

Recumbent Cyclist

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News



The New ZOX Tandem

What's Inside

- | | | | |
|----|----------------------------|----|--|
| 2 | Editorial License | 19 | Road Test: Burley Canto |
| 4 | Recumbent News | 22 | Rec-Tech: TerraCycle Fold-Forward Stem |
| 6 | Letters | 24 | On Getting 'Bent |
| 9 | Road Test: Penninger Trike | 28 | Rec-Equipment: Burley Nomad Trailer |
| 15 | Road Test: Burley Hepcat | | |



Jeff and Emma Kelety ride the Greenspeed GTT in the Port Townsend Rhody Parade (photo by Deborah Carroll)

Parades, Friends, Bicycle Riding Mayors, and a Red 12-Foot Long Greenspeed GTT Tandem Trike

by Bob Bryant

In Port Townsend, where I live, we have an annual event called the Rhody Festival. Aside from our annual Wooden Boat Festival, this is the biggest event of the year for our little town of 8,000 people. Though I love wooden boats, Rhody is special because it involves lots of local people of all ages. The crowning event of the festival is the annual Rhody Parade, which happens on a Saturday afternoon in May. Everyone I know is either in the parade or helping out in some way. The weather is usually overcast with the sun peeking out. This year was no exception.

Though we have plenty of standard parade fare, there are lots of cool small-town participants: bands, floats, candidates, Kinetic Kops, Giant Salmon, and much more. Port Townsend folks like to have fun, so everyone gets out to participate. My kids (Amy is 13; Dan is 10) and I play in drum ensemble called Drum Tribe. I'm lucky enough to be one of two parent volunteers (who also have the nerve to play). This is our third Rhody Parade. Drum

Tribe is well known in town, and the hometown crowd is really into our drumming.

OK, so now I'm sure you're wondering what this has to do with bicycles. Well, each year our small-town mayor rides in a classic convertible in the parade. A week or so prior to the big event, I received an e-mail from the local bike club president that Mayor Kees Kolff had declined the offer to ride in the convertible and had decided to ride his bike in the parade (he is well known for riding his bike everywhere in town). The mayor was inviting local cyclists to ride along with him. Usually I'd jump at the chance to do this, but my gig with Drum Tribe takes priority.

While watching the Rhody Kiddie Parade (the day after the Rhody Pet Parade; we like parades here in Port Townsend), I was telling this story to my pal Jeff Kelety. He said, "I've never been in a parade before, do you think we could ride our bikes in it?" I told him that I thought he could. Just to be sure, he called the mayor to see

if it was OK. I then told Jeff about my current test recumbent. Now, Jeff isn't exactly the world's biggest recumbent fan. He has a 50-year-old wooden sailboat that he owns (or perhaps owns him) and sails, but he does ride his mountain bike around town for transportation. He likes to tease me about my fleet of weird bikes. But when I we walked into the door of PT Cycles and he saw the Greenspeed GTT tandem tricycle, his eyes lit up.

He decided to ride the tandem in the parade with his daughter Emma, who is six. We decided that Jeff needed a GTT piloting course. We rolled the GTT out the door. I told Jeff to hang on, and we were ripping down Water Street. Jeff reminded me that he needed to unlock his Stumpjumper so Amy could ride it home, so I pulled a quick U-turn in the middle of Water Street and headed back into town. Once that duty was taken care of, we took a left on Water as we started Jeff on a crash course of Tandem Trike Piloting 101. Many of our friends, family, and neighbors were still on the street from the Kiddie Parade.

A neat sidebar about this trike is that I have NEVER, in my life, received so many positive responses, smiles, waves, politeness, and extra room on the road as I did riding the GTT. If you want to be well known in your town, get a big, long trike.

Back to my story . . . I had Jeff howling in the stoker seat of the GTT. I think maybe I was scaring him, but he was into it. We rode the parade route backwards (all uphill, instead of all downhill). I had to explain to him about the dual independently operated hydraulic disc brakes, the 81 speeds (a fairly straightforward triple crank + 9-speed cassette + the 3-speed SRAM DualDrive). Though the trike is slow to climb, it's pleasurable because you don't have to worry about balancing it and it has very low gears.

Jeff schmoozed his way through a the piloting course, and I explained that he'd better be careful with this \$6,000 trike. Now we had to convince six-year-old Emma to co-pilot. We debated removing the stoker pedals, but then we noticed that Emma could sit in the bright yellow hammock stoker seat and place her feet on the stoker USS handlebars. Cool. They cruised around the neighborhood, and

Emma was hooked.

So along comes parade day. The parade cyclists met uptown in front of the old food co-op, a few blocks from the start. When Mayor Kolff rode by, the cyclists merged into traffic and followed him on the parade route. Of the twenty or so riders in the parade, you can bet there were no other Greenspeed GTT tandems with the now wild-man Jeff veering back and forth, doing 360's, pretending that the 12 feet (almost) of the GTT were out of control. Emma accidentally dropped her sweater on the road at one point, and another rider picked it up and did a quick handoff to her while in motion.

At the end of the parade, Jeff and Emma brought the GTT back to PT Cycles and backed it into the long parking spot by the door. They'd had their fifteen minutes of fame behind the side-sticks of a Greenspeed GTT tandem at the peak of Rhody fever in Port Townsend, Washington—far from Ferntree Gulley, Australia, where the Greenspeed GTT is crafted by Ian Sims, family, and staff.

The GTT finished its month-long stay here in Port Townsend and is off to another magazine for another test.

Mayor Kolff has my utmost respect as a utility/commuter cyclist who sets such a wonderful example for our townspeople



Port Townsend's Mayor Kees Kolff
(photo by Deborah Carroll)

by riding his bicycle. He has been an inspiration to me as we experiment with car-free life (we sold Marilyn's car in June). I had attended some meetings last winter and was amazed that the mayor arrived on his light-equipped commuter bike during the short, dark days of winter.

We can all learn from the example Port

Townsend's mayor sets. Get out of the car—walk or ride your bike when you can. Most of us can arrange our lives to deemphasize cars. It just needs to be a priority. Lose your late-model car, and you could save enough money to buy just about any kind of new bicycle you want.

Bikes are wonderful bargains—especially compared to cars. They are the most efficient means of transport that you will find on earth.

Oh, I almost forgot. Pal Jeff is sanding, varnishing, and painting *Nais* (his 1950 Folkboat), which is out of the water for yearly maintenance. Emma is practicing for her part as the lead fairy in the play *Hallelujah Hopscotch*. Amy and Dan, along with Emma's brothers Myles and Josh, are also in the play. We are practicing drumming for our next concert at the Low Tide Festival (sorry, no parade). I saw the mayor riding his bike through town this morning and waved at him.

Viva Recumbency!

Bob Bryant

bob@recumbencyclistnews.com

A special thank-you to Deborah Carroll for taking the parade photos of Jeff and Emma on the Greenspeed GTT tandem and of Mayor Kolff. Deborah is married to Jeff and is Emma's mom.

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ZOXBIKES Presents Two New Recumbent Tandems

ZOXBIKES, a recumbent manufacturer in Erlangen, Germany, presents two new recumbent tandems for 2002: the ZOX DUO, a touring-oriented tandem, and the city-concept model ZOX DUO Compact.

For the first time in the history of commercial bicycle technology, these two tandems are powered by two individual drivetrains. This unique setup enables both riders to shift independently and to choose a cadence fitting their riding style.

ZOXBIKES founder and designer Sergio Gomez tested his new bikes extensively. "The new drive-train proved itself, especially on longer rides. The classic tandem constellation, he having more power than she does, she having more endurance than he does, often leads to quarreling. Now the only conflict between partners is when deciding about the ride's destination," he explained.

To utilize your ZOX DUO even more, without constantly having a riding partner, you can replace—in a quick and easy procedure—the rear seat and drivetrain with a standard rear-wheel setup. This option enables you to convert your tandem to a solo recumbent with proven ZOX front-wheel drive.

The second new model, the ZOX DUO Compact, offers two riders tandem bliss while only having the length of a regular solo recumbent bicycle. "It is as nimble as a regular bike and therefore ideal for city traffic," the entrepreneur from Erlangen describes. Of course, it also is equipped with individual drivetrains.

ZOXBIKES develops and distributes recumbents since 1998. About 40% of their business comes from the USA.

E-mail: info@zoxbikes.com or www.zoxbikes.com

Source: ZOXBIKES

***Editor Comments:** Ed Deaton at Fools Crow Cycles in Tallahassee, Florida, is one of the USA dealers for Zox. Ed says that the new tandems start at \$3,600. You can reach Ed at www.foolscrow.com.*



The ZOX DUO tandem. See DUO Compact on cover.

Possible Problem With Double Vision Tandems

We have received three reports of main-frame failures from model year 1999-2000 Double Vision frames. A crack developed in the same area on the frames: at the underside of the stoker's bottom bracket. The cracks went undetected and continued to propagate until the frames failed. In one case the rider sustained minor injuries. We have done both visual and X-ray analysis of the area, and the cause of the cracks has been inconclusive. We are continuing to study whether the three instances of failure are isolated occurrences or more widespread.

You can assist our effort to gather additional information and help to ensure the safety of our riders by inspecting your tandem frame.

DO NOT RIDE THE BIKE UNTIL IT HAS BEEN INSPECTED!

If you are concerned about your ability to inspect the bike, please contact us immediately.

While we encourage all Vision tandem owners to respond to us, it is imperative that owners of the "Style 2" frames contact us. We have a short survey form at our website, www.visionbikes.com.

If you find any problems with the bike during the inspection, whether or not it is related to the area of this inquiry, contact us before riding your tandem again.

We appreciate your help in this study. We will follow up with our finding.

If you have any questions concerning this study or anything else relating to your Vision Recumbent please give Rick Comar a call at 877-433-4273 or 425-673-2448, ext. 14. E-mail to info@VisionBikes.com.

Source: Rick Comar at Vision Bikes.

Bob Bryant interviewed in the Easy Rider Recumbent Club Newsletter. See what people are saying about Bob! To order your copy, send \$5 to: Connie McAyeal, PO Box 1688, North Plains, OR 97133-1688



WizWheelz Launches New TerraTrike V. 3.3

Hastings, Michigan. WizWheelz announced the release of the TerraTrike version 3.3 recumbent trike, available now.

The 3.3 offers greater speed, stability, and improved handling, coupled with a slimmed-down weight of 33.3 pounds.

New features include:

1. Mechanical disc brakes for more responsive braking compared to the drum brakes
2. New steering geometry with more caster for better high-speed stability
3. Velocity wheelset hand-trued by master wheel builders
4. Stiffer frame/tube-set design for better handling and greater strength
5. New hub mounts with 20 mm CroMoly tubular axles for better handling and a sturdier feel
6. Longer-lasting, better-gripping tires
7. New black crankset and rims
8. Slightly larger seat for more comfort
9. Delrin tie rod ends, which eliminate rattle over bumps, making the 3.3 very quiet
10. Weight reduction to 33.3 pounds, making acceleration and hill climbing easier

Many more features are detailed on the WizWheelz web site, www.wizwheelz.com.

"This is a major improvement in handling and feel," says Ike Trikeman of WizWheelz. "We'll put the 3.3 up against any trike on the market. It's really something special!"

"I was lucky enough to test-ride the version 3.3 a few weeks ago—what a blast," says David Lawson of Santa Barbara, who owns two other TerraTrikes. "The steering is so centered that I found myself accelerating in a straight line . . . no hands! And the disc brakes operate like a dream and contribute to the elegant simplicity of the TerraTrike."

The TerraTrike is currently sold factory direct for \$2,395. For more information, visit the WizWheelz website (www.wizwheelz.com) or call 616-940-1909.

WizWheelz, Inc. is a recumbent tricycle manufacturer headquartered in the small western Michigan town of Hastings. The company was founded in 1996 by three friends who began by welding the first TerraTrike frame in a garage. Today, WizWheelz has customers in 43 states and 5 countries.

Source: WizWheelz Press Release

Recumbent Cyclist News

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with regard to safety, technique and equipment.

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Zach's Trice and Trailer

While doing errands in Berkeley pulling my new Tanjor trailer (www.lodrag.com) behind the Trice XL NT, I encountered customer Ron Levine commuting home from work on his RANS V2. We rode over the new pedestrian and cyclist bridge over the I-80 to an area where a park is being constructed beside the bay. A man driving a church van pulled over and asked if he could take our photos.

The trailer is working out well so far. I can carry much more than with my old trailers, and the aerodynamics appears to be better than any of the other two-wheeled trailers. It is a bit awkward getting in and out of my shop and takes up a lot of storage room, plus more care needs to be taken when making tight turns in close quarters, but I think I can get used to all this. At a supermarket I visited yesterday I could tell there was no way the trike plus trailer would fit in the bike parking area so I simply found a car parking space next to a metal railing structure I could lock the trike to and pulled into the space like a car. I noticed the trike plus trailer was longer than the Subaru Forester in the space next to it. I figured the length of the trailer and the unusual looks would generate a lot of respect and attention on the rode, but I wasn't expecting this would happen to the degree it did yesterday. It is like a time machine, brings me back to 1992 when I bought my first recumbent before they were more popular. Back then it was like riding in a parade all the time with the majority of the people I noticed on the road pointing to me, waving, giving thumbs up, friendly honking of horns, etc. I had much the same type of experience yesterday. Also, whenever I was off the trike people would come up to me and express amazement.

Someone asked if I was carrying a body in there. Another asked I could sleep in there. Two people in the supermarket asked me if the futuristic-looking "bike" outside was mine. One of them called it a "spaceship bike." Several asked if I made the trailer (and the trike) myself, and I pointed out the URL's of the manufacturers. It seems like the trike and trailer work synergistically as the trailer brings more attention to the trike and vice versa.

Zach Kaplan
zakaplan@earthlink.net



Zach Kaplan (left) and Ron Levine (right)
(photo courtesy of Sangwook Lee)

Greenspeed Kudos

I just read your GTO article. I couldn't agree more. Mine is a fantastic machine (I have one of the last Aussie-built frames). I have Rohloff and Schlumpf driveline—AWESOME! Best regards and continued success!

Todd Bettenhausen

Editor Comments: We have a Greenspeed tandem that is perhaps more fun than the single—look for a road test coming soon.

Burley RecumButt

I'm a two-year veteran. I ride a Burley Limbo and I'm having posterior troubles. I was hoping that you might be able to give me some information concerning butt problems and if there is any research being done in this area. I love to ride and I really believe that recumbents are a wonderful invention on many levels, but for me, the pain isn't going away and I'd really like to figure this out before the season gets started.

Doug Merrill

Editor Comments: There are no studies being done on recumbent butt pain. The usual suspects are too much weight on your hind quarters, not enough padding on the seat, or your backside's not adapting to the seat base.

In your case, it might be the seat padding. The Burley's padding is thin by comparison. Riders have varying lengths of

time that they are good to go in the saddle. Some people can ride for an hour without standing up, others can go for several.

You might give Calhoun Cycle a call. I've heard that their Evolution (RANS) seat base designed for BikeE's may fit the Burley.

Linear Parts Wanted

I'm trying to find handlebars for my long-wheelbase Linear. Now I have under-seat steering and would like to go above. I hope you can help.

Dave
davewlyle@msn.com

Editor Comments: The above-seat steering for the Linear will be very difficult to find. You might want to try some of the older dealers around. My first call would be The Bicycle Man in New York, and then perhaps Larry Black at Mt. Airy Recumbent.

You might want to just make some. I'd look at the Rotator Pursuit bars or maybe an EZ1/EZ Sport bar with a very long/tall stem.

We recently heard that the remnants of the Linear Bicycle Company are currently tied up in bankruptcy. The final chapter of the demise of Linear has not yet been played out.

Cannondale Brake Tick

In your review of the Cannondale Easy Rider, you mention a front brake tick un-

der "My analysis—front-wheel woes." What is a tick?

Lloyd Abrams
lloyd_abrams@yahoo.com

Editor Comments: If a rim seam is not smooth, the brake pad hits the seam each time the brakes are applied and you feel a very minor tick. We did not experience this on our BikeE RX's (three of them), but we did on the CT, as they use a lower-grade rim.

If it bugs you, you can have a better-quality front rim put on. There is no safety concern that I can see.

Gold Rush Off-road

I know you ride a GRR off-road sometimes. I read about it a year or so ago in RCN. I have one now and my friends want me to ride in the Leadville, Colorado, 100-mile mountain bike ride. I think it is mostly fire roads and some on pavement. We will climb a 3,500-foot mountain, but no technical single-track. My question is, Can the GRR do good with wide enough tires, and where to you get a 700c off-road or cross tire? Next, Do you think the EZ Sport may be a better choice? The weight concerns me a little at 38 lbs. before you put water and tubes and food on. I guess I want to know if you did a lot of off-road riding with the GRR and how did it do? Thanks for your opinion.

Mark Milam, Lafayette, LA
DDSmtmilam@bellsouth.net

Editor Comments: I've never ridden a GRR off-road, but I see no reason why it couldn't be done. The EX version has V-brakes, and I'm sure a big tire will fit in there. I rode my 2000 Tour Easy off-road quite a bit. Gardner Martin installed the big tires. I think it was a 700 x 38 or 40 rear and a 20 x 1.75 front. I even kept the fairing on. You'll save 5 pounds or so going to a Gold Rush, but the frame isn't as tough. The EZ Sport is probably better suited to this, but it has a higher seating position. I should have my EZ Sport soon,

so you might want to e-mail me again. The 26/20 combo is more suited to off-road than a 700. I still wish Easy Racers would offer a 26 on the Tour Easy EX. You might also consider a Lightfoot. I just reviewed a dual-26 Ranger (RCN 70). These are tough bikes designed for exactly this kind of riding. Most people will opt for the 26/20 Explorer.

Recumbent Selection Help

I would like to know if you would help me select a new recumbent. I have a prostate problem. I am 49 years old and cannot sit on any seat. I have a Haluzak Hybrid Race. The reason why I bought this bike is mainly the seat. I always dreamed of having a good LWB recumbent. I like the Gold Rush Replica very much, but I'm afraid that if I sit on this horizontal part of the seat, my prostate will get worse.

Can you recommend a bike or somebody in the recumbent industry who does custom seat applications?

Gerard Witowski

Editor Comments: From what you said, it seems like a full sling/mesh seat is what works for your condition. Sling/mesh seat bases work best on recumbents that have a higher bottom bracket (BB)/pedal height or where the seat base is designed for the lower BB/pedal height. This usually entails cut-away seat sides with a seat horn.

The Gold Rush Replica does not fit this criteria. The problem with a mesh base on a low BB design is that the backs of your thighs may rub on the edge of the mesh base with each pedal stroke. I'd suggest looking at the following bikes:

1. Rotator Pursuit: This bike has a full sling/mesh seat. In the past, Steve Delaire has even laced the seat mesh with bungee cord to give it more flex. The Rotator design also has a passive suspension built into the frame, so you'll be more comfortable. Rota-

tor makes five versions of their seat, varying in width and height. Rotator can build a Pursuit with a 20/20, 26/20, 700/20, 700/700, or 26/26 wheel combo, with or without a mid-drive. They can even build a frame in titanium.

2. Lightfoot Cycles: Lightfoot has a similar design to a Gold Rush, but their new mesh seat has a "slung" base somewhat like the Vision seat base. The seat base is somewhere between an Easy Racer Koolback and a Haluzak mesh.

Two companies have offered full sling/mesh seats for Easy Racers. The first is Rotator, and the second is Organic Engines in Florida. I have no idea whether either still does so, but they have in the past.

I think your best bet will be a Rotator due to the higher BB and full sling/mesh seat.

Needs Shipping Help

I need to ship two LWB recumbents to the West Coast to begin a coast-to-coast ride. What is the best (safest, cheapest, or quickest) way to get them there?

Roger Rowe

Editor Comments: Get some big boxes from somebody like Easy Racers (they sell shipping boxes; each bike requires a long frame box and a wheel/seat box). These boxes aren't cheap, but they can be mailed to you bunched together flat. They can be sent by UPS.

Depending on what LWB you have, you might have to remove the fork. Most LWB's I've reviewed fit into an Easy Racer box one way or another.

We have been told that some airlines accept unboxed bubble-wrapped bikes.

Recumbents in Consumer Reports

Recumbent bicycles were included in a listing bicycles in the latest issue of *Consumer Reports Magazine* (June 2002). They missed some important pluses and overemphasized the cons, but at least recumbents were included along with a generic picture.

Dave Fritzsche
djf7@psu.edu ♦

Send Letters to the Editor of RCN

If you have something to say, a differing viewpoint or experience—we want to hear from you! **Please limit letters to 300 words.** No charity ride sponsorship request letters. RCN reserves the right to edit submissions for clarity, content, and space limitations.

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Rich Higginson rides the Voyager

The Penninger Voyager Trike

by Rick Higginson

The first time I ever saw a recumbent tri-cycle was some 25 years ago, while I was stationed at Keesler Air Force Base in Biloxi, Mississippi. I visited a bike shop in nearby Gulf Port, and there, sitting on the shop floor, just begging to be ridden, was a MASA Slingshot (if you've never seen the Slingshot, www.recumbents.com has one of their old brochures scanned and posted on their page). At the time, I thought the Slingshot looked like one of the slickest, fastest pedal-powered vehicles I'd ever seen, and I longed to try it out on some clear, straight stretches. Such was not to be, though, as on the airman's salary I was earning at the time, the Slingshot was so far out of the budget that I dared not even ask for a test ride. Little did I dream then that 25 years later I would not only be test-riding some recumbent trikes but reviewing them for a magazine.

Systems

My first experience on a recumbent trike was the Penninger Voyager, provided by Ajo Bikes in Tucson, Arizona. The Voyager is a delta-configuration tricycle, with

the single wheel in front. The frame is constructed of TIG-welded CroMoly and finished with a powdercoat paint. Steering is accomplished via a pair of handles, or steering arms, beside the seat, linked to the front fork by two long push rods. The SRAM Centera shifters and brake levers are also mounted on these handles. The 50-pound trike is propelled via twin Deore derailleurs shifting twin Sun Race 8-speed cassettes, and it rides on matching 20 x 1.75 tires mounted on Velocity Triple V rims. Shimano caliper brakes are mounted on each rear tire and are controlled independently by the brake levers on the corresponding steering arm (that is, the right wheel is controlled by the righthand lever). The Voyager comes stock with platform pedals, though I swapped these out for my old Time clipless pedals for the test ride.

Comfort

With its cushioned vinyl seat base and sling mesh seat back, I found the Voyager to be a comfortable ride. The seat back accommodated my Camelback fairly well.

A little note here on that. Living in a desert environment, good hydration is quite critical on any ride beyond a few miles. To that end, I've found that the seat back of some recumbents can easily take having a hydration pack hooked over them (since we can't wear them on our backs on most 'bents), and the drinking tube routed over my shoulder for easy use. Being able to do likewise on the Voyager seemed rather important to me, as the Voyager is billed as a "touring" trike. If you're going to be riding something for hours on end, you'd better be able to hydrate easily while doing so.

The Voyager seat sits approximately 19" high, and for me the relation of the seat to the pedals was comfortable and natural. Granted, this is a subjective factor, as some prefer a higher bottom bracket and others prefer a lower one. The bottom bracket on the Voyager sits approximately 3" lower than the seat, which should help prevent numb feet. The seat adjusts forward and back along a 10-inch travel, and additional adjustment is found in the attachment of the bottom bracket. The bottom bracket is attached to the body tube via a circular clamp system, allowing for 15" of variation on the position. This not only allows for taller and shorter riders (the X-seam range is rated from 30" to 50") but also allows riders of medium height to adjust their weight distribution forward or back. Additionally, the seat back is adjustable and allows for a decent range of inclination. Although the position of the steering-arm shaft is fixed, the relative angle of the steering arms themselves can be adjusted to suit different riders.

Ride and Handling

The steering-arm control gives the Voyager's handling an incredibly responsive feel. One of the early surprises for most riders is that the Voyager will turn in a very tight radius. Riding on a 10-foot-wide bike path, I was able to complete a 180-degree turn without dropping any wheel off the pavement. Considering that the Voyager is 81.5" long, turning in under a 5-foot radius is pretty impressive. Granted, part of this is that, as a trike, the Voyager doesn't have the problem of wanting to fall over in a tight turn. You can creep slowly through a U-turn confidently. It took me very little time to get



Note Penninger jackshaft and two rear derailleurs

accustomed to the steering-arm control, but I would recommend that new riders take a few minutes of maneuvering through an open area to get the feel of it before trying it in a tight or congested area.

The highly responsive steering, however, is something of a double-edged sword. While a bicycle tends to feel more stable the faster you go, and the gyroscopic action of the front wheel tends to resist any radical steering moves at higher speeds, the steering of the Voyager will respond to the steering arms quite readily even at higher speeds. A small amount of pressure on the steering arms can result in a turn, and this lends a certain twitchy feel to the steering. While riding the Voyager at speeds between 15 and 20 mph, I wondered if anyone had considered adding caster action to the front wheel, similar to how they adjust the front-end alignment of cars. By making the hub of the front wheel slightly trail the pivot point of the steering, the steering will tend to naturally track a straight line. Perhaps the design engineers have a reason for not doing this on the trikes, but it did occur to me as I was riding. That said, though, I must also comment that I had no problem whatsoever keeping the Voyager on track and in my lane, even at speeds up to 25 mph. Momentarily releasing both steering arms at any speed, though, resulted in drift very quickly. Likewise, since only the left rear wheel is driven, there is a slight tendency for the trike to want to steer to the right under heavy pedaling. This is not sufficiently evident to create a problem, and it's only noticeable when the hold on the controls is too relaxed, but it bears remembering that the physics of the trike requires consistent attention to the steering. Heavy braking on only one or the other of the rear wheels will also cause the trike to tend

to pull to one side, but again, this effect is minimized by the length of the trike and the leverage the steering maintains accordingly. In the unlikely event that one brake fails, the trike would still be able to be safely stopped using the other brake, albeit in a bit longer distance. A note here on the braking: the Voyager comes with stock Shimano brake pads, which do not offer the best braking power. Frank at Ajo Bikes swapped these out for better brake pads after my initial spin on the trike (which he normally does before selling the trike). The beefier brake pads gave a much more satisfying feel of braking power over the stock pads, and I immediately understood why Frank routinely replaces them.

Another surprising factor on the Voyager is that at no time during the test ride did it ever feel as though I was pedaling a 50-pound vehicle. Despite its weight, the Voyager rolls smoothly and accelerates well. The twin 8-speed cassettes, augmented by a double chainring up front (a 52/39 combo), offers the amazing total of 128 different gear combinations. Penninger advertises that the gear-inches on the Voyager range from 16 to 85. To check how well the Voyager starts up against a hill, I stopped at the bottom of a short but somewhat steep underpass. In the lowest gear combination of the twin cassettes, but still in the 52-tooth chainring, I started climbing almost effortlessly. It took me a moment, though, to realize that I was actually slightly lifting the front wheel with the torque I was applying through the low gearing. Please note on this that I had the seat positioned all the way back, placing it almost directly over the rear axle and distributing my weight predominantly back. Once I noticed the wheelie effect, I backed off on my pedaling effort slightly to maintain



Voyager drivetrain



The Voyager



Voyager in Toyota pickup

contact with the front tire. The chainrings do not have a derailleurs, though, and must be shifted by hand. With practice I'm sure a person could do this while riding, but my attempt to do so merely resulted in a jumped chain.

While it might have been this trike's novelty to a certain extent, I have to say that the Voyager was fun to ride. The learning curve was fairly short, and I would venture that nearly anyone would be able to get on one and go out and enjoy it quickly. My 18-year-old son took it for a test spin and wondered how long it would take him to be able to afford one.

Owning

The Voyager seems well suited for tour-

ing or for practical human-powered transportation. A built-in luggage rack behind the seat would accommodate a student's books or a shopper's groceries without too much trouble. For the new Voyager production models, this rack has been strengthened to accommodate heavier loads of up to 200 pounds, evenly distributed. The beefier rack also allows the Voyager to handle heavier riders, though it appeared quite capable of handling a good-sized person before.

While the initial impression is that its width might make it more awkward sharing the streets with automobiles, I found that the overall width of just under 32" isn't that much more than what most of us take up in a normal riding position. Any car that might clip the Voyager because of its width would most likely have clipped a bicycle rider's shoulders anyway. The seat height puts the average rider near the same level as the average car driver, though lower than the drivers of even small trucks. The low position is offset in this regard by the uniqueness factor of the Voyager, which makes it draw more attention than most bikes even twice its height. I noticed people doing double takes on the Voyager even when it was in the back of my truck.

This raises another aspect I made sure to evaluate. Since most of us are not going to be riding our recumbents everywhere we take them, portability can be an important factor. The Voyager's size makes this a bit more difficult than most bicycles. I own a Toyota Tacoma standard-bed pickup with a cross-bed toolbox at the front. Atop the toolbox I have attached three quick-release blocks for securing bicycles. Since my SWB Lightning has a prominent boom protruding ahead of the fork, I have the blocks mounted in the center of the toolbox, allowing some forward clearance. Were the blocks mounted fully forward in the truck bed, the Voyager would have sat completely within the bed with the tailgate closed. Without the toolbox, the Voyager would fit easily in the bed sitting on its own wheels and secured to either the front or rear of the bed with tie-downs to prevent it from shifting. Some minivans and SUV's should be able to accommodate the Voyager in the back, especially if the rear seats are removed. Passenger cars, though, will likely require some creative solutions to transport the Voyager. Were I planning to cart one of these around with our Saturn, I think I

would invest in a good trailer hitch and one of the kit trailers available from most hardware outlets and carry the Voyager on the trailer. If you're going to invest several thousand dollars in a recumbent trike, it doesn't make much sense to try and boonie-rig a way to carry it to a distant ride. A few hundred dollars' more invested in a hitch and trailer is far wiser than the risk of bouncing the trike down the freeway.

While Penninger hasn't published a written warranty on their trikes, Charles Penninger responded to an inquiry about such by stating that they have stood behind their products, even when they've been resold. Whether you're the original owner or bought it used, the company will work with you to resolve problems should they arise.

One change for the newer production models is the elimination of the third freewheel. While the final freewheel on the rear-wheel cassette is the only one absolutely necessary, the front cassette on the intermediate shaft also has a freewheel. Additionally, the model I test-rode had a third freewheel on the lefthand cog of the intermediate shaft. This is being replaced with a fixed single-track cog to eliminate the unnecessary moving part. One less moving part means less to maintain and less to potentially fail. The new trikes will come with a choice of a 13- to 20-tooth track cogs, adding another way for riders to select the range of gear inches to accommodate their riding style. Also new are steering arms with a 30-degree forward bend and an additional 2" of length.

Market Competition

Those shopping for a delta-configuration touring trike will likely also want to check out the Penninger Traveler, a similar model with a few less features. Similar trikes can be found from Hase and Lightfoot.

For those without a dealer nearby, Penninger will sell direct, and the trike comes needing only minor assembly. Should the buyer encounter any difficulties in assembly, Penninger has a tech support line that can be called for help. The best bet, though, is to visit a dealer if at all possible, test-ride one for yourself, and buy through a dealer who can provide local support.

Options and Accessories

Penninger offers a number of interesting

INFO AT A GLANCE

Specifications

Model—Voyager
Type—delta trike
Steering—USS
Wheelbase—61.75"
Wheel sizes—26/20
Seat height—19"
Bottom bracket height—16"
Frame sizes—one size fits most
Weight—50 lbs.

Frame—CroMoly
Fork—CroMoly
Suspension (f/r)—None
Seat frame—CroMoly
Seat material—mesh

Components

Crank—Shimano Sora 39/52
Bottom bracket—Shimano sealed
Mid-drive—jackshaft (Phil Wood)
Headset—Shimano Deore LX
Derailleurs—Shimano Deore LX (2 rear)
Shifters—SRAM Centera
Cassette—Sun Race (2) 13-28 8/24-spd.
Chain—NA
Gear inch range—Varies 12-96 to 15-119
Pedals—NA
Wheels (f/r)—406 mm
Rims—Velocity Triple V 36 H
Tires—Odyssey Bermuda 20" x 1.75"
Hubs (f/r)—Phil Wood (QR front only)
Brakes (f/r)—Shimano RX 100 sidepull (rear only)

Incidentals

Price—\$2,795
Warranty (frame)—Not published
Colors—Red, yellow, or blue powdercoat
Accessory mounts—None

Critique

RCN Rating— 3/4

Pros

Very comfortable
A real head turner
Minimal chain slop (2-chain system)
Nice finish quality

Cons

Needs chain guard/tube on front chain
How about a front derailleur option?
Lack of braze-ons
Tracking ability needs improvement
Needs better brakes (disc option?)

Contact

Penninger Recumbents
Tel. 630-377-1696
Web: www.penninger.com

Credits

This was a freelance review done by Rick Higginson.

Special thanks to Ajo Bikes in Tuscon, Arizona, for supplying the test trike. Ajo can be found at www.ajobikes.com, or tel. 520-294-1434.

accessories to go with their trikes, including a block that couples two or more Penninger trikes into a tandem configuration. Additionally, a separate block is sold that will couple most two-wheeled bikes to the back of the Penninger in a tandem arrangement. For those with such need, special packs are also available that are designed specifically to fit Penninger trikes. A T-handle accessory that mounts to a special bottom bracket is available, and it can be used to mount headlights, computers, and bottle cages and also offers a sturdy handle that can be used to steady yourself as you get on or off the trike. The T-handle can be purchased alone or in a package with the special bottom bracket. New for this year is a fender package priced at \$150 retail. For those who will be riding in all kinds of weather and/or for long distances, the fenders can be very helpful in keeping both you and the trike cleaner.

Penninger also sells an accessory that will allow the rider to easily attach a BOB-Yak (one wheeled) cargo trailer, ideal for the long-distance traveler.

Verdict

All in all, my experience with the Penninger Voyager was a good one. It rode like a well-built machine with a minimum

of fuss. It easily scores top marks for comfort, and as stated before, it has a certain head-turning style that gets attention and comments. The drivetrain worked well, and with the chain divided into two separate loops, there is less chain slack than on most recumbents. The paint appeared smooth and evenly applied and made for an attractive trike.

In summary, the Penninger Voyager has a number of pluses in its favor: a well-built, strong frame capable of carrying not only a large rider but also several bags of groceries, a pack of textbooks, or fresh work clothes for the commuter. It has a good gear range for everyone from the slow cruiser to the fast sprinter. It's low enough to help keep wind resistance down, yet high enough that you can make eye contact with automobile drivers. The steering arms keep the rider's arms in a natural, comfortable position, good for those long hauls. The trike offers an established, design with reliable components, backed by a company that intends to keep the customer happy. Put all that into a trike that also offers a decent amount of fun factor and attention getter, and it makes for a very attractive package.

At least one of the minuses is already being taken care of, in the elimination of the extra freewheel. Some little things that

would add to the overall package might be a chain guide tube to help keep your legs or clothing from contacting the chain while pedaling. I found the clearance between my leg and the chain to be rather close. The lack of the front derailleur, while understandable in the design, can also be annoying to some people. It would also be nice to see a better brake pad installed as stock. Disc brakes would be very nice on a trike this size, though the design revisions would likely be prohibitive. As also mentioned before, looking into revising the front steering to instill better straight-line tracking would also make for a much better ride. One other minor complaint is the lack of any braze-ons for water bottle cages. Considering the luggage capacity of the Voyager, this seems trivial, but for those who don't use hydration packs or those whose headlight systems use a bottle battery, it would be nice to have a solid, convenient place to bolt the cage to. ♦

Reviewed by Richard Higginson of Tucson, Arizona. Rick can be reached at Baruchz@yahoo.com

Penninger will be sponsoring two riders who will be using Voyagers to circumnavigate Australia. Visit their website at www.beimers.com/penninger/

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The Burley Hepcat

by Bob Bryant

"The ultimate in cool. The Hepcat features superb handling at all speeds. . . . Low, light and fast, the HepCat is an all-out performance machine."
Burley 2002 brochure

The sleek Hepcat and Django are the second and third recumbent models introduced by the well-respected tandem and bike trailer manufacturer in Eugene, Oregon. Burley set out to build a superb-handling, high-performance racer that was light, low, and fast—perhaps competition for the venerable Lightning P-38—and they seem to have accomplished just that.

Burley the Company

Burley Design Cooperative was formed in 1978. Here is what Burley has to say about how their company is run: "The cooperative part of our name means each employee owns an equal share of the business. We all have a financial investment—and a personal one. As worker-owners, we bring an uncommon degree of pride and attention to our work. We test relentlessly to improve our designs, assuring that every product that rolls out of our Eugene, Oregon, facility meets our uncompromising standards.

"Burley's work environment is structured to promote worker empowerment, decentralization, and small-team focus. These concepts, which are now widely recognized as superior organizational

models, have been the foundation of our success for over twenty years. Whether it's completing the task at hand or participating in co-op decision making, we truly enjoy the challenge of running a business."

We're very impressed with the progressive co-op business format.

Systems

Frame and Fork—The Hepcat/Django frame is built of thin-walled 4130 CroMoly steel in Burley's Eugene, Oregon, factory. It is a "Z" frame, monotube with cantilevered rear stays (no triangulation). The frame tubes are rounded rectangular tubes custom-formed into a near monocoque shape mated to traditional round tubes. Burley has developed this "strategic" metal forming so that the frame will resist torsional twisting at the boom. To keep the seat low, the frame ends up with the "Z" design, which is more complex than a typical monotube. Some riders may not like this look; others will.

The fork is also of Burley's design. The Hepcat gets an aluminum "Supalite" fork. The Django has a CroMoly fork.

The creamcycle orange powdercoat finish is exceptional.

The Hepcat weighs in at 29 pounds (advertised weight). The bike has a rider/cargo weight limit of 275 pounds.

Steering—The steering mast (stem/riser) is very similar to that of the Trek R200. We found that it didn't like to go as upright as we would have liked it to (along with the seat), though otherwise it's very nicely built. There is a stem, so you can use the handlebar of your choice.

The riser attaches to Burley "Supalight Arc" bars that have an angular or "arc" bend a few inches out. Combined with the under-bar Rapid Fire shifters, this bend may cause some knee interference with the handlebar/shifters.

Drivetrain—The component spec list shines on this bike. For a production model, it's all top-notch stuff. Our only complaint is that the front shifting required too much effort and was not accurate enough (indexed front shifting). This appears to have been a problem with just our test bike.

Chain Management—The chain travels in an X-path over an amidships idler pulley. The idler works well and appears to be of excellent quality. It might not be a bad idea to keep a spare idler in your spares kit.

Braking—The Shimano LX V-brakes offer good stopping power and are of excellent quality. The front V-brake, which is mounted on the back of the fork, seemed not as strong as it could be, due possibly to cable routing.

Wheels and Tires—The rims, tires, and wheel build are very good. We had no problems whatsoever with the wheels on any of our Burley test bikes.

Comfort

Seat—The Hepcat features a medium-height mesh seat back that is about 3" shorter than a RANS or BikeE seat (the seat top cut in just under my shoulder blades). The seat frame is aluminum. The base is made for Burley by Corbin, the motorcycle seat maker. The foam is comparatively thin and firm. The seat is covered with black leather.

For 2002, Burley has made it so that the seats will go 10 degrees more upright (range of 48-67.5 degrees). However, it seems more reclined than similar models (even in the most upright position). In contrast, the RANS V-Rex and Rocket make



Prototype 2003 mesh

both the very upright and very reclined positions possible. This aspect of the seat clearly needs further refinement. When we put the seat in the most reclined position, the bike was nearly unridable. The bottom line is that even with the 2002 adjustment changes, this bike likes to be ridden in a laid-back position.

Burley has had four incarnations of their seat mesh since we first reviewed the Limbo back in 1999. Gone is the seat back lumbar pad in the shape of a Burley logo. The 2002 seat has adjustment straps across the lower part of the seat back, and the upper seat mesh is not adjustable at all. We didn't like that either. We were then sent the 2003 mesh, which is laced up the back. Hopefully, they'll use a good non-stretchable cord. This still isn't as good as adjustment buckles and straps or even big zip ties. The cord tension isn't easy to adjust, but overall the 2003 seat is the best so far.

The Burley seat slider mechanism is similar to that of the BikeE and the old Trek R200. It adjusts easily and seems like a sound design, but it slipped a bit under our normal day-to-day pedaling loads (on Hepcat and Canto). Burley has a new design that seems to have solved this. We were able to try the prototype, it is a definite improvement.

Ergonomics—The Hepcat is a laid-back SWB with a bottom bracket that is 3" above the seat height. This, of course, meets our definition of an "extreme" riding position. This is not a bad thing; it though it might be too extreme for some.

I did experience some knee interference with the under-bar Rapid Fire shifters.

This was primarily caused by Burley's choice of an arc shaped bar. Because of this, I had to place the bars higher than they would have otherwise been.

Ride and Handling

The frame is torsionally stiff. The cantilevered rear stays make for some passive suspension, and the seat back flexes more than most. The ride experience is unique in that it is a very stiff bike up front, though the rider feels some give in the seat and stays. The optional Speed Struts stiffen up the link between the seat back and rear stays and makes for a very firm and stiff ride.

With the Hepcat's reclined, performance-oriented stature, alertness in traffic needs to be emphasized. The bike did not come with a rearview mirror, but it definitely needs one. There is heel/front wheel interference and a high pedal height, both of which tend to limit maneuverability. Shorter riders may also experience a light rear end (rear wheel skids easily under hard braking).

This bike is agile, stable at speed, and designed to go fast. It tracks well, though it has a bit of tiller-like feel due to the reclined steering mast. Some riders will feel that this is a very quick handling bike.

Performance

The Hepcat is a light, stiff (with Speed Struts), and quick bike, similar to a P-38 (but more laid back) or a Vision R44/45 and some Euro SWB's. My only question about the performance of this bike will be how the individual rider adapts to the laid-back seat.

Owning/Purchasing

Burley calls the bike an "all-out performance machine," and I agree. The bike and riding position are performance oriented. Keep in mind that this is fast, mainstream-style SWB. There are more extreme SWB's, lowracers, and highracers that are faster. I preferred not to ride a bike like this for commutes, errands, or on diverse terrain. The reason for this is the laid back and stiff feel of the bike. In my opinion, this is a road bike, not even an all-rounder. In contrast, the Canto LWB or SWB was a more usable utility bike.

So just when I feel I've got enough ammunition to make this generalization, I learn the Burley's John Morris toured the West Coast on a Hepcat towing a Nomad

INFO AT A GLANCE

Specifications

Model—Burley Hepcat

Type—SWB

Steering—ASS

Wheelbase—40.5/44.5"

Wheel sizes—26/20

Seat height—23"

Bottom bracket height—26"

Frame sizes—S/M & M/L

Weight—29 lbs. (Burley)

Frame—Thin wall 4130 CroMoly

Fork—CroMoly

Suspension (f/r)—None

Seat frame—Aluminum

Seat material—Mesh

Seat cushion—Leather-covered foam (Corbin)

Components

Crank—Shimano Ultegra 30/42/52

Bottom bracket—Shimano sealed

Headset—Aheadset

Derailleurs (f/r)—Shimano 105/XT

Shifters—SRAM ESP 5.0

Cassette—ESP 7.0 11-34 9-spd.

Chain—SRAM

Gear inch range—22-118

Pedals—Wellgo alloy platforms

Wheels (f/r)—406 mm 20"/559 mm 26"

Rims—Weinmann Zac19

Tires (f/r)—Primo Comet

Hubs (f/r)—Shimano Deore LX

Brakes (f/r)—Shimano Deore LX V-brakes

Incidentals

Price—\$1,799 (Django is \$1,399)

Warranty (frame)—Lifetime (orig. owner)

Colors—Creamcycle Orange

Accessory mounts—Waterbottle cages

Options—Speed Struts (seat back braces); rack; trailer hitch

Critique

RCN Rating— 3/4

Pros

Excellent value

Excellent craftsmanship (USA built)

Smooth-riding comfort cruiser

Great company (employee-owned co-op)

Passive suspension in frame/seat

Cons

Not as user friendly as low BB LWB

Passive suspension in frame/seat

Seat base a bit firm

Fourth version of seat mesh is best (2003)

Most upright seat position still laid back

Best rider size—Mid 5' to low 6'

Contact

Burley Design Coop

Tel. 800-311-5294

Web: www.burley.com

trailer. This bike is capable of going nearly anywhere you're comfortable riding it.

Options and Accessories

Burley has developed several accessory items specifically for their recumbent line. There is a kickstand adapter, a shop workstand adapter (fits to the seat slider with seat removed), and rack stay kits that allow it to adapt to most rear racks, including Burley's own Moose Rack. An Alternative Hitch allows the Hepcat/Django to pull a Burley child or cargo trailer (rear-wheel quick-release hitch a la B.O.B.). Burley offers Speed Struts, which are adjustable seat supports that are CNC-machined aluminum. They are made for stronger and heavier riders (though the bike has a maximum limit of 275 lbs.). There is also a rack installation kit that works with all Burley recumbents.

Market Competition

The Hepcat is more "extreme" (and perhaps performance-oriented) than seemingly similar Vision or RANS models. It is probably more comparable performance-wise to the HP Streetmachine, Lightning P-38, and Vision R44. It has better build quality than all four, though the design integration and refinement are not quite on par with these more seasoned designs.

Verdict

Some riders are going to love the Hepcat. However, it is not an easy universal SWB recommendation like we can give for a bike such as the RANS V-Rex. The Hepcat has a more extreme performance-oriented character.

The down side to this is that Burley chose to start with "a fresh pot of coffee and a clean sheet of paper." The problem with not learning from others' mistakes is that you sometimes have to learn them over again yourself. Burley has had some initial problems with their recumbent designs. The first was the Limbo LWB's suspension pogo problem. Second was the very reclined seat on the Hepcat/Django. Third, I experienced seat slippage on the seat track (Hepcat and even more on the Canto). I fully expect these problems to be worked out, though hopefully sooner rather than later.

The Hepcat is perfect for a laid-back (riding position, that is) rider who likes to go out for fast sport rides. The bike has a stiff and firm ride, and the handling is light and quick, as on a drop-bar road bike. This may be a good niche for Burley, as the V-Rex is a better all-rounder and the P-38 is a performance SWB with a very upright (and closed) riding position.

Despite our nitpicks, the Burley recumbents have an exceptional build quality. Along with Cannondale, Burley is setting a new standard in this regard. Burley also offers good value. We hope they continue to refine their bikes, and we're happy to have them in the world of recumbent bicycles. ♦

Editor Comments: In late June of this year, we received an e-mail that Burley's Blair Winter, would be leaving the company. Blair had been our R & D contact person since the Burley recumbent project started, to as recently as this past month when we tried the 2003 seat clamp and seat mesh. We wish Blair well. No replacement had been named at press time.

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The Burley Canto

by Bob Bryant

Burley is on a roll. The Canto and Taiko are the fourth and fifth new recumbents to be introduced by Burley Design Cooperative in the last few years. The Canto is essentially a hard-tailed Limbo (LWB with rear suspension) that can be converted to a SWB. Its frame is similar to a SWB's, which allows the use of the same steering mast and linkage used on the Limbo and Hepcat/Django. The linkage steering gives the bike smooth and neutral handling with no signs of tiller or wheel flop. And the best part is that this built-in-the-USA beauty sells for just \$1,250.

Systems

Frame and Fork—The CroMoly frame and fork are made in Burley's Eugene, Oregon, factory. In terms of design, the frame appears to be a continuation of the Limbo/Hepcat/Django concept. The

Canto's design is similar to the Hepcat's in that there is an extra tube between the seat and head tube that allows the seat to be lower to the ground. This makes for a unique look that, though perhaps not as graceful and sleek as some, does what it was intended to do (lower the seat height).

Steering—The Canto has a steering rod and linkage that connects the front fork (and wheel) to a SWB-style above-seat steering linkage that pivots on a headset. This headset can also be used to convert the bike to a SWB.

The steering is very similar to that of many LWB USS recumbents I've reviewed over the years. The linkage steering system works quite well. There are a few extra rattles that come with the linkage, and one must keep a careful watch on these parts (if a rod or end bearing breaks or becomes disconnected, loss of

control is possible; check the linkage parts frequently).

As has been the case with all of our Burley test bikes, we find the build quality, assembly, paint, and overall quality to be exceptional.

The Hepcat weighs in at 36 pounds (PT Cycle's scale). The bike has a capacity (rider/cargo weight limit) of 275 pounds.

Drivetrain—The ESP twist shifters will be a better choice for most riders due to the Burley handlebar bend (and possible knee interference). The drivetrain shifted well and was better integrated than the Hepcat's. I found the low- and mid-range gearing a bit too high, especially for towing a trailer.

Braking—The Shimano M420 V-brakes are not of as high quality as the Deore LX's on our Hepcat, though both offer excellent stopping power.

Comfort

Seat—The Canto seat is identical to the Hepcat/Django seat except that its frame is made of steel rather than aluminum. The adjustment range has been improved (it will now go more upright) to 48-67.5 degrees (previously 42-56.5 degrees). Even with the change, the seat's most upright position is still a bit laid back. A more upright position can be found on the Burley Limbo, which adjusts to 77.5 degrees (see the Hepcat for more info).

Ergonomics—The Canto's bottom bracket is just below the seat height. The riding position is very open and reclined, and it is also quite comfortable.

While more user-friendly than some SWB machines, this bike is not as user-friendly as its market competition due to the higher bottom bracket, the remote-linkage above-seat steering, and the laid-back seat, all which add to the learning curve for this bike.

Ride and Handling

The Canto is a comfy cruising machine. The long wheelbase and 26/20 wheels do a lot to soak up the bumps. Add in the cantilevered rear stays and the passive seat suspension (along with a bit of flex in the seat back), and you have a ride that is nearly as smooth as a swing-arm rear suspension. The Canto design allows for a very reclined seat and bars. This takes the pressure off your hind end and could make

for some comfortable long rides. In town the bike was more difficult to manage, due again to its higher bottom bracket and reclined seat. Stops and starts are a tad more difficult, and the bike feels long.

The Canto performed well, though I would not consider it a performance or sport bike. The performance will be about the same as other 26/20 and 20/20 LWB's, but perhaps a bit slower than similar SWB's due to the added weight.

The Canto seems best suited for a recreational cruiser for weekend rides, but it is capable of much more. Though it doesn't seem like an ultra-robust hauler or cross-country tourer, I'm sure it would do just fine for these purposes.

SWB Convertible

The Canto's remote-steering linkage pivots on a second headset mounted amidships. To convert the bike to a SWB, you disconnect the front brake cable, disconnect the linkage at the fork, drop the fork out, remove the steering mast (stem/riser), drop the steerer tube at the second headset, replace it with the fork, replace the stem/riser, and hook up the front brake.

I found the SWB Canto to ride quite nicely. The riding position is less extreme, with a bottom bracket 1" under the seat height (vs. 3" above the seat height for the Hepcat). The SWB Canto is a casual comfort cruiser SWB. This isn't a quick change, but if you have some knowledge of bike mechanics you can do it in 20-30 minutes and be back on the road again. The only real down side to the conversion is that the empty headset sticks out at the end of the SWB boom. The Canto makes for a relatively heavy SWB.

Owning/Purchasing

The Canto is a very nice bike at an excellent price. It is well built, has a good warranty, and should hold its value nicely. Burley has many dealers because of their bike trailers, tandems, and rain gear. We're not sure how many are actively selling the recumbents, so we don't know how difficult it will be to find a Canto to test-ride. One problem has been that preexisting Burley dealers have kept their recumbents out of some recumbent specialty shops (apparently preexisting dealers have the first option to sell Burley recumbents).

For most of the time I rode the Canto, I towed the Nomad trailer (see review in this issue). The LWB Canto tows very nicely and behaves well, even with 150 RCN's

in the trailer bed (I didn't tow with the SWB). There is an optional rack, though a seat bag won't really work due to the reclined seat (my L.L. Bean backpack wouldn't fit on the seat back, nor would any seat back bag that we know of due to the seat back's proximity to the rear wheel, even on the most upright seat back position). Installing fenders might be more of a fuss, but I'm sure it can be done.

Options and Accessories—See Hepcat

Market Competition

The Canto is an entry-level enthusiast recumbent that will compete primarily with the Sun EZ Sport, EZ Sport Aluminum, and RANS Tailwind and Stratus. The craftsmanship on the Burley is better than that of its competitors, but the bike's overall design refinement was not there yet. This should change with the 2003 model.

*"A shortcoming of most medium and long wheelbase recumbents is the tiller effect imparted by direct mast designs which place the handlebar far from the steering axis. The 'tiller' effect, named for the swing of a boat tiller, produces unnatural and awkward bike steering."
—from the Burley website.*

Verdict

If Burley's intent was to design a high-quality, excellent value comfortable cruiser with a neutral linkage-type smooth-handling feel, they have totally succeeded. However, despite Burley's marketing claims (see quote above), some may feel that Burley has found a solution to a problem that didn't really exist (and call attention to this by making statements like the quote above).

Throughout recumbent history, the majority of LWB buyers prefer the longer handlebar/semi-tiller feel that offers a bit of feedback to track smoothly and effortlessly down the road. The Canto doesn't have this. Certainly the steering is smoother with not one iota of tiller feel, but it is different: it is a more complex design with linkage, rod-end bearings, and an extra headset; it won't accept a fairing (at least not very easily). It is much like a LWB USS recumbent in many respects.

The Canto is a nice bike that rides well, but this style of LWB has been a minority player in the market. Ask any Sun EZ, Easy Racer, RANS Stratus, Tailwind, or V2 owner if he or she has a problem with

INFO AT A GLANCE

Specifications

Model—Burley Canto
Type—LWB convertible to SWB
Steering—ASS
Wheelbase—62"
Wheel sizes—26/20
Seat height—23"
Bottom bracket height—22"
Frame sizes—one size fits most
Weight—34.5 lbs. (Burley)/36 lbs (PT Cycle)

Frame—4130 CroMoly TIG welded
Fork—4130 CroMoly
Suspension (f/r)—None
Seat frame—CroMoly
Seat material—Mesh
Seat cushion—None

Components

Crank—Cyclone 30/42/53
Bottom bracket—NA
Headset—Aheadset
Derailleurs (f/r)—Shimano Sora/ESP 5.0
Shifters—SRAM ESP 5.0
Cassette—ESP 5.0 11-32 8-spd.
Chain—SRAM
Gear inch range—23-120 gear inches
Pedals—Wellgo alloy platforms
Wheels (f/r)—406 mm 20"/559 mm 26"
Rims—Weinmann Zac 19
Tires—Primo Comet 1.5 and 1.75
Hubs (f/r)—Shimano Deore
Brakes (f/r)—Shiman M420 V-brakes

Incidentals

Price—\$1,249
Warranty (frame)—Lifetime (orig. owner)
Colors—Sliver
Options—Speed Struts, rack

Critique

RCN Rating— 1/2

Pros

Excellent value
Laid-back, smooth-riding bike
Excellent fit and finish, build quality
Great company (employee-owned co-op)
Passive rear suspension or real stiff with Speed Struts

Cons

Not as user friendly as most LWB ASS
Lots of seat flex (without Speed Struts)
Seat slippage (fix in process)
Seat back adjment straps need refinement (fix due for 2003 models)
Entry-level riders may want a more upright position

Best rider size—Mid 5' to low 6'

Contact

Burley Design Coop
Tel. 800-311-5294
Web: www.burley.com

“unnatural and awkward bike steering,” and you will find that it isn’t really a problem. Most LWB riders actually prefer the “tiller” steering. It is my opinion that Burley doesn’t need to criticize the direct-steered LWB recumbents and their competitors’ designs to sell bikes. The Canto can stand on its own merits.

Burley has labeled the Canto a MWB (medium wheelbase), perhaps because it switches from LWB to SWB. By our terms, and those terms in use in the pre-RCN days, this bike, with its 62” wheelbase, is a LWB, plain and simple. In the alternate mode, it is a true SWB. Hence the MWB label will be confusing. Historically, when people think of a MWB they think of a longer SWB (like a Lightning) or a longer CLWB (like a Vision R32 or Radius C4). Others have also labeled CLWB’s as MWB’s, though, further complicating recumbent terminology.

The remote-steered, higher bottom bracket LWB Canto is not as user-friendly or as easy for the first-time rider. Even our mechanic was a bit put off at first by the remote steering and higher pedals (having just assembled and test-ridden our EZ Sport the week before). The higher pedals, laid-back seat, and SWB-style ASS do make for some excellent reclining comfort. For the long haul, it is more comfy than the classic LWB style described above.

The SWB conversion is not a exactly a quick conversion, but it will be nice for owners to have this option.

Our criticisms of the bike are the same ones we have for the Hepcat—mainly the seat back height (medium back) and recline range and adjustment. One added note is that the Canto frame has some torsional flex not seen in their SWB models. The seat and cantilevered stays flex, though the Speed Struts will stiffen the tail end.

We’re happy to see Burley exploring this unique niche and wish them success. This bike is so smooth riding and handling, it would be very well suited to a USS option. The Canto is unique

and a very comfortable cruiser. The bike is of exceptional quality and a great value. ♦

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The TerraCycle Fold-Forward Stem

by Shari Bernhard

Pat Franz is the man behind TerraCycle, Inc., a recumbent and special-needs bicycle manufacturer in Portland, Oregon. He specializes in designing and building bikes, parts, and accessories that are on the cutting edge of technology. One of his special-needs trikes powered a rider to two silver medals in the 2000 Sydney Paralympics.

Seeing a need for a different type of fold-forward stem for above-seat-steering recumbents, Pat created the GlideFlex. This completely new design with several unique features:

- Smooth bending friction, completely adjustable from negligible to firm
- No metal-to-metal contact in the hinge or friction system (it's silent thanks to Delrin friction bushings)
- Wraparound steerer clamp to keep the back of the stem smooth
- Available in a range of riser tube lengths and diameters—standard is 1" OD and 7" long
- Available in a variety of anodized colors (or clear anodized)
- Optional quick-release lever can be used to control friction—an allen-head bolt is standard
- Adjustable tilt angle

Those are the marketing details. They're all true.

Pat requested my assistance in beta testing a GlideFlex prototype on my V-Rex, and I happily agreed. Having seen his work firsthand, I had a feeling that this was going to be a fine piece of equipment. I wasn't disappointed when it arrived a few days later.

It's beautifully machined, with the TerraCycle logo engraved on the side. The stem comes with excellent, and remarkably simple, installation instructions, complete with annotated pictures. Even so, I didn't trust myself to install it correctly, so I enlisted the aid of my mechanic and friend, Fritz. It took Fritz about three minutes to look over the instructions and about five minutes to make the switch. It's designed for a threadless headset.

Fritz had some misgivings about the design. Most notably, instead of a split in the stem that compresses when the steerer clamp is tightened, it's simply squeezed, which he feared might distort the steerer tube. He also expressed some concern about the pivot design, which is comprised of half the riser tube and half the headset clamp, with a bolt for the friction control. It looks like an excellent approach to me, but then again, I'm no machinist, so I con-

sulted Pat to get his rationale for these design issues.

Even though it would seem that the clamp could squeeze the steerer tube and distort it, the jaws are carefully designed to exactly match the shape of the tube. It could be a problem if the shapes didn't match, but Pat ensured that the clamping surface is the same shape as the tube. Additionally, steerer tubes are fairly thick-walled CroMoly and not easily distorted. He tested overclamping, and he was unable to squish a steerer tube. Pat did his research. New stems coming on the market are using the same basic clamping mechanism. It works well, has a very clean profile, and virtually eliminates the problem with clamp arms snapping off.

My first impression is that it's definitely sleek looking, and the bending action is unquestionably smooth and steady, unlike the sometimes sticky movement of the original RANS Flip-It stem. It's only slightly lighter than the Flip-It, which is mildly disappointing, and replacing the pivot friction bolt with a quick-release skewer eliminates even that difference. This is not a major issue.

One of Pat's main design criteria for the GlideFlex was to make a stem where the side that faced the rider was smooth, with nothing sticking out that could catch on the rider in an accident. This is a solid improvement over the Flip-It.

After a few rides with the bolt as the pivot friction mechanism, I requested the optional quick-release skewer. I thought it would be more convenient to use a quick release instead of having to rummage for my allen wrenches in case I let someone try out my bike and they preferred a tighter or looser fit. In Pat's experience, once the pivot friction is set to the user's preference, it usually isn't changed. After several rides with the quick release, I realized Pat was right—changing the pivot tension wasn't necessary after all. I removed the quick release in favor of the bolt. It looks more attractive and has a cleaner profile.

There are two issues that I feel should be addressed, both involving the tilt. First, the tilt isn't as adjustable as it should be due to the angle machined into the bottom of the stem riser and its corresponding surface on the stem clamp. Even with the backstop bolt screwed in as far as it

can go, there is a limitation in pullback that may not be acceptable for riders who like the bars close in to the chest (the "praying hamster" position). I can get the bars about 8" from my body, measuring from the center of my chest to the center of the handlebars in the same plane as my arm. The distance is increased for a taller rider sitting farther back. (This is more of an issue for sliding-seat recumbents like RANS models, as opposed to sliding-boom styles like Vision bikes.) My elbow forms about a 90-degree angle, which happens to be my preference. My husband, Jeff, prefers his hands closer to his chest than I do, and with the seat farther back for his longer legs, his arms were at about a 100-degree angle. There was no way to tilt it any closer to him.

Second, after about five rides, the stainless steel backstop bolt started to mar the smooth surface above the stem clamp. (For the record, this happened on my Flip-It, too.) The GlideFlex adjusts in a 36-degree range, 22.5 degrees back and 13.5 degrees forward of the steering axis. In practical terms, this means that for someone, in some position, the bolt is going to hit non-optimally on the backstop. When you mash a steel bolt head against a smooth aluminum surface, the aluminum is going

to suffer. Some suggestions for fixing this: a better tapped angle for the bolt, a flat bolt head, or a hardened or depressed surface for the bolt head to rest against. It would be nice to have a way to adjust the tilt angle manually instead of having to use a tool in order to turn the bolt a couple of revolutions, but that's not a primary concern.

I relayed these two issues to Pat, and he is still thinking, designing, researching, and lying awake at night, trying to discover solutions. I don't doubt that he will. He has already devised GlideFlex stems for threaded forks, different tube sizes, and more.

Overall, I'm very impressed with this

stem. It certainly delivers on the smooth, steady folding action. It's sleek looking and there's no squeal or snagging when tilting the bar fore and aft, as I've experienced on the stock Flip-It. I plan to get one anodized in black to match the riser on my V-Rex, making it look like a one-piece molded handlebar.

The GlideFlex web page at www.terracycle.com/glideflex.htm has pricing and other information. It may seem like a pricey upgrade at \$129 MSRP, but it's an excellent folding stem alternative, built to last, and very aesthetically pleasing. I'm certain it will stand up to challenging treatment for many years. ♦



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On Getting 'Bent

by Len Redon
letr1104@aol.com

I'm returning to cycling after a hiatus of about ten years. Actually, this is my third incarnation into cycling. My first was back in college. My wife and I bought bikes for a trip to Nova Scotia for our honeymoon (it never happened, but that's another story). I started riding my 10-speed around campus and taking rides around Worcester, Massachusetts, where I was going to school. One day I decided to ride down to my in-laws' house in Connecticut about 30 miles away. That ride was when it hit me. What a wonderful machine the bicycle and the human body working together were. Rolling through the hills of Connecticut was wonderful. Blast down the hill to make getting up the next one easier. Roll through the small towns and enjoy the early fall scenery. Yes, this was clearly the day I became a cyclist for life.

The next manifestation came some years later. This was an extended period lasting over 10 years. I had a good friend who was into cycling, and I decided to start riding with him. I picked up a new 12-speed bike and started riding. I took the bike everywhere. The shore at Rhode Is-

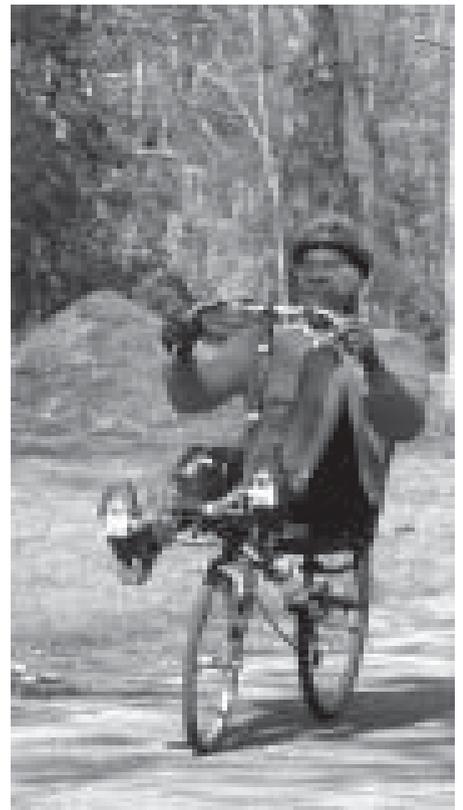
land, riding in New York in Central Park, back home in Cleveland, a city tour in Washington, D.C., with my wife, and some great local rides. In this period I started using a mag trainer during the winter and riding some particularly nasty hills just to build up my stamina. Yes, I was really into it. There were 4 or 5 years in this stretch when I was doing 1,300-1,500 miles a year. Still, it was the synergy of man and machine along with the feel of the breeze in the face, the lovely scenery along backcountry roads, and the sense of accomplishment that made time on a bike such a pleasant experience. It was mental and physical and allowed me to relax in a way that I find in few other endeavors. Alas, as time marched on the demands of career and family as well as new interests brought the period to a close. But those wonderful memories and accomplishments continued to linger in the back of my mind.

The current manifestation has basically just begun. It started with buying a mountain bike at a local charity fund-raiser and riding on the Erie Canal path that is only

a mile from my house. The canal path is generally flat but it did allow me to start riding again. I bought some new street-oriented tires for the MTB and probably rode 200 miles the first year. But the plague of the wedgie seat had begun. I'm heavier now than before, and I started to find that I couldn't do much more than 20 minutes at a time in the saddle before I had to stop. It was like my legs weren't getting enough blood or something. Anyway, I started changing seats the way some people change hairstyles, and even though it got better, I could never call it comfortable or enjoyable. This year a mild winter in upstate New York was beckoning me to ride more, and those wonderful memories from my previous biking life began to re-crystallize in the front of my mind. Yeah, I'd like to get back into this, but this seat thing has got to go.

Last fall, around the time of my fiftieth birthday, I was thinking about what I wanted to do to mark my first half century. It was around the holidays that I learned that all my male cousins had diabetes. This along with the fact that both my mother and father have the disease brought a focus to the need to get more exercise and control my weight better. Hmmm, that sounds like cycling to me. As I started riding more and more over the winter with renewed focus, again the seat thing came back. OK, in order to meet my exercise goals I could justify the investment in a new bike, but I had to solve this seat problem.

While surfing the net I found RCN and other recumbent sites. These allowed me to access the array of recumbent manufacturers' sites and start getting behind the scenes on these amazing bikes. Although an engineer by education, I combine an intuitive approach with a structured approach in making these kinds of decisions. Any buying decision must start with an honest assessment of what you're going to do with the product. My assessment was that I would probably ride in the range of 1,200 miles a year (40 miles a week on average 9 months a year). In addition, I would probably do a couple of century rides and one tour weekend ride a year (overnight in a motel). I then started evaluating the parameters by which I would try to make a decision. I decided that 26/20 was the wheel sizing that would best sat-



Len Redon rides his Lightning

isfy my style of riding and the terrain I would be riding. I also decided that a short-wheelbase recumbent would probably be the right choice for transportability (I already have Thule bike racks) and to facilitate optimum hill-climbing capability.

This is probably a good time to make a few comments on hill climbing. I will be doing most of my riding in the Finger Lakes region of upstate New York. The area has a lot of rolling hills and the occasional killer climb. Not necessarily long in a Colorado sense, but quad-burning steep. Even with my old road bike these were killers, as I never really was good at the technique of climbing out of the saddle, and without a triple crank some of these climbs approached torture. I want to be ready to climb these types of hills.

I reached the conclusion that above-seat steering was probably going to work best for me. The under-seat steering doesn't look natural to me, and I wanted to be more aero. I set my price point kind of low at about \$1,500 because I knew I would want to do some upgrades no matter how much I spent (that's the engineer coming out), and \$1,500 should allow me to get a good baseline bike that's worth upgrading.

After visiting websites and chat rooms and reading bike tests wherever I could

find, them I began to focus on the Lightning Phantom and the RANS V-Rex. These were available at local dealers, and they seemed to have the performance characteristics I was looking for. On a relatively warm day in late February I stopped by the local RANS dealer, and he had a V-Rex in stock. He set the bike up and I took it for a short spin. Wow, what a revelation. I could see how this would be really fun and comfortable. The high bottom bracket didn't faze me. I was twitchy, but I handled the balance well and the seat was very comfortable. I didn't like the braking as the rear wheel kept locking up. I think this was because of where the seat was set and because there was too much weight on the front wheel. They also had a Rocket, which I tried, and as I expected the 20/20 didn't excite me that much and I felt I would grow out of it too quickly. One quick word about the bike shop where I did these test rides. Although they were very cooperative, they were not very knowledgeable about recumbent bikes. I can't imagine they sell many, as they couldn't answer many of my questions.

All in all when I returned home later I knew I would be buying a 'bent. Later that same day I was riding my MTB on the local bike path on the barge canal, and guess what? I see a guy riding a 'bent. Not

just any 'bent but a Lightning Stealth (the precursor to the Phantom). I turned around and caught up with the guy, who was nice enough to stop and answer questions and let me look the bike over pretty good. I liked what I saw and I liked what I heard. The intuition kicked in, and I knew it would be the Phantom.

When I got home after the ride I called the local Lightning dealer. No, he didn't have one I could ride, but he owned a Stealth himself and without too much prompting he said all the right things. Monday, I stopped by to chat. How long to get one? I didn't want to wait forever. He said he would talk to the factory and get back to me. That evening I read everything I could find on the Internet about the Phantom. There was something about it I liked—its pedigree relative to the P-38, the aerospace background of its designer (Tim Brummer), and the performance orientation of the company. Plus it met all my criteria right on the mark from price to upgradability.

The next day I ordered one in black, size L/XL with XL seat (I'm a big guy, 6'2" and 230 lbs). I went for P-38 style handlebars with bar-con shifters and a Lightning seat bag in red to match my helmet. Dave, the guy at Bicycle Connection where I bought it, told me that the factory was just

finishing up a run and would be able to ship either Friday of the current week or Monday the next and that he should have the bike a week later.

Pretty much on time the bike arrived and Dave asked if I could come over for a basic fitting so that he could size the chain properly. When I walked into the shop there it was, my Lightning Phantom. It looked plain yet aggressive. It was well built with very nice welds, and the components were as specified, kind of in the middle of the quality spectrum. The only problem was that the front tire was black and the rear had a tan sidewall. I need symmetry in my life, and this would have to go. I couldn't wait to get it home.

It took Dave a few more days to get the bike sorted out, as a part for the brakes had not been sent. Finally, the part was overnighted and I was able to pick the bike up on Thursday. The bike fit into my car OK (I was shocked), but there was one problem. After one of the warmest winters on record in upstate New York, this was the day that old man winter decided to pound us a bit. Temperatures were forecast for highs in the twenties with snow for the next few days; figures, doesn't it. Still, that evening I took a little spin around the neighborhood but it was too cold to get excited about anything but going back into the house to get warm.

Finally on Sunday it got above 32 degrees (I have a general guideline not to ride unless it's above freezing). Not much above freezing, but it met my guideline. Out I went for my first ride. I rode to a local park, and wow the bike was wonderful. It was very responsive and climbed well. I was twitchy, as my daughter who was driving down the street behind me

noted, but I loved it. Twice on the ride my feet had come off the pedals, and I decided it was time to go clipless although the Lightning owner's manual recommended delaying this step until one was more experienced with the bike. Still I didn't like my feet coming off the pedals while climbing or while going down a hill at 35 mph. I put on my Shimano Look-style pedals from my old road bike on and mounted the bike in my mag trainer to get used to them. In all the chat stuff I've read on the web about clipless pedals I have heard nothing about Look pedals. I find them to have a wide base as well as easy entry and exit. Anyway they work great for me.

My first real ride came about five days later, as old man winter continued to be especially grumpy. Finally I got out for about a 12-mile spin. What a blast. The bike was quick, and the more I rode the less twitchy I became. The lack of discomfort in the seat, hands, shoulder, and neck was wonderful. I was experiencing some 'bent leg muscle adjustment, as it was clear that I was using my glutes more. I also was climbing OK, but I needed work in this area. I did experience some torque steer at high speeds when I was really getting into the pedals, but all in all the bike was going to meet my needs very, very well. I did fall twice, once while getting started and once while stopping. Nothing serious, but it highlighted the need to develop some better technique. All in all, a good start with an average speed of 12.45 mph. Not bad for a fifty-year-old guy still getting in shape on a pretty hilly course. My top speed was 36.5 mph.

Now it's a few weeks later. I have over 150 miles on the 'bent. I'm climbing well using a slower cadence, my 'bent legs are

developing well, and I don't fall anymore starting and stopping. My average speed for all my runs thus far is over 13 mph and my best yet is 13.78, which is getting up toward my goal of 15 mph for the exercise rides I take. Riding a 'bent is truly a joy. I'm more aware of what's going on around me, as I'm not staring at the front wheel 60% of the time. I'm quite comfortable, although I am experiencing some foot numbness. I was able to significantly improve this by moving the cleats for my pedals away from the ball of my feet, but I still get a little. I also consciously wiggle my toes when climbing, which also seems to help.

My stopping now is because of traffic laws, not my physical conditioning or wedgie butt. I've done 12, 15, and 20 milers and will step up to longer rides very soon as time allows. I've planned a century in June for a local charity ride, and all in all I'm a cyclist again. The joys I recall are still there. Man and machine synergistically clipping along. Heart rate such that you are aware you are breathing harder but not out of breath. Legs spinning the cranks, shifting gears to meet the need, lean into the turn, climbing hills and blasting down to attack the next. There is nothing like cycling, and 'bent cycling is more fun than I could have imagined. I want to thank RCN and all the friendly folks online for making information accessible, allowing people like me to learn about recumbent bicycles and step up to join the club. I couldn't have done it without you sharing your thoughts and knowledge.

Now the upgrades start. First up, new wheels! ♦



Put your own spin on it.

Below the main image is a navigation bar with a logo on the left and a series of icons representing different bicycle models. The icons are arranged in a row and are labeled with the names of the models: **TRUCK**, **TRUCK**, **TRUCK**, **TRUCK**, **TRUCK**, **TRUCK**, **TRUCK**, **TRUCK**, **TRUCK**, **TRUCK**. The labels are in a stylized font and are positioned below each icon. The navigation bar is semi-transparent and has a rounded bottom edge.



The Burley Nomad Cargo Trailer

The Only SUV You'll Find
Around Our House

by Bob Bryant

Hauling cargo with a recumbent isn't the easiest thing to do. Each and every recumbent has a different cargo-carrying capability. Some have great seat bags, others can't accept seat bags. Some have great under-seat panniers, others don't. And some recumbents can take front and/or rear racks, and some can't.

One option that is often overlooked is to tow a trailer. My trailer-towing experience goes back to 1991, when I purchased a Burley d'Lite folding trailer to tow my kids. For seven years, we used it, abused it, traveled with it, and overloaded it—and never had a single problem with it. We sold it to another young family who may still be using it.

Burley has introduced a new trailer to their line—the Nomad. This is specifically a cargo trailer designed with touring in mind. It uses 16-inch wheels that quick-release from their axle, and the trailer also folds. It has a tonneau cover that fits over

the cargo bay, and a sectional separator that has some pockets for loose items. The trailer is 32.5" wide. It weighs 14 pounds and will carry up to 100 pounds in 8,500 cubic inches of space. The trailer has a low tongue weight, which means a lighter load on your bike (Burley says that 50 pounds in the trailer is equal to less than 10 pounds on your bike).

Like their bicycles, Burley's trailers are built in Eugene, Oregon. The build quality, fit and finish and product refinement, are superior to any other trailers I've owned or tested. Burley has always been the leading name in bicycle trailers.

Burley's trailer hitch is legendary. It easily hitches to the non-drive-side rear triangle. The hitch is a wedge of plastic that rides in between the seat- and chainstays while a screw-down clamp locks it in place. There is a new Alternative Hitch that replaces the rear quick-release of your recumbent's rear wheel. The

actual hitch looks like a miniature plastic head tube that accepts a latched pin. A safety strap then wraps around the chainstay of your bike. This is the best trailer hitch I've ever used.

Our Nomad arrived with the Alternative Hitch. Thinking I'd like the old (standard) style better, I ordered one. I can definitely say that I much prefer the Alternative Hitch. The only negative for the Alternative Hitch is that if you want to switch out between different bikes, you either have to have one Burley Alternative Hitch quick-release for each bike or keep changing the quick-release that comes with it.

Wheels

Generally, I'm partial to 20-inch wheels. The beauty of the Nomad is its light weight and compactness, and the 16-inch wheels fit in with the design. The biggest benefit of the 16's is when you need to make something small. They are noticeably smaller than the 20's.

Many of the recumbent riders I know have had custom wheels built for their one-wheeled trailers. The Nomad shouldn't need this. The Nomad has spoked wheels and alloy hubs with sealed cartridge bearings!

The tires are Cheng Shin 16 x 1.75" 35 psi nylon tires. While not a world-class tire of this size, they worked just fine.

Frame

The Nomad frame is 6063 aluminum. The wheels attach to the axle by independent quick-release. The wheel slips into the hollow axle, and you flip the quick-release lever. Inside the axle, what looks like a miniature handlebar stem wedge squeezes against the hollow axle and tightens the wheels. The Nomad can be folded with wheels off in less than a minute.

The trailer gets its shape from the use of coated nylon pack cloth (of various thicknesses). The base is black, the sides are blue, and the tonneau cover is bright yellow. There is a 3M Scotchlite reflective strip across the back of the trailer, as well as reflectors. The trailer also includes a two-piece safety flag. Since the frame consists of aluminum rectangles, it was easy to find a way to lock it, though you will need either a second lock or a long cable.



The Nomad carries one week's worth of groceries for our family

Compared to One-Wheelers

When one-wheeled cargo trailers came on the scene, they nearly became a bicycle fad. To give them their due, they do work great if you single-track mountain bike or ride in tight quarters. However, if you're touring or commuting, I find the Nomad higher in quality and easier to use; it holds the weight better, and you can put more in it (the Nomad holds 8,500 cubic inches; the B.O.B. Yak, 5,700 cubic inches; the B.O.B. Coz 3,600 cubic inches). You can probably squeeze nearly as much stuff onto a Yak due to its open bed and bag design. The problem is that when you unhitch, the trailer just falls over, whereas the Nomad sits nicely balancing on the two wheels and the hitch arm. Burley notes that the pitch axis of the hitch is located behind the yaw axis, which greatly improves stability over its single-wheeled competition, especially at higher speeds.

Nomad in Use

One sunny afternoon we hitched up the

Nomad and went grocery shopping at the local food co-op. We managed to stuff four bags of groceries in with ease. I'm thinking at least six bags would fit, perhaps more. Marilyn even towed the grocery-filled trailer up the hill to our house with relative ease. I have since volunteered to tow the trailer for our family's weekly grocery shopping trips.

When the Nomad is empty you barely know it's there. When full it is noticeable, but it tracks well and pulls easily. I seem to be more respect on the road towing the trailer. Perhaps it is because drivers think a child is onboard. I've started using the trailer for my mail runs. The other day I carried 150 RCN's down to the post office. I found that when I'm towing the trailer and its bright-colored body and safety flag are waving in the breeze, motorists give me more room and show more respect on the road.

I've had some bad trailers—two that I can think of. One literally fell apart on me after a few months of use; another was just

difficult to use and didn't go together well. The Nomad, however, really couldn't be any better, though it could be bigger. We'd love to see a larger-size cargo version, perhaps with 20-inch wheels, but don't let the Nomad fool you, it will tow a bunch of stuff. We bought the test trailer, so when you order something from RCN, it's delivered to the post office towed in the Nomad.

The Nomad is a fantastic buy at \$269.

Specifications

Weight—14 lbs.
 Width (with wheels)—32.5"
 Width (max. interior)—25"
 Length—32" + 20" hitch arm
 Inside height—11"
 Folded size—32 x 25 x 9"
 Cargo capacity—100 lbs.
 Price—\$269

RCN Rating—★★★★ 1/2 (out of 5.0)

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Easy Racers: Our Customers Speak

SUBJECT: How Does That Thing Climb? April 4, 2001

Just a quick update on the Gold Rush Replica that I purchased about two months ago. Great!!! The weather in Cincinnati is just starting to break. I have over 900 miles on my trainer since February, and about 120 miles on the GRR. With the weather breaking, the GRR should see about 150 miles a week.

The GRR becomes more of a blast the more I ride it. I did my first climb out of the river valley where our major bike path is located. Everyone warned me that I would be in trouble on a climb. So I was somewhat apprehensive as I started the 1.5-mile climb out of the valley.

First, I never got out of the middle chainring. I think I could have stayed in the large (53). I held between 13 and 17 mph for most of the climb. I never dropped below 11 mph. I was very impressed. I have climbed this hill hundreds of times on my Trek OCLV and felt far worse at the top of the climb than on the GRR.

As a matter of fact, I felt great on the GRR!!! No back pain; nothing. The ride back down was a hoot. I had a friend with me (about 5 minutes behind me up the hill) as I descended down into the valley. I was hitting 40 mph without moving my legs, and using the brakes into the turns because I was not sure what to expect from the GRR at speed around the turns. My friend had to pedal like a madman and he still couldn't keep up. The GRR felt like a sports car going down the hill. What fun!!! I wish I had started this



*Double Century Man, Ron Bobb
out training for the Terrible Two*

30 years ago instead of my mid fifties!!!!

Best regards,
Doug Pendery

**SUBJECT: GRR Update
April 25, 2001**

This past Saturday I rode with a few friends that have conventional racing bikes (wedgies, I think you call them). We climbed out of the valley up the Route 48 hill. This climb goes for about 1.5 miles. I pulled my friends up the hill at about 18 miles per hour and crested at over 20 mph. Needless to say they were out of their saddles trying to stay up. I must say I was winded, but so were they. Their comment was, "I guess your recumbent doesn't have a problem going up hills."

In my younger days (about 8 years ago) I would have pushed myself to my limit to go 18 miles per hour up this hill on my Trek OCLV. My point is the GRR is a great recumbent. I enjoy going up hills on it more than my OCLV. I am more relaxed, my back doesn't hurt, and my legs aren't killing me from being out of the saddle trying to lever the OCLV up a hill.

By the way, I had a tailwind on one stretch of the ride. I managed to get up to 36 mph in the flats. Nobody passed me . . . It was a real hoot!!!

Best regards,
Doug Pendery

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