.I.R.L. Meets Saturdays weekly 8 a.m. (9 a.m. winter) at the Viers Mill Rec Center. MD, north end of Beach Drive, weather permitting, at 8am Contact: Vic Sussman @ 301/565-3050 or whirl.cycling.org

¹ Human Powered RaceAmerica (HPR¹) events. For a complete set of rules, and a complete set of race descriptions and directions, contact Garrie Hill at garriehill@nextek.com or write Garrie Hill, 220 Vill-Edge Drive, Granville, OH 43023

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ABOVE AND RIGHT: The pictured BikeE has a sliding BikeE accessory adapter and the Load Llama™

NEWS RELEASES

LOAD LLAMA OFFERS COMMUTING CYCLISTS UNPRECEDENTED CARRYING OPTIONS AND SECURITY ON THE ROAD

Vail, CO—Nett Designs, a computer-conscious bicycle accessory company in Vail, Colorado is offering a newly patented rear bicycle rack designed for versatility, convenience, and safety. Sold either as a complete rack or as an accessory that fits on existing racks, Load Llama™—The Ultimate Bike Rack™ features expandable, rotating arms that form a sturdy frame basket or stable flat platform to accommodate objects of almost any size and shape. When not in use, the arms neatly retract.

Load Llama™ designer Ted

Simonett commented, "You know how often you see a kid riding with a basketball under his arm. This rack is ideal for him. It's so much safer." Simonett pointed out his rack is most useful to students and the growing number of exercise-conscious and energy aware commuters who rely on the bicycle for their primary transportation.

In addition to basketballs, briefcases, pizza boxes, coolers, and sizable boxes of groceries are among the objects that can be transported securely. Simonett has placed much greater demands on the ingenious system, testing it with a trombone, a cinder block and even champagne in an ice bucket (on a smooth road!).

San Francisco bike messengers started using the Load Llama™ extensively last summer. Aero deliv-

RIVENDELL RETRO

Closet retro-grouches unite! Former Bridgestone chief, Grant Petersen's, now publishes the **Rivendell Reader**, a newsletter and catalog of "too retro" bike stuff. Grant doesn't like index shifting, cassettes or gel seats. At Rivendell, he ferrets out old stock retro parts, and has new stuff designed and built for Rivendell. He offers a line of road frames that are built to his design by Waterford (former Paramount factory). In RR#9, Grant offers brand new old stock Dia Compe 450B center pull brakes, boomerangs, Nitto high stems, drop bars, his own Willow Chainrings and some old stock Suntour goodies including Cyclone brakes, levers and old stock derailleur. RR has a parts catalog and is a good source for Brooks seats and Carradice bags and panniers. To subscribe to the Rivendell Reader, send

\$15 to: 1561-B 3rd Ave., Walnut Creek, CA 94596 or give them a call at 510/933-7304 or <http://www.veloworks.com/rivendell>.

Another great retro source is Michael Kone's **Bicycle Classics** at 617/455-0590.

BENT BITS: AeroLite has introduced super light 123 gram (pedal & cleat) clipless pedals. AeroLite achieves their light weight with the help of a new space-age bearing material called Turcite. AeroLite uses a 7075-T6 titanium spindle and aluminum end-bolt. The two-bolt cleat uses the two rear holes of Look compatible shoes. The pedals retail for \$125-\$160. AeroLite Bicycle Components 209/383-4251.

Speedplay has introduced a the new Slim Line cleat that weighs just 96 grams. 1-800-468-6694. □

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Bicycling Magazine,
August 1994.

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GRIST FOR THE MILL (blatant rumors)

.....AND BOB RANTS

The Seattle flagship **REI** (Recreational Equipment Co-Op) is now stocking **ATP Vision Recumbents**. If you live on the west coast and haven't yet been to this store, GO! ATP is having a record sales year and going through an ambitious expansion during the middle of the season. Deliveries on all models are at the 6-8 week level, though there are dealers who have bikes in stock. **S & B trike** is their best selling model. It's certainly the best priced trike in the USA at \$910 + options. **Wild Bill Volk** of San Diego, California of local HPV racing and coroplast fairing fame has a new lightweight racing machine built for him by S & B. Bill uses a Rans seat on this bike. Jack of S & B also wanted us to mention that they install **Zap electric motor kits** as optional equipment, however, they don't recommend them to everyone because they are too powerful. S & B offers customized Zap mounting hardware. S & B also has a new tall persons seat. The new seat offers more upper back support (funny how that works—see my report this issue). **Bill Haluzak** has a new bike designated the Horizon-A which incorporates many of the desirable options including V-brakes and bar ends controls. Bill recently shipped us a

Hybrid Race that weighs under 26 pounds. On a recent 40 mile test ride, we especially liked the Haluzak **FULL** sling/mesh seat offering total breathability, something that is becoming more rare in recumbency. Bill also mentioned that he has a new source for suspended 20" front forks. Bill was spotted checking out the "compact" competition at a recumbent shop recently..... Things on the **Lightning** front are really quiet as far as RCN is concerned. We haven't heard anything from them since January of this year when we edited the BG specs. We sure would like to get a P-38 test bike to compare against the SWB hot rods that have been in and out of the RCN garage this season. We saw a trick **Angletech/Lightning GL63 P-38** with a Sachs 3x7, 20" front wheel, and Rans flip-it stem in Colorado. The craftsmanship and paint looked very nice. Angletech can also lace a 3x7 hub into a HED wheel (as done on Bob Meierhans new **Angletech Gold Rush Replica**, complete with gold paint and White Industries shifter/derailleur. The fully suspended **Altitude** SWB is finished and available on custom order (\$3500!) We should have our unit by the time you read this. An **Angletech Ostrad** fully suspended LWB is also

stateside in Colorado. **Tricumbent** seems to be either out of business or on a hiatus. We haven't been able to get an update on the company's future. Mt. Airy Recumbents has a demo for sale. The mortality rate of trike manufacturers sure is high. The 1998 season is beginning to take shape for the **Rans** company, though we're not sure what to expect. Sales have been fantastic, in fact, they had beat '96 sales numbers by April of '97. We expect to see changes in both the LWB and SWB lines. **Gardner Martin's Easy Racers** is busy while lavishing in the praise of the July *Bicycling Magazine* review. The Gold Rush Replica was already a good seller, though now it will be considered by all as the supreme recumbent speed machine. Our new Gold Rush Replica has arrived. It has HED wheels, Scott Superbrakes, Super Zzipper and all the rest of the Black Gold goodies. It tips the scales at just 27 pounds (no accessories). The Black Gold kevlar fairing and body stocking won't be available until late 1997. **Dick Ryan** has raised the price of a Vanguard to \$1850 while also upgrading the specs at the same time. A **top secret suspension** recumbent targeted for 1998 release was just canceled. The manufacturer gave the reason that bike enthusiasts

(apparently not recumbent enthusiasts) won't buy dual 20" wheels. We had hoped for a new **Greenspeed** test trike, or maybe even a tandem or bodied GTR20/20, but no suitor has been found and the cost of importation is just too high. If interested in a Greenspeed tandem trike post test, let us know. The **Wheel EvoGLIDE** is a recumbent that is truly holier than thou. Just look at the photo of the one with all of the 2" holes drilled in it. This is a "Wheel" exclusive option. I wonder if it comes with a sprinkling of holy water or blessing from the local padre. There has been lots of buzz on the **Pashley PDQ** that looks a lot like a.....Presto. The US distributor is located just a few miles north of us and we haven't yet received the "call" that PDQ's are stateside. A few dealers claim to be getting **WizWheelz** trikes soon, though expect a higher price from dealers. Peter Ross' **Crystal Engineering/Trice** is behind in deliveries, but has shipped a Festina low-racer to Bill Volk and Zach Kaplan for review. Look to the August *Bicycling Magazine* for an article on **penile numbness** and why men shouldn't ride uprights—really bold stuff. It seems as though *Bicycling's* Ed Pavelka likes his Easy Racer Gold Rush Replica! ☐

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but it takes work with the steering.

In 1996 my Stratus frame broke. After inspection, Rans offered to repair my old frame or sell me a new one at a reduced price. CAN YOU IMAGINE THAT! After 11 years! Thank you Rans. I would have repaired the Stratus except that I had just received my copy of the 1996 RCN Buyers' Guide. I kept looking at and reading about all of the different designs. I looked at the V-Rex and I thought this was a neat bike and worth a try. It was an emotional decision based on looks and wanting to try something different.

It took about five miles to love the V-Rex. The handling is fast, but stable. The V-Rex weighs 2.5 pounds less. Here is my comparison:

STABILITY: The LWB is more stable going downhill, while the SWB is more stable going up. The faster response of the SWB under most other conditions gives it the edge for me.

COMFORT: Both bikes are light years ahead of wedgies so this is somewhat a moot point. The SWB allows you to lean the seat back (than the Stratus) taking the weight off your bottom. The LWB is easier on

the legs. It has taken more than 9 months to feel really comfortable with the position of my legs (high bottom bracket). I travel frequently for a week or more. The first ride after being away is when I feel the difference. To put it another way, a LWB works well with toe clips and straps, while a SWB is virtually impossible to ride without a clipless system. I feel the SWB has more potential for ultimate comfort.

NUMBNESS: The only real problem with the SWB has been numbness in my toes. I've tried many things including thicker/thinner stocks, innersoles, different cleat positions, and different bike set-ups. The most promising development was cutting longer grooves in my shoes to put the cleats closer to my heel. I now have the center of the cleat about 3/4's of an inch beneath the ball of my foot. Pointing your toes forward on downhills also helps.

OTHER BIKES: I have rented a '95 Stratus and a faired Tour Easy in my travels. On both bikes I took my shoes and pedals with me. I had brief periods of numb feet with both bikes, but this was before I modified my shoes. The new Stratus was more stable and felt quicker than on my V-Rex. The Tour Easy felt great also.

The steering is more direct than the Stratus but the vinyl covered seat (old model) was horrible, though the owner liked the seat.

SPEED: Most of my Stratus riding was done in Georgia and South Carolina while I now live in Kentucky. What I remember of my Stratus rides was that it was a bit faster than the V-Rex. However, I am a few years older and my riding is over different terrain (12-20 mi. commutes). I am just now getting used to the V-Rex and my speed is increasing. The V-Rex is definitely faster on the hills.

EQUALITY: Both bikes are more trouble to haul through a building than a wedgie. Both fit on my rear carrier. Both bikes draw hoots from teenagers and looks of wonder from kids and adults. Both bikes get ignored by racers, you know the ones with commercials on their jerseys. Both bikes are more visible to motorists. Both of my bikes were beautifully constructed and painted. Both are better for me than any wedgie.

CONCLUSIONS: I love riding both bikes and recommend both. The LWB may be initially easier to start off, but the SWB handling may feel more comfortable on hills because it has a more wedgie-like feel. My goal for next year is to

climb Mt. Mitchell in North Carolina (12,000 foot climb/ 100 miles)!

Dennis Carlson, P.E.

Dennis, the Stratus and V-Rex are two fine bikes. I find that the SWB riding position (non-extreme BB height) has the most potential for ultimate comfort, but agree that possibility of toe numbness exists. Bottom bracket height and heel interference are issues for some; Stability: I find LWB ASS bikes more stable at speed, though the Rocket/V-Rex are nearly as good and take less steering/tracking effort; Low speed SWB heel interference bothers riders for a while; Comfort: the V-Rex and Stratus are two of the most comfortable recumbents for rider ergonomics and are outfitted with the excellent Rans seat, though the seat works best on medium-high BB bikes; Speed: I would rather climb up steep hills on a SWB like a V-Rex or Rocket (I just completed the Slumgullian tour in Colorado on an Angletech V-Rex24 GL63). LWB ASS bikes seem to go faster down the other side. I also find it easier to climb on a SWB, though it has been awhile since I've climbed on a Gold Rush Replica; LWB ASS fairings work better (thanks to Zzip Designs) are more effective—Bob. □

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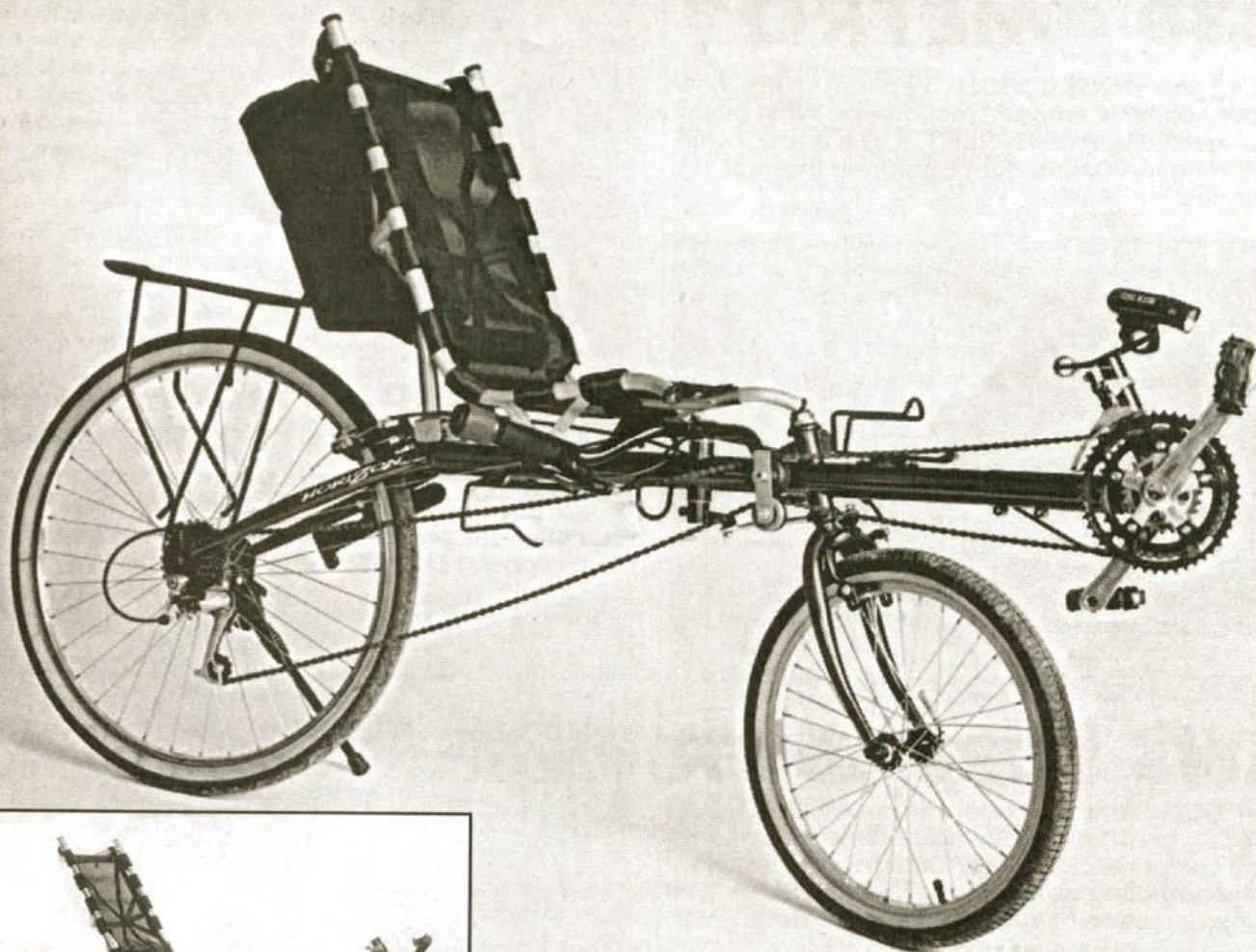
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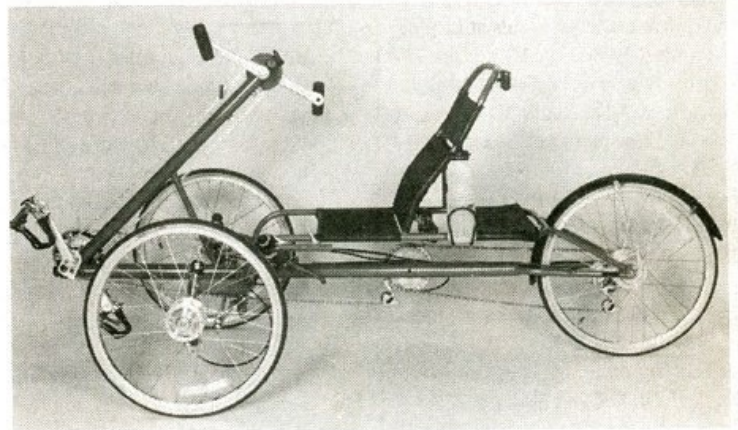
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AD DEADLINE FOR RCN#41
August 10, 1997.

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FOR SALE BIKES AND PARTS: ROTATOR TIGER MWB white with intermediate drive (40-speed), 2 handlebars, frameset \$800. 20" wheels with TNT 8-spd. hub, IRC tires, Sun M14A rims, extra tire and tubes \$300. Complete bike \$1500. Call Roy 423/926-5097 EST (TN/40).

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USED RECUMBENTS

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FOR SALE: one used **Linear LWB with 45" frame**, 21 speed, rear rack, two H2O cages, computer-\$700. One **Linear LWB with 42" frame**, 21 speed, like new - \$850. Call 319/556-6706 Dubuque,

FOR SALE: 1996 RANS V-REX, 24/20-37" frame. Sachs chain, kickstand. 400 miles. Like new \$1200. Ph#919/291-6911 (NC/40)

BIKES AND PARTS FOR SALE: **Demo Rans Stratus 26/20** "fat tire" format, red w/ gold pearl, "C" bar; **New Rans Stratus 700/20** "road" format, Sharkskin, immediate delivery; **ANGLETECH TRUNKS** for Rans, Vision, Haluzak, Lightning, Presto \$69.99; **ANGLETECH TRANSIT** semi-hard cases to fit Vision Metro. **ANGLETECH** 719/687-7475. Anglezoom@aol.com.

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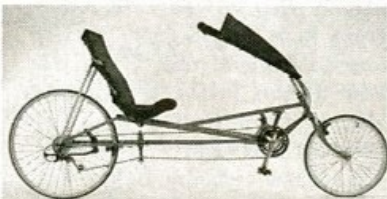
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KEVIN LUDWIG WINS CONTEST!

Congratulations to Kevin Ludwig of Pacific Grove, California. He submitted 4,778 words (3 letters or more) made up from the phrase: "People Movers Recumbent Bikes." For his efforts, Kevin will receive a new set of bike panniers.

This Issues Contest

The list of misspelled words below are all parts of a recumbent bicycle. When all the words are spelled correctly you then must take the circled letters and come up with the answer to our puzzle. In case of a tie, the winner will be chosen from a random drawing. The Winner gets a \$50 gift certificate from People Movers!

HEWEL	— O — — —
MEFAR	— O — — —
TEAS	— O — —
GRINFIA	— — — — O — —
NARCK	O _ O _ _
ETRI	O — — —
KAREB	— — — — O
KOSEP	— — O — —
BUH	O _ O
DANRABHEL	— — — — O — — — —
RAGE	— O — —
FIRESH	— — — — O — —

Clue: I love to do this with my bike!

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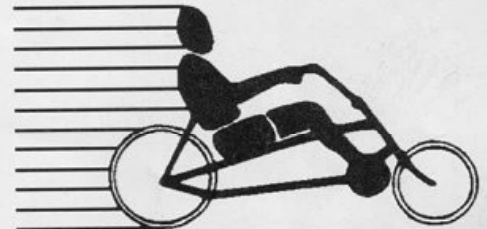
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