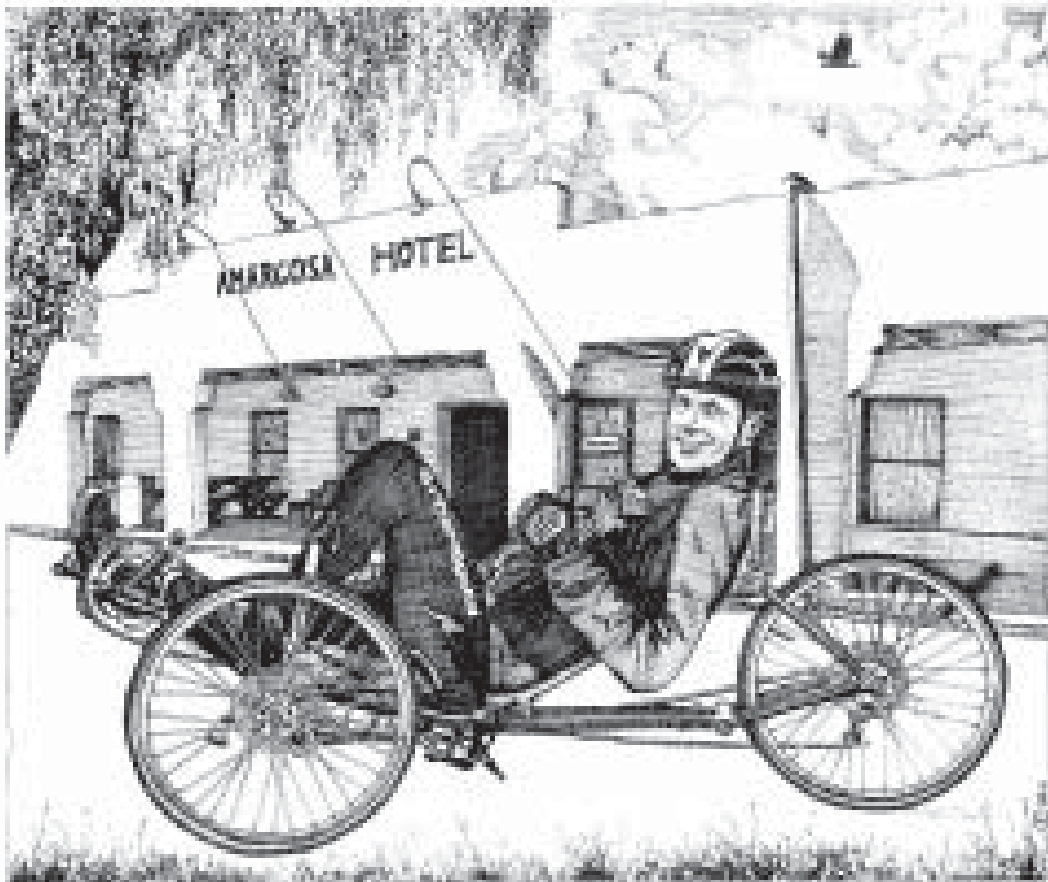


RCN

RECUMBENT CYCLIST NEWS

Issue No. 69
May/June 2002



Greenspeed © Leo Kodl

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Editorial License

Taiwan-built Recumbents — A Bad Thing?

by Bob Bryant

bob@recumbencyclistnews.com

First off, I'd like to apologize for my comments on Taiwan-built recumbents in RCN 67. In retrospect, I could have handled this better. Rather than discussing Taiwan build in terms of "Pro" and "Con," I used "Good" and "Bad." This was a mistake. And so the question remains—what constitutes a Taiwan-built recumbent, and is Taiwan build a "Bad" thing? My goal in this is to help you make your own decision. Let's explore the topic in more detail.

Not all Taiwan-built recumbents are created equal. There are varying grades of builders in Taiwan, some of whom I don't know much about. I do know that there are varying levels of service from builders.

1. Bikes completely built, painted, assembled, and shipped by somebody big like Giant (they build BikeE CT and AT).
2. Same as above, but with some jobs done by a few smaller companies.
3. Frames built in Taiwan, then shipped to company of origin for painting and assembly.
4. Frame tubes, extrusions, seats, and stems/risers or other parts built in Taiwan.

Reasons for Moving Production to Taiwan

1. In the case of BikeE and Sun (EZ1), moving production to Taiwan allowed builders to keep costs low and thus to lower bike prices by selling more bikes.
2. In the case of RANS, finding experienced bicycle fabricators in Hays, Kansas, has always been difficult. By moving production to Taiwan, they've solved this problem. RANS now operates a small bike crew in the United States, and the bikes are now built completely in Taiwan

- (the Screamer is assembled in the USA).
3. In the case of Bacchetta, it appears that the production capabilities of Taiwan will allow them an easier entrance to the recumbent business (no factory or fabrication employees are necessary). Like RANS, Bacchetta will build expensive models in Taiwan (they have no models below \$1,495 at this time). Bacchetta has told us that it is too expensive to build in the USA.
4. In one case, no subcontractors were capable of building a certain recumbent frame. This builder has its frames made in Taiwan, and then the bikes are assembled in Europe.

Is It Cheaper?

The primary reason to build in Taiwan is to save money. I've been told that some wedge bike manufacturers can produce their aluminum frames for less than \$80 apiece. Two recumbent builders have told me that they can't even buy their aluminum frame parts for that amount.

Not everyone agrees that building in Taiwan is cheaper. At least one builder has told me he'd like to bring production back, and another said he was bringing production back, though this may have changed. The important considerations are travel time and costs for employees, and perhaps political concerns of doing business in far-off lands.

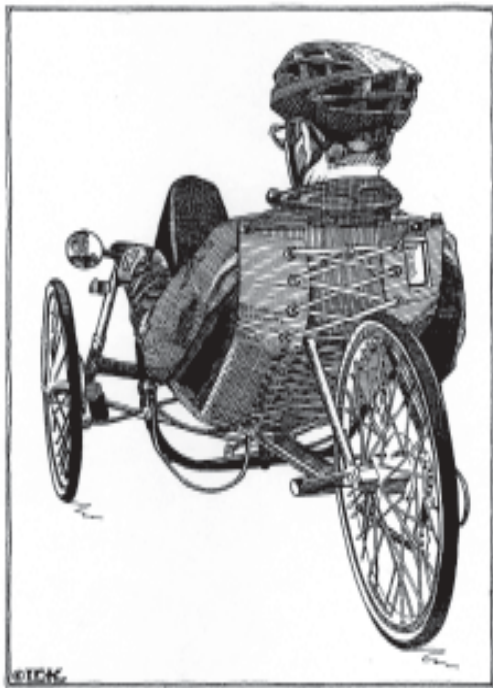
Less than 20% of all models listed in RCN 67 (our 2002 Buyers' Guide) are built in Taiwan (models, not quantities of bikes). Currently, nearly 100% of recumbents that cost under \$1,000 are built in Taiwan. It is our guess that about half of all recumbents produced are built in Taiwan (actual bikes, not models).

NAUTICRAFT/RECUMBENT BOAT NOTE

Nauticraft has just taken over production of John Howard's Wavewalker. For more info on this and other recumbent boats, see RCN#60 or send \$3 for an article reprint to RCN. Rusty Lane of Pedalcraft is a Nauticraft dealer in Olympia, WA. Rusty does demos all over the NW. Contact him at rusty.lane@attbi.com or www.pedalcraft.com. For more more info from Nauticraft write: 5980 Grand Haven Rd., Muskegon, MI 49441

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Greenspeed © Leo Kodl

The Politics of Overseas Production

There's a trend in American business to shut down fabrication, assembly, and plants and do marketing only. Production is then sent to some far-off land where labor is cheaper (and we thereby lose American living-wage jobs). Most of these bikes were formerly built in the USA. It's the business model of moving production to countries with cheap labor that concerns me. In the world of big corporations, their social and environmental responsibilities can vary dramatically. I don't have definitive answers, but I do think it's something to consider.

U.S. Production

Many feel that the days of the "built in the USA" recumbent are numbered. As a recumbent enthusiast, I consider it a plus if bikes are built in the country of origin by craftsmen. I asked myself why. The reason is because I like to speak to the person who built or oversaw the building of the bike. This can be a unique and pleasurable experience while it lasts. On the other hand, I also see the need for affordable entry-level products.

Just because a recumbent is built in the USA, it doesn't mean it's perfect, nor does it mean that some passionate recumbent enthusiast is meticulously welding the frame. Some U.S. manufacturers hire basic fabricators who may not care about the refinement that cyclists are concerned about. Others train their own people. So in some cases, having a bike that was built in a state-of-the-art factory in Taiwan may be a plus. Some recumbents that are built by hand by small builders in the

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USA can have a more homebuilt or experimental look to them.

Possible Problems with Taiwan Build

Taiwan build quality can be very good. Go look at a \$400 comfort bike from Giant, Trek or similar and you'll see phenomenal Taiwan quality. It's just amazing. Those frames appear to be every bit as good as the finest USA-built aluminum recumbent frames.

So the frames aren't that big of a problem. They aren't as good as the aluminum comfort bikes (yet), but they aren't bad. So what's the deal? Well, there can be problems with specialized recumbent bicycle parts. Examples can be found in the many recent recumbent industry recalls and premature failure problems. These include forks, seats, seat frames, seat parts (sliders, foam, mesh, fittings), steering stems/risers, brackets, and clips. What they have in common is that they are mostly nonstandard bicycle components that are produced in Taiwan.

What we are finding out is that there is can be a learning curve when a manufacturer moves any level of production to Taiwan. Mistakes can be made by vendors. Problems might not become evident for a few years. Bikes built dating back to 1999 are being recalled, as we are seeing this month with the latest BikeE recall.

Rider safety aside, I don't see these types of recalls as total negatives, but rather as responsible actions from the manufacturers. A formal recall shows that the company wants to do what's right by taking care of problems. However, nobody wants their bike recalled. The recent Cannondale, RANS, and BikeE recalls involve the Consumer Product Safety Commission. For consumers, this is a benefit of the maturing of recumbency. Perhaps these bikes could have been engineered better, but the fact that manufacturers are taking responsibility for fixing the problems is admirable.

Some industry insiders argue that some of these problems are design issues. I agree that this is part of the problem. Many manufacturers are not doing adequate testing. We like to hear about torture-testing machines with gonzo 300-pound testers abusing bikes to see how they will respond.

I've Got It All Figured Out!?

Just when I think I've got it all figured out, the Cannondale recall and another BikeE recall are made public. The BikeE recall affects both USA- and Taiwan-built bikes. The USA-built Cannondale uses some Taiwan-built parts. This course of events makes a good case for the idea that it really doesn't matter where the frame is made. The problem comes back to those Taiwan vendors and the nonstandard parts. In doing more research, I find one manufacturer who builds here in the U.S. using a Taiwan- built fork and another who imports frame tube sets.

Sheesh, I'm sorry I ever brought up this subject. What I've learned is to never judge a bike by the little American flag decal on the frame, but to judge it by its quality and appearance.

From here forward, RCN will not list Taiwan build as being "Bad" or a "Con." We will just list the country where the frame is built and leave it up to you to make your own decision.

So what can you do? It depends upon your tolerance for these kinds of problems. If you need a bulletproof bike, buy one that's time-proven and known to be durable. If you're willing to take a chance on a new model or brand, make sure you trust the dealer you're buying from.

Given the quality of the Taiwan-built upright comfort bikes, Taiwan-built recumbents will eventually be fine. Vendors will get the hang of our nonstandard parts, and designers will build more carefully.

Viva Recumbency!
Bob Bryant, publisher

Resources

1. No Logo by Naomi Klein
2. The Better World Handbook
3. Anything written or filmed by Michael Moore
<www.michaelmoore.com>



Recumbent News

News & Rumors

Yellowbikes—The racers in the blue VW with lowracers on the roof seem to have been let go. Our 2002 information inquiries were ignored. We are hearing that there may be problems at Yellowbike. The phones and emails are currently not being answered. There have been rumors of their demise, but the website is still up.

Giant—This bicycle builder builds BikeE CT's and AT's in Taiwan. They previously employed Mike Burrows (Windcheetah and Ratchatcher fame). We have now heard a rumor that we might see a recumbent at some point. We will be reviewing their unique new Prodigy Comfort bike later this year.

www.grannytrike.com—This company that we never heard of until now appears to be rebadging S & B recumbents and two-wheeled and reselling them under the new moniker. I guess this answers our question as to whether S & B is still around. These trikes sell for \$1,100 to \$2,300.

www.schwalbetires.com—Now accepts customer-direct tire orders over the internet.

Longbikes—We've heard that a mailing of dealer packets has gone out. The models are a \$2,500 Slipstream LWB and \$5,000 DuPlex (Ryan name?) LWB tandem. Dick Ryan reports that his "DuPlex tandem" may be coming back to market from him in 2002.

Easy Racing—Gardner Martin has recently purchased Matt Weaver's "Virtual Edge" racer. Gardner and team want to go for the one hour Dempsey/MacCready prize sometime this year. They must go 50 miles in one hour to win.

Bent Gear—We have found a new company that manufacturing and sells clothing specifically for recumbent bicyclists. You can check out their website at: <http://www.bentgear.net> (we haven't seen any of the products, just the website).

Bacchetta—Mark Colliton offered this update: "We are on schedule and expect to have steel bikes in to dealers the first week of April. The Ti Aero will be built stateside, assembled in Florida, and should be ready to ship mid-May. We don't have a final spec for the Aero yet, but it will be nice. The retail price is still projected to be \$3,800."

Linear—The company sold earlier this year. The new owner (whom we never heard from or received information from) seems to have thrown in the towel. In January rumors were rampant that the company was out of business. We are now hearing rumors that yet another buyer has stepped forward.

Do you have something for our rumors section? If so, please e-mail to drrecumbnt@aol.com.



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- RCN#66 Vision Saber, BikeE E2 tandem, Barcroft Dakota, Bentech kit, California AIDSride
- RCN#65 HP Velo Speed Machine, Tour Easy vs.V2,
- RCN#64 BikeE RX, Lightfoot trikes, RCN#63 Vision R54, Twike, P-38, Electric assist
- RCN#61 Trice trike, Sat R Day, Design by DGW

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RX Feedback

Thanks for a great magazine. I've been a reader for several years and have enjoyed almost all of it. RCN 66 was one of your best. I especially enjoyed reading about the woman who built the Bentech and the AIDS ride story. The only suggestion is to have more travel stories as they are fun to read and often motivational. Thanks again.

As for me, I've been a BikeE guy since Doug Oxsen set me up years ago with an original hardtail. The RX I ride now is just right in light of (a) price, (b) user-friendliness for a commuter, and (c) plenty of bike for a late-40s stocky (read "chubby") ex-jock. Some of the stuff you review is more than I need. The BikeE is bullet-proof.

Al Hulbert from Bend, Oregon
ahulbert@bend.k12.or.us

Can't Find EZ Sport

I'm new to recumbent cycles and have been reading RCN #67 to gain some knowledge. On page 38 in the article covering the editor's choice you identify as a best buy LWB the Sun Easy Sport.

I checked the manufacturer's contact info. on page 35 and went to the Sun Bicycles page and did not see any info on this bike. I also checked the Easy Racers site, but no info. on this bike.

Can you provide some info. on how I can find out more about this bike and the location of authorized dealers? Thanks for the help.

Jerry

Editor Comments: Sun is somewhat difficult to deal with compared to other manufacturers. They are a branch of J & B Imports, a large bike parts wholesaler. The bike dealers do most of the sales work and supply info. We did not receive 2002 info/photos from J & B either. Your local bike shop will most likely have a J & B catalog that has full-color photos of the bike. We are supposed to be getting one of the first production units from Easy Racers in March when they are available. You may want to check the RCN ads for recumbent specialists who sell Sun/EZ1 recumbents, or give Easy Racers a call.

Electric Easy Racer

My wife, Leona, and I have been riding recumbents for about 10 years—Visions, Tour Easy's and Gold Rush Replica's mostly. In those 10 years we have had 2 children and have aged a bit (imagine that!). Recently Leona has been riding less due to a progressing auto-immune disease. . . . nothing deadly, but it's painful for her to ride sometimes. What to do?

The idea of an electric assist came to mind. If I could mount an electric motor on Leona's Tour Easy she might be able to continue to ride. I was researching the possibilities when "Electrify Your Recumbent" (RCN #63) caught my eye. I called Tom in Illinois at Tom's Bike Annex (618-262-4088 or www.bikeroute.com/BikeAnnex). We had a very pleasant chat. Tom said he had just perfected a simple mounting bracket for the Easy Racers bikes . . . so I ordered a complete Currie U.S. ProDrive unit from him along with his Tour Easy mounting bracket.

After the unit arrived I had it mounted and ready to roll in less than an hour. Tom's bracket was perfect . . . and he was available by phone when a small problem came up, and we solved it quickly and easily. He was a pleasure to deal with, and I highly recommend him.

Leona loves the motor. She still likes to ride mostly unassisted, but

when she can't make that hill or she's gone a bit too far she can engage the throttle and continue to enjoy the ride!

Charlie Schink
schink101@home.com

Thank You for the Warm Welcome

Last September we announced that Cannondale would be introducing a new CLWB recumbent, the Easy Rider. To be honest, we didn't know how the recumbent community would respond to the news. Although we've been fairly successful with innovative upright bikes, we realized that we were very much the new kids on the block when it came to recumbents.

We are very pleased—and very grateful—to report that we've received a warm welcome. Recumbent riders, the recumbent press, and even other recumbent manufacturers have all contacted us to offer their best wishes and assistance. The kind gestures and words of encouragement have been wonderful. We are more excited than ever to be joining such a great community of cyclists, and more determined than ever in our commitment to "do it right."

We hope that we have! The Easy Rider has been shipping to Cannondale dealers for several weeks now, and the initial response has been gratifying. These early favorable indications underscore the fact that we haven't entered into the 'bent market lightly. Chris Dodman, the Cannondale engineer who designed the Easy Rider, has been building, riding and racing recumbents for 14 years. In development for three years and created with advanced CAD (Computer-Aided Design) tools, the Easy Rider combines Dodman's knowledge of recumbents, Cannondale's sophisticated testing and manufacturing systems, nearly 20 years of experience producing lightweight aluminum frames, and 10 years of experience producing high-performance suspension systems.

For all of our experience, we're tremendously excited to learn more about recumbents. The Easy Rider is just the first in what we are certain will be a family of Cannondale 'bents. We welcome your comments on the Easy Rider, we encourage your input into future Cannondale recumbent designs, and more than anything, we thank you again for your warm welcome into the extended recumbent family.

Sincerely,
Joe Montgomery
Founder & President
Cannondale

Taiwan Comments in RCN 67

On page 38 of RCN #67 the review of the RANS Stratus says that the fact that the Stratus frame is manufactured in Taiwan is one of the "bad" aspects of the bike. In almost all the other references to Taiwan manufacture of RANS frames, the comments have been positive. So what's up?

towles@shastalink.k12.ca.us

Editor Comments: The term "bad" was probably not the best choice of words. Please see my editorial in this issue. The Stratus is an excellent bike that has had fine reviews in RCN.

The Cannondale Recumbent

by Bob Bryant

Cannondale is known for cutting-edge, high-tech, and cool products. For the 2002 season, they now offer a very cool new CLWB recumbent called the Easy Rider. We've been hearing rumors about a Cannondale recumbent for years, and now, for the first time ever, they're in production and available at your local (hopefully) Cannondale or recumbent dealer.

Cannondale is not acting like a lame wedgie manufacturer. They've carefully crafted a very nice recumbent, and we may see others in the future. Cannondale handcrafts their bikes in the USA out of custom oversized aluminum tubes. The frames are stiff and strong. They also have the capability to be light (though the Easy Rider is no lightweight).

I'm really jazzed about this new bike. The systems, fabrication quality, components (most of them), design, testing, and integration will set new standards for the recumbent industry. This is the most finely crafted recumbent I've reviewed in 12 years. Performance and handling are also at the top of their design category. I truly hope that Cannondale takes their design talents and building capabilities into all realms of recumbency. Also, the service and response I got from the company during this test were among the best, if not the best, I've received.

History

This CLWB is not a mountain bike. It's perfect for varied terrain, including paved roads, unpaved roads, rail-trails, dirt roads, etc., but Cannondale believes that showing the recumbent flying through the air as an MTB is irresponsible.

RCN's history with Cannondale dates back several years. In 1986 we met Cannondale's David Campbell at Interbike in Las Vegas. At that time, Cannondale had a secret prototype LWB ASS 26/20 full-suspension recumbent, and they wanted some feedback from enthusiasts. David told us that when they had news, they'd call. Sure enough, back in August 2001 we received a call telling us that the Easy Rider was about to be unveiled.

The chief designer on Cannondale's team is Chris Dodman. Chris lives in Ireland (hence the Euro feel of this CLWB), is connected with the HPV movement, and has even shown Cannondale prototypes at European HPV events.

Recumbent Design, the Cannondale Way

Cannondale has over 10 years of high-end suspension experience and insight. Besides beating the living crap out of test bikes, they also use sophisticated motion analysis software. The suspension is tested over the equivalent of 40,000 miles of riding (the bicycle's statistical lifespan). Roughly 95% of the bikes will outlast this figure. Of 100 bikes, maybe one will break.

The bikes are road- and robot-tested using a variety of methods. What these methods all have in common is the use of a data acquisition box. This is very similar to what is used by the auto industry and for race cars and exactly what Cannondale used while designing their Supercross motorcycle. Cannondale's system uses a strain gauge and records eight different items at once—up to 1,000 times per second. There is a series of static, load, strength, and durability testing for just about every aspect of the bike. No recumbent has ever undergone testing this serious. Sound too high-tech to you? Well, maybe—I had to have it explained to me by two people over a few conversations.

The part I did understand right away was the real-world testing. Before the testing phase was complete, 300-pound test riders rode the wheels off of the Easy Rider.

I have to admit, I was still skeptical, even when I sat down on pro-

duction model #001 here in Port Townsend. The shock sinks a bit as you sit down on the seat. I'm thinking "here we go again . . . pogo city." I'd warned the guys at Cannondale about this. They assured me that if need be, there were 10 different coil/oil shock combinations. Hey, they even say the suspension is "bob-free." I'm not sure what that means.

So I hit the road. It was a nasty late-December day, and I rode the bike on my test loop in what I would find out later were gusts of up to 50 mph. The Easy Rider handled it with ease. I rode up the two biggest hills. The suspension is active, but no pogo . . . "bob-free." That's when I figured out that they were right: this is the finest recumbent suspension I've ever tried.

Systems

Frame—The Easy Rider has a Cannondale Advanced Aluminum Design (CAAD) aluminum frame. Different diameters and wall thicknesses are used to reinforce crucial areas for strength and lateral stiffness and to make the frame as light as possible. The Easy Rider CAAD frames are welded and heat-treated by hand in Bedford, Pennsylvania. The build procedure they use is called "just-in-time," which allows them to make running changes in the design relatively quickly.

Each frame is painted with DuPont Imron, and there is a clearcoat over the decals. The paint quality is the best we've ever seen on a production recumbent and rivals custom paint jobs.

Fork—Cannondale's HeadShok is one of the finest front suspensions I've ever ridden. I rode one of the first many years ago. We have also owned a Cannondale HeadShok-equipped MTB. The HeadShok is vastly superior to any 20-inch BMX suspension fork. Each HeadShok has 88 needle bearings for stiction-less travel. The fork, suspension parts, and headset are all an integral system. The front suspension has 60 mm of travel.

Suspension—Cannondale's rear suspension is also based on years of experience, engineering, and rigorous testing. The aluminum swing arm is similar to those found on the Jekyll—evolved and optimized from its roots on the Super V. The shock is a Fox Vanilla coil/oil. Riders will find that it's much more lively and has far more active travel than other recumbent suspensions. The rear suspension has 75 mm of travel.

Steering—Cannondale's Easy Riser stem/riser/bar combination is well thought out and expertly crafted. The bars are tourist-style upright bars. With the adequate pullback of the stem, the reach will be suitable for most.

Cannondale tried stems ranging from 0 to 100 mm. The bike has a 70 mm stem. I found the reach perfect for a relatively upright mode, but I experienced borderline hyperextension when I reclined the seat farther back. Cannondale offered me the chance to try out their prototype 100 mm stem. There is some benefit to the longer stem, but the handling is optimized with the one they chose. Perhaps at some time in the future Cannondale will offer options for stem length. It would also be very easy to choose longer-reach handlebars given their top-loading style of stem.

The handlebar feel is different from other CLWB's. The Easy Rider's pedals are a bit higher than on other similar CLWB's. This makes knee clearance between the bars a minor concern (for some). The bike has a very European feel, no doubt due to the design talents of one of the design team members, Chris Dodman. The ergonomics are very good. The only thing newbies will need to know is that you sometimes have to tuck your knee out of the way of the bars in tight turning situations.

Weight—The Easy Rider is not a lightweight by any stretch.

Cannondale's Chris Dodman explained: "Your XL with mirror and kickstand weighs 40.5 pounds. A standard size without mirror and kickstand weighs 39 pounds. There will be a 90-gram (.2 pounds) weight savings from the revised eccentric bottom bracket on later models. We deliberately erred on the side of strength, stiffness, and comfort with the expectation that we would add lightness once we have some long-term consumer field-testing of the production bikes as a benchmark. The choice of a coil-over shock adds almost 2 pounds over a light tires and air shock (Cane Creek ala BikeE)—but having ridden the two setups back to back, I feel the performance of the bike is not directly related to static weight. Improved ride performance and durability are worth it for this bike and our customer. A tricked-out standard-size Easy Rider using lightweight parts can weigh 35 pounds."

Drivetrain—The drivetrain is very smooth. The components aren't the fanciest we've seen, but they work very well together and seem like a fine match for this ultimate recumbent comfort bike.

Use of the two-chain mid-drive drivetrain creates a new set of concerns. First of all, the rear chain is actually shorter than that of an MTB or road bike. With an 8- or 9-speed cassette, chain deflection and proper gear selection become a bigger concern. For the rider, this means more trimming of the front derailleur to alleviate chain noise. We found that the Easy Rider seemed to need a bit more trimming than even the BikeE RX. Perhaps this is due to the Easy Rider's mid-drive being more rearward on the bike.

The second concern about mid-drivetrains is forward chain tensioning. On standard bicycle drivetrains, the spring-loaded rear derailleur takes in all of the excess chain. The mid-drive's forward chain is similar to that of a one-speed bike. It needs to be of perfect length, as well as have a method of adjustment to compensate for chain stretch. Cannondale has achieved this by using an oversize tandem eccentric bottom bracket ("eccentric" means that the bottom bracket spindle is off-center and can be easily rotated a few degrees to adjust the chain). This beautiful CNC-machined piece accepts common bottom brackets. This system is a significant improvement over previous ones and should become standard in the industry.

Cannondale uses cable stops and naked cables to provide smooth shifting quality. The system was trouble free during our test.

Braking—The Easy Rider has an Avid mechanical disc brake in the rear. This brake is the perfect combination of retro user-friendly (easy twist dial adjustments) and high-tech strong braking. Its metallic pads are very durable and have a long life. The rotors are stainless steel. The brake handles are wonderful Cannondale-brand four-finger comfort levers—perhaps the best-feeling levers we've tried.



The Cannondale Easy Rider

The front brake is an Avid V. I asked Cannondale why they didn't use a disc in front. Their contention is that braking gets stronger as the wheel diameter decreases. A disc on the front 16-inch wheel would elevate braking power to unusable levels of power and twitchiness.

Wheels and Tires—The wheels are of excellent quality, built with Sun rims, DT stainless steel spokes, and brass nipples. The rims have a black finish, which starts to get marred the minute you ride it out the door (at least the front does).

Our only real component complaint about the Easy Rider is the front wheel. It is built half-spoked (16 spokes on a 32-hole rim (a la BikeE), which is fine. The build quality looks great. The front hub is a lower-line component than the rest of the bike. The Shimano RM40 hub is Acera level and has no business on a \$2,000 bike. Cannondale uses this hub up front because only 30% of the weight is on the front end of the bike and the bearing stress loads are less than on an upright.

The tires are Maxxis Hookworms. Cannondale did coast-down tests and found the Maxxis to outcoast the Primo V-Monster.

Comfort

Seat—The seat on the Easy Rider is exceptional. The mesh back is comfortable and very high quality (built in the USA with Cannondale-sewn nylon mesh). This internally braced seat frame is very stiff. The seat slides a machined track that is similar to that of Burley and Trek, though it works better than both. The look, feel, and quality of the machined parts are exquisite.

The Cannondale seat is adjustable in five ways:

1. Seat reclines with two allen bolts.

2. Base tilts.
3. Base moves fore and aft.
4. Two seat nose positions (holes in side-plate for quick release)
5. Two seat tail positions (for quick-release; a la BikeE).

Ergonomics (seat height in relation to pedal height)—The Easy Rider has relatively higher pedals than many other CLWB's, but the ergonomics work very well with the design.

Ride/Handling

Stability—The Easy Rider is very stable. In fact, it's probably the most stable CLWB we've ridden. Combined with the refined suspension, this makes it a great bike for new enthusiasts as well as longtime riders.

Tracking—The Easy Rider steers and tracks perfectly and goes where you point it. It takes little effort to expertly control the Easy Rider.

Maneuverability—This bike can turn on a dime and feels great at speed. You always feel in control thanks to the engineered and tuned Cannondale suspension.

Speed/Efficiency—Though no racer, this CLWB performed well. The handling is more tuned to faster, more enthusiast speeds (lets say 15-22 mph) than to beginner speeds, and the suspension does not pogo *at all*. Most enthusiasts will find SWB's and LWB's that outperform the Easy Rider, but you're unlikely another recumbent this comfortable.

User-friendliness—The Easy Rider is not quite as user-friendly as a some other CLWB models. The pedals are higher than on some others. Cannondale's mid-drive is more rearward, which requires more frequent trimming of the front/mid derailleur (which you can't see). Also, the handlebars have a Euro look and feel. During low-speed maneuvers, it's sometimes necessary to pull your legs inside

of the bars. This is similar to pulling your knee out of the way when turning a LWB ASS with a fairing.

Fitting Riders—There are two sizes: the standard, with a 50.5-inch wheelbase, and the large, with a 55.5-inch wheelbase. Our test bike was the large, which according to Cannondale fits riders from 5'7" to 6'10". Our 5'4" testers could not ride the large. The Easy Rider fit my 6' frame perfectly. The standard size fits riders 4'8" to 6'1". You will notice the overlap here. Some riders will prefer a longer bike. Larger riders and those who tour (or carry a load) may prefer the larger size. From what we can tell, this CLWB sizing is ideal and surpasses other CLWB sizing schemes.

Fun Factor—This might be the ultimate fun bike. It is a looker and it rides as good as it looks. Our test bike was trouble free short of one flat front tire. The only thing that won't be fun is opening your wallet. A recumbent of this quality has a price.

Owning/Purchasing

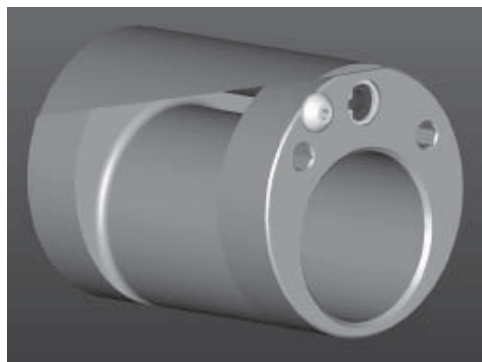
Versatility—The Easy Rider is a very versatile machine. The full suspension, user-friendliness, and utility possible with the CLWB design style make it ideal. Commuting, touring, and recreational riding



*Above: The Easy Rider's rear suspension
Below left: The Cannondale HeadShok for a
305 mm front wheel*



*Below right:
Cannondale's new
eccentric bottom
bracket shell to be
used on the Easy
Rider and
tandems. This
makes chain
tensioning very
easy.*



will be the Easy Rider's finest points. The drawbacks are that the present Easy Rider does not have fenders or rear fender mounts, and that the CLWB 20/16 design is not the best performing of recumbent styles.

Shipping/Assembly—There are Cannondale dealers almost everywhere, so mail-order purchasing will most likely not be necessary. The Cannondale suspension systems are taken from their MTB bikes, and the systems are proven and easy to set up. No dealer should have a problem setting up this bike. Ours was effortless to make road-ready.

Quality/Durability—The quality of this bicycle is mostly exceptional. The frame and fork come with a lifetime warranty (not on suspension parts). We found this bike durable but complicated. As with any suspension bicycle, it will require more maintenance.

Cost/Depreciation—The Easy Rider is considered expensive to many. The reason for this is the market/enthusiast perception that CLWB recumbents are affordable, entry-level models. The Easy Rider is expensive as bicycles go; however, if this were a SWB or LWB with this type of suspension, everyone would consider it a bargain.

Options and Accessories—There are few accessories available to fit this bike. I asked Cannondale about fairings; they are probably going to leave that to Mueller and Zzip. As for fenders, the rear half-cutaway main tube acts as a fender (as does the BikeE's frame extrusion), but this isn't as effective as a real fender. Installing a real fender will be tough, as there are no mounts on the rear. As for the front, a BikeE or Sun EZ1 fender will probably fit. See your dealer.

BikeE and Radical seat bags will surely fit. Cannondale has a line of panniers and may eventually sell their own bag. We used our trusty L.L. Bean backpack, which straps onto any recumbent mesh-back seat with one bungee cord in about 20 seconds (faster than mounting a BikeE bag). The bike did come with a Mountain Mirrycle rear-view mirror, which is my favorite mirror. Cannondale says a mirror is "essential to your safety," and we agree. We wonder why other manufacturers don't supply mirrors.

Market Competition—Everyone seems concerned about Cannondale's marketing of this bike, fearing a repeat of Trek's well-known recumbent debacle. Cannondale, however, is a much smaller company than Trek—more a Lightspeed than a Trek. There are only 30 to 40 reps at Cannondale, and more than 10 actively helped on this project. Their mantra was, "We need this niche." From my experience, I can say that Cannondale is vastly more committed than Trek ever was. Cannondale also services many niche markets, such as tandems, track racing, cyclocross, and loaded touring. They can deal with models that sell in the hundreds per year. More than 200 units had been shipped by early February 2002.

Dick Ryan called several Cannondale dealers in the Northeast. His report was that eleven out of thirteen dealers would not be carrying the Easy Rider. We called five dealers in the Seattle area, and four of them said that they would be carrying the Easy Rider. All but one had the bike in stock already.

The Easy Rider is direct competition for the BikeE RX. The RX is still cheaper than the Easy Rider by several hundred bucks. If budget is your main concern, we suggest the RX rear-suspension model.

The one problem for Cannondale will be that the market has identified CLWB's as entry-level, affordable, and even "cheap" recumbents. From this perspective, the Easy Rider is a very expensive CLWB. How-

ever, the Easy Rider should be compared with the RANS Stratus and Velocity Squared, the Easy Racer Tour Easy, and others. If you compare this bike with LWB ASS models, it's a downright bargain. Though this is a great bike, we wish they'd made it a 26/20 LWB. We know they're serious, so maybe we'll see one sometime soon.

Cannondale has an excellent reputation and is known for building very high quality niche models. They are a perfect match for recumbency.

Additional Notes—Cannondale has an ex-

cellent owner's manual. The manual and updates are being placed on their website.

My Analysis

Verdict—We loved the Easy Rider and really didn't want to send it back. It's a spectacular new recumbent with the finest recumbent suspension we've ever tried. Cannondale has raised the bar on recumbent quality and what we as recumbent buyers should expect. If they come out with a SWB or LWB based upon the Easy Rider's systems, the industry should watch out. Every current manufacturer should be watching this bike and this company. We've heard of types of 'bent prototypes. We hope to see more recumbents from Cannondale in the future.

All is not perfect, though. We did find some items to pick on:

Handling—The only possible glitch in the handling, maneuvering, speed, and efficiency of this recumbent is the limitations of the tiny 305 mm 16-inch wheel. They wear quicker, are more difficult to get parts for, are very small, and don't roll over road hazards (bumps, holes, ruts, shoulders and road surface elevation changes) as well—and they are the key to the compact size of a CLWB recumbent. If you don't like 16-inch wheels, you are essentially upgrading to a LWB.

Front-Wheel Woes—The front brake tick and lower-line front hub were the only real component disappointments. This wouldn't keep me from buying the bike, but rim ticks are unacceptable on a \$2,000 bike.

Fender Mounts—Or lack thereof: there are only dropout mounts for fender struts—no upper or front fender mounts. Chris Dodman has mounted fenders on his own Easy Rider by using an aluminum plate across the chainstays mounted to the frame with plastic-coated "P" clips (7/8" dia.). I rode the test bike in the rain, and it gets real messy. It's a complex frame and takes a lot of time to clean. The lack of fender mounts is a real disappointment. Cannondale did say that if there is enough interest, they can add mounts.

Lack of Accessories—There are no accessories at this time. Cannondale suggested that they would rely on outside vendors for seat bags, fenders, and fairings, but we've learned that this isn't how it works. The company needs to play an active roll in making sure all of this happens.

Other Criticisms—The only real flaw we found was on the rear tip of the main tube/fender. There was a blip at top dead center. I asked the Cannondale reps about this. Apparently, it was the place at which the main tube laser cut is started. They have since inverted the tube for cutting, so the blip won't show.

The Easy Rider is expensive. The reason the bike is considered expensive is that most other CLWB recumbents are inexpensive and made for the entry-level recumbent mainstream (assuming there is such a thing). If this bike was a 26/20 LWB or SWB of the same quality and using the same components, it would be considered a bargain. However, it is the finest-quality recumbent we've ever tested, from the beau-



*Chris Dodman riding in Las Vegas at the Interbike Dirt Demo Days
(photo by John Riley)*

About the Designer—Chris Dodman

Chris Dodman is 30 years old and a resident of Edinburgh, Scotland. He studied mechanical engineering at Strathclyde University in Glasgow, Scotland, and in 1994 went to work for a small company in the south of England called Middleburn that produced both high-end machined bike components and parts for electron microscopes. At the time, CNC parts were all the rage, and Chris designed numerous road and mountain bike cranks, hubs, chainrings, quick-release skewers, bottom brackets, etc., including the RS3 (sculpted CNC Billet crank), which was chosen by British designer Sir Paul Smith to represent "British Design and Identity" in the Museum of Modern Art Copenhagen.

By 1997 the CNC bicycle component era was winding down and Chris decided to pursue Cannondale for a job. He was hired and relo-

cated to Cannondale's USA headquarters, where he designed brake and drivetrain components, including the CAAD6 Hollowgram system. Chris also began working on some recumbent ideas as an unofficial after-hours project.

After three years, visa issues compelled Chris to move back to the UK. He continues to work for Cannondale from his home in Edinburgh, with visits to the company's Connecticut headquarters every four to six weeks. Chris's most recent project for Cannondale has been designing the Easy Rider recumbent, which went into production in December 2001. Apart from cycling and engineering, Chris's hobbies include photography, indoor rock climbing, hiking, and the nightlife! ♦

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tiful craftsmanship to the smooth, show-like Imron finish. With the Easy Rider's entry into the market, Cannondale has raised the bar on recumbent finish quality. You won't find recumbents that look like this one anywhere else. Other manufacturers should take note. It has been my dream for 15 years to see a recumbent with this quality of finish.

Pro

Best build quality we have seen to date

Great company attitude and recumbent commitment

Excellent components

Best paint found on any recumbent

World-class recumbent suspension (the best we've seen to date)

Con

Front V-brake (rear disc; this is done for a reason)

Front wheel is not worthy of the price (brake rim tick/low-line hub)

Short main chain requires mid-derailleur trimming (or chain noise)

No accessories (fender, seat bag, or fairsing . . . yet)

Access

Cannondale

(800) 726-BIKE (2453)

www.cannondale.com

Specifications

Model—Easy Rider; Type—CLWB; Steering—ASS; Wheelbase—50.5" (std)/55.5" (lg); Seat height—27"; Pedal height—20.5"; Weight—40.25 lbs.; Frame—Cannondale Easy Rider CAAD Technology; Fork—HeadShok R-Bone; Suspension—HeadShok (f)/Fox Vanilla shock on Jekyll/Super V-style swing arm (r); Accessory mounts—flashers will easily mount to seat frame tubes, water bottle cage mounts on both sides of stem/riser.

Components

Crank—Shimano 32T with alloy Cannondale chainguard (all black); Bottom bracket—Cannondale tandem/recumbent eccentric sealed; Mid-drive—Cannondale 22/32/44 (w/Shimano chainrings); Headset—HeadShok R-Bone; Derailleurs—Shimano LX (f), XT (r); Shifters—SRAM Attack Halfpipes; Cassette—Shimano 11-34 9-spd.; Chain—SRAM PC-59; Gear inch range—18.6-115; Pedals—Wellgo alloy; Wheels—305 mm 16" (f)/406 mm 20" (r); Rims—Sun Rhino Lite alloy; Tires—1.95" Hookworm Maxxis; Hubs—Shimano RM40 (Acera) (f)/Shimano Formula disc (r); Brakes—Cannondale Expert sidepull (V) (f)/Avid mechanical disc (r); Warranty—Lifetime frame/fork (fork suspension guts, 1 year); Colors—tangelo or metallic silver. ♦

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Wickster SWB & the Trimeter Trike

by Mike Stern

I'm a recumbent rider from St. Louis, Missouri. Recently I've been searching for a new bike that would outperform what I have. Since I own a very nice all-around bike, this hasn't been easy. I rode many. Unlike uprights, recumbents are manufactured by not just the large players, like Vision, Easy Riders, BikeE, Lightning, and RANS, but by many smaller companies like Rotator, Turner, Barcroft, Reynolds, Optima, just to name a few. Each offers something different. My search took me to Washington, D.C., Indiana, Springfield, Illinois, and Chicago. A trip to the West Coast may be next.

In August 2001, on a supported local ride in southern Illinois, my wife and I stopped for a water break. Mine was the only recumbent we'd seen that day (she rides a Bianchi road bike). Then, a blur approached. It was our second recumbent of the day, but unlike any we had previously encountered. It was long, sleek, and fast. That is how we met Jerome Hediger.

Jerome manages Wicks Aircraft Supply in Highland, Illinois, some 40 minutes from St. Louis. Wicks has a long history of distributing customized components for the aircraft industry. It also manufactures

pipe organs. Jerome is affable, fun to be around, and an avid cyclist with twelve years of recumbent riding experience. He's one of the strongest cyclists I've met. Three years ago he convinced the company to produce the Trimeter, a tadpole trike. This year they added a short-wheelbase recumbent. As our conversation progressed and our interest grew, my wife and I arranged test rides at the factory. Then, as we saddled up, we were passed by a group of hard-body wedgie riders. Jerome decided to give chase. It took him half a mile to catch and pass them, much to their surprise. I cannot ride like Jerome, but I rode the bikes he sells.

I'm not technically oriented. For this review I incorporated some of the technical information Wicks provided and supplemented it with my own observations. I'm not qualified to explain the ins and outs of bicycle mechanics, but as a dedicated recumbent rider I know what feels good to me, what handles right, and what I don't like. I've test-ridden a lot of bikes, and I understand that personal preferences differ. The following are my reviews of the Wicks products.

The Wickster

Wicks offers one SWB model with three component levels. The Wickster (the test model) has Shimano 105 componentry, the JT Cruiser has Ultegra parts, and the top-of-the-line HedTurner has Dura-Ace components. Wicks will build a bike with any componentry mix you want with a corresponding adjustment in the price.

Frame—All three SWBs share the same frame, a design modified from the one used by Turner Cycles. Frame tubing is 1.75-inch round 4130 CroMoly. The end cap by the rear triangle is weld capped, not flattened, for extra strength. All connections are TIG welded. There are no rough edges. The seatpost is welded to the frame and supported by welded triangular tubes. The front main tube extends out well beyond the steering post and houses the boom, which adjusts the pedal position for rider fit. This front portion is cantilevered. Wicks has experimented with lighter frame materials, but steel is the one material strong enough to support the boom and the long boom sleeve. The entire frame is simple in design, solid, and very rigid. I noticed no bounce in the frame when riding.

Fork—The CroMoly fork has a special forward angle that desensitizes the steering. This results in a tight steering feel with less road shock transmitted to the hands. The fork has also been widened to accommodate a disc brake. The angle isn't extreme, but it results in moving the front wheel slightly ahead of where it would rest with a more conventional fork. Welded to the front derallieur post is a metal tab for mounting the Cateye wireless computer (standard).

Seat—The seat is a formed narrow carbon fiber double shell with three stiffening vertical ribs. The seat bottom contains two gel pads, side by side, one to cushion each cheek. Lumbar support is provided by a tempered foam pad which can be moved up or down to fit the rider. This foam is soft yet supportive and holds its shape. It is similar to the test pillow found in bedding shops which compresses and slowly returns to form. The gel pads and foam are then covered with a seat-length piece of breathable filter foam (similar to what some European lowriders use to cover their hard-seat shells). All of this is covered

with a breathable mesh seat cover. The result is a seat that is rigid, yet supportive, and surprisingly comfortable. A built-in feature is a foot-deep pocket in the back of the mesh seat cover for storage of small items.

The seat attaches to the main frame with allen bolts. The frame contains threaded nut receptors. The carbon fiber seat has parallel slits in the bottom and back. Using the allen bolt and washer, one screws the bolt into the frame nut from the seat side of the slit. Due to the shape of the seat, the back angle can be adjusted by loosening the bolt and moving the seat up or down in a pivoting manner. The bolts are then tightened to hold the seat in place. This opens or closes the seat back angle but does not move the seat back or forward to any degree. When all is in place, the seat is anchored to the frame with no give.

Water bottle cages attach to the rear of the seat in an upright position (similar to RANS) as opposed to the parallel position found on Lightning. There are two cages provided with each bike (again standard).

Handlebar/Stem—Only under-seat steering is available. While adding an above-seat steering unit is possible, the distance between the seat front and the steering post would be close, which would make for cramped quarters for larger riders. The handlebars are a straight T with no angling of the ends. One grasps the bars by cupping them in your palms with the back of your hand facing forward. My hands naturally fell to the bar grips, which were in perfect location for me. Shifting is done with Dura-Ace bar-end shifters or, if requested, SRAM twist-grip shifters. I initially tried the bar-end shifters. When these shifters are on vertical handlebars (as on the trike), they are easy to shift using thumb and forefinger. However, at the end of a horizontal T-bar you shift with the pinkie and meat portion of the hand. This is similar to the arrangement found on Lightning's drop handlebars. It takes some practice, but after a learning period I adapted and became comfortable with it. Shifting requires controlling the steering bar with the non-shifting hand while sliding the shifting hand to the bar end and moving the shifters. I also tried the twist-grip shifters and found them more to my liking. I

could shift without moving my hands along the bar. I am much more familiar with that arrangement. Since you have under-seat steering it isn't possible to check what gear you are in without taking your eyes off the road. Some riders ride totally by feel and for them this is not a problem. Since I like to know what gear I'm in it was a minor irritant.

Brakes—Magura hydraulic disc brakes are standard, and they stopped splendidly without noise or vibration. They responded well to touch braking, and didn't once overrespond to my efforts. I felt safe and secure and in total control when stopping. I stopped better than I have on any other recumbent. I wish my bike had them.

Drivetrain—The level of drivetrain componentry is based upon the level of the bike. Mine had Shimano 105 cassette, derailleurs, chain, and chainrings. The Wickster comes with three chainrings, the other models with two (I never felt the need to use the small chainring). The chain line runs along a straight, slightly elevated path from the rear cogs to the front chainrings. Some bikes I have ridden route the chain around idlers. Here, the drive line was straight and true. It passed through a nylon U bracket that served as a trough to keep the chain from sagging onto the return idler when not under tension. While I was riding the chain never came in contact with the bracket. Only when at rest, when the tension on the chain lessened, would the chain touch the bottom of the U. It is a practical arrangement, though unique. The chain on its return to the rear cogs was routed around a chain idler pulley that rotated on a polished lubricated machined shank shoulder bolt. I've read that if the chain is routed around an idler between the rear cog and chainring it detracts from the force generated from pedaling since the natural tendency for the chain under pressure is to straighten, which causes friction with the idler and a small loss of power. Here there is no contact on the drive path of the chain, only on the return, where tension is not as great.

Wheels/Rims/Tires—All models have Sun rims with 14-gauge stainless steel spokes. Rear wheels are 700c, front 20-inch. The geometry of the bike does not allow for smaller rear wheels. Wicks wants the bike's weight distributed evenly between the front and rear wheels and has configured the bike geometry to use only those wheel sizes. All models have a Continental Grand Prix rear tire, 700 x 25. On the front the Wickster runs a Primo Comet 20 x 1.35", while the other models run a Grand Prix 20 x 1.125". I prefer the narrower Grand Prix (I know that many, including the editor of this publication, like the wider Tioga Comp Pool) as I have found that I accelerate faster with a high-quality narrow road tire. The HedTurner adds a Hed carbon fairing to the rims, hence the name.

Size, Fit, and Adjustment—The seat does not move fore or aft. Fit is done by a sliding boom. Unlike some, however, the boom is held



The Wickster SWB

in place by the pressure of tightening two allen bolts housed in built-in sleeves near the front end of the main frame where the boom is inserted. The result is a boom with infinite adjustment. Of course, depending on the amount of adjustment needed, one may have to change the length of the chain by adding or removing links. According to Wicks, the standard boom handles riders from 5'2" to 6'4", and any riders falling outside those parameters would need a different boom (which the company will provide at no cost). I haven't been a fan of sliding booms, liking the ability to adjust the seat back and forth to accommodate the size of the rider. Considering the concept of this bike (rigid in-place seat for less give), the boom makes sense. I've had trouble at times with seat slippage, and that definitely won't happen here. The only way to fit the bike with its solid seat arrangement is to adjust the boom.

Comfort/Ergonomics/Fit—This is a tight machine. It's made to be responsive and to go fast. There is no wasted effort. When one pedals there is no backward movement (and loss of force) into a giving seat. The rigid carbon fiber shell holds you in place, and all of the pedal effort is pushed forward onto the pedals. Yet, I found the seat comfortable. The lumbar support was fine, the gel pads protected my bottom, and the foam covering softened some of the road shock. The seat is narrow, so larger riders might not like it, but I did. It was supportive and stable without being uncomfortable. And the bottom bracket (22 inches) was only slightly higher than the seat (21 inches), so I experienced no toe numbness. I initially found the steering twitchy (even though I'm an experienced SWB rider), and this is no doubt exacerbated by the very short wheelbase (36 inches). My initial tendency was

to oversteer, but as I began to feel more comfortable that problem eased. I never felt not in control, but initially I thought I had to constantly make minor adjustments. Before the ride I preferred above-seat steering, and I still do, but the under-seat steering here bothered me less as I became more familiar with it. At the end I didn't so much steer as will the bike to move in a direction.

Ride/Handling—Even standing still, this bike looks fast. In operation I found I was slightly faster than on my regular bike. I believe this is due to the many subtle differences this bike offers. First, the chain has a straight path (no idler) from the rear cogs to the chainring, thus allowing all of the torque to transfer. Second, the rigid seat pushes all of the energy forward in pedaling. Third, the frame is stiff and solid, thus absorbing less of the pedaling effort. The bike's profile is narrow and lean, providing less frontal area for wind resistance. The angle of the seat back is semi-reclined, again helping the aerodynamics. I believe that with more riding under my belt, my attention would be directed more toward riding and less toward dealing with the steering issues and my speed would increase. I found that climbing hills was not as hard (don't think it was easy because it never is, but I found I strained less). I seldom use a granny gear, liking to push up at a decent speed (for me). At times I tend to rock from side to side as I direct force to each pedal. There was no rocking here. My thighs didn't ache as much, since I kept my cadence up, and I went a little faster. And yet, the ride seemed less harsh.

Miscellaneous—There are a number of items included in the standard package that are upgrades (at additional cost) on other bikes.



Mike Stern and the Wickster

Hydraulic disc brakes are standard. So are two water bottle cages and a wireless computer. You can order the bike in any color (no charge). Frog Speedplay pedals (the kind I use) are standard. You get the storage pouch in the back of the seat. You can even customize further by dictating any changes in componentry. You get a complete unit with quality parts. There are a lot of little finishing thoughts that create the impression that they paid attention to detail. Almost all of the cables are covered, and they are also taped together to provide clean lines and a neat appearance. The paint finish appeared flawless. The boom adjustment showed refinement.

Conclusion—This bike isn't for everyone. You need to want under-seat steering and a solid ride. Because of its short wheelbase and tight geometry, this model provides response with a minimum amount of guidance. It is a peppy and compact SWB that handles well, climbs well, and responds quickly. It's more a performance machine than a

cushy cruiser. I liked it. Although it's not an overwhelming improvement over what I have (I have yet to find a bike that is), it is subtly better in some areas where I want improvement. It offers slightly increased performance in both speed and climbing, and it uses quality components in a package that looks good and rides well. And it allows the flexibility to have a bike built to one's component specifications. And while it has its drawbacks, such as a limited dealer network (they are selling to twelve dealers currently), the need to adjust the boom for different riders, and the narrowness of the seat for larger riders, it is a bike definitely worth considering. Its appropriateness will turn on what the rider wants most out of a bike. I've ridden some highly touted models and not been as impressed as I was with the Wickster.

Pro

- Compact, sleek, and fast
- Many extras included in price
- Nice attention to detail
- Top-quality components
- Ability to build to own specs

Con

- Only under-seat steering offered
- Only carbon fiber molded shell seat offered
- Short wheelbase may not work for all riders
- Limited dealer network (but working on it)
- Boom adjustment for length

Specifications

- Overall length: 68"
- Total height: 43"
- Total width: 30"
- Wheelbase: 36"
- Seat height: 21"
- Bottom bracket height: 22"
- Weight: 31 lbs.
- Price: Wickster \$2,434.67
- JT Cruiser \$2,939.61
- HedTurner \$3,826.92

All prices include crating and shipping.

The Trimuter Trike

The most fun one can have in recumbent riding is on a tadpole trike. Cruising along barely off the ground, turning on a dime, reclining in a race car-style cockpit, one is master of the road. That is, of course, until the first dog runs out and looks you level in the eye. But tadpole trikes are a kick to ride.

In addition to the Trimuter, Wicks makes frames for other independent trike dealers. It is configured similarly to a Greenspeed. This unit offers a real alternative to two-wheel cycling.

Frame/Steering—The frame is a simple configuration of connected 4130 CroMoly tubing with all TIG welds. It has a main tube running from the bottom bracket to the rear wheel, with angled cross tubes running to the front wheels. The seat frame is more than attached, it is part of the main support geometry of the unit. It offers Centerpoint Ackerman steering. The steering bar runs underneath the carriage of the trike, and steering rods are attached near the center point of the bar. They then cross with the right-side rod going forward to the left wheel and vice versa. The under-seat bar is attached to the handlebars, which rise vertically at each side of the rider. When you steer to the left, the right rod pushes the left wheel in the direction of the turn. The whole operation is smooth, effortless, and responsive.

Seat—The seat consists of a steel frame with an angled top cross

tube. It is supported by diagonal tubes welded from the top of the seat frame and which run to the rear dropouts. In conjunction with the chainstays, which run from underneath the seat to the rear dropouts, a solid, stiff triangle is formed that firmly supports the rear wheel. Nylon mesh is strung with bungee cord, which provides the actual seat support and shock absorbency. There is no lumbar support, but the cords can be tightened or loosened to allow the seat to adapt to one's shape. There is no seat adjustment, but I found the seat angle to be ideal.

Shifting/Components—The double crankset and cassette are Shimano Ultegra. The rear hub is a Sachs internal three-speed with eight external cogs. Shifters are Shimano Dura-Ace bar-ends. Shifting was flawless, and because the handlebars are vertical, the shifters are operated with thumb and forefinger, an ideal arrangement. There is an indexed twist grip on the left bar to shift the internal rear hub. In such an arrangement the shifting becomes fun. The rear derallieur is index-shifted, the front is friction-shifted, and the internal rear hub is index twist-grip shifted. I found them all to operate flawlessly. Gear- inch range is 23-128. Gears are 48-speed Sachs/Shimano (3 x 8 x 2). Shifting was easy and responsive. It was like running though the gears of a sportscar.

Drivetrain—The bottom bracket is six inches above the seat. The chain runs diagonally downward, around an idler, and directly to the rear wheel. It then returns along the same path, over the same idler (different channel) and back to the chainring. The pedaling force pulls the chain forward from the rear wheel and around the pulley, which rotates on steel bearings. It then returns to the rear wheel running through a grooved extension of the unit. The sides of each unit are bevelled slightly outward so the top of the chain edge does not come in contact with the sides of the pulley or groove. According to Wicks, this reduces any noise from chain contact. The chain is enclosed in chainguards (similar to what is found on BikeE) from the chainrings to the idler.

Brakes/Wheels/Rims—Brakes are twin Sturmey Archer drums. I didn't like them as much as the disc brakes on the Wickster, but they were sure in stopping without problem or noise. Rims are by Sun. Standard tires are three 20 x 1.35" Primo Comets (I share the feelings of the editor regarding these tires, and while they are adequate I would opt for an upgrade). Because of the drum brakes, none of the wheels have quick-release mechanisms but that only affects the back tire. The two front tires are not in forks so in case of a flat the tube can be replaced by placing the unit on its side and removing the tube without unbolting the wheel. This is not an option for the back wheel, however, so don't get a rear flat!

Comfort/Ergonomics/Fit—The seat, which lacks adjustment for angle, is inclined to 45 degrees from horizontal. It was comfortable and supportive, and I had no problem with it in its standard configuration. The ride is a little rough given the closeness of the seat to the ground and the solidity of the frame. I find this to be true of all trikes. This was not bad, just noticeably different from the Wickster. Rider fit is adjusted by a sliding boom with infinite settings, the same as on the Wickster. Seat height is 10" and bottom bracket height is 16 1/4" so those who have problems with high bottom brackets beware. I know of no tadpole trike that doesn't share this configuration. I had no foot problems in my test runs, but I might have overlooked it because I was having such a great time. I ride a bike with a high bottom bracket. My wife does not. She had no problem with the high bottom bracket. Clipless pedals or other apparatus to keep feet on the pedals is highly



The Wicks Trimuter

recommended to avoid leg suck (your foot falling off the pedal at speed and ending up under the unit).

Ride/Handling—I did not go as fast on the trike. That may be because of the increased weight I was moving (42 pounds). Yet, I felt like I was. That was due to my racing along the ground barely one foot above it. I thought I was really flying. Yet, when I looked at the cyclometer (again standard) I was surprised. It would read 14 mph when I was sure I was doing 20. But the illusion of speed contributes to the enjoyment. The cornering ability adds to the fun. I made hard turns at 10 mph to see if I could get a wheel off the ground. I couldn't raise the wheel, but I did raise my anxiety level. I felt like a Formula One driver. This doesn't mean the trike won't tip. However, at speeds I was willing to chance in a turn it did not.

Hill climbing was satisfactory. Again, the weight held me back. I found I exerted more effort to get up the hill. Of course, the payback is that in a headwind, being one foot off the ground makes for less wind resistance. And when you crest that hill and start down the other side



The Wicks Trimuter looks similar to a Greenspeed GTR. At one time, Wicks was set to be a distributor for Greenspeed. The deal fell apart. Wicks then came out with their own trike.



Wickster molded shell seat, foam and cover. Note direct USS stem/bars. The Wickster is based on the Turner T-Lite Deluxe, though the frames are not built by Turner. They are built for Wicks.



HED wheel on the back of the Wickster SWB.

with the stability of three wheels and sitting atop a 42-pound machine, you better hope there are no speed traps.

Miscellaneous—Like its recumbent brethren, the Trimuter comes with extras included. Frog Speedplay pedals, a water bottle cage (attached to the main frame in front of the seat) and a Cateye wireless cyclometer are all standard. So is a warning flag that inserts into a tube on the back of the frame. The unit also arrives with a mirror and a rear rack. It comes in a red, yellow, orange, black or white powdercoat. The finish appeared flawless. In addition, Wicks offers a large selection of solid or patterned seat mesh. For the price and what is included, I think this is a real bargain.

Conclusion—I like trikes. I especially like this one. It is simple in design, performs well, includes all the extras I'll ever need, and is a

kick to ride. I've ridden other trikes with varying results (some I liked, some were OK), and this is a nice unit. What keeps me from being a full-time trike rider is that I want to go fast, and two-wheeled recumbents are faster. I also share Bob Bryant's concern about the general safety for lower trikes (I know that avid trike riders will adamantly disagree). I cannot get used to looking at dogs eye-to-eye or looking at the wheelwells of passing cars. I'm not concerned about my own operating habits so much as those of the drivers around me. And if I am to offer a dog a portion of my anatomy to bite I would prefer it to be an ankle instead of a shoulder. Living in bike-unfriendly St. Louis, there is little opportunity to use a trike the way I'd like to, but if that changes, the Trimuter is right up at the top of my list. It rides well, corners well, functions nicely, and looks neat. It

flies down hills and sure draws attention. If you want to be the center of attention you may need a trike to do it. The Trimuter is the answer.

Pro

A very well made trike
Many extras included in price
Nice attention to details
Nice componentry
A real kick to ride


Con

Stiff trike ride
Seat does not adjust for recline angle
Fitting only by adjusting boom
Heavy
Small dealer network

Specifications

Length: 77"
Overall width: 36"
Wheelbase: 42"
Seat height: 10"
Bottom bracket height: 16 1/4"
Seat angle: 45 degrees from horizontal
Ground clearance: 3.5"
Weight: 42 lbs.
Price: In kit \$3,092.60
Assembled \$3,292.60

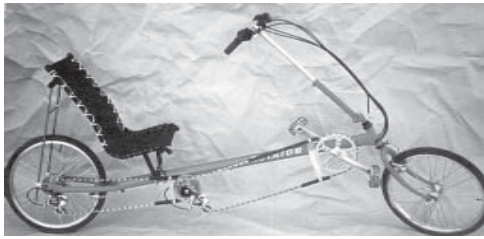
Wicks does not offer a large selection of bikes, but within the boundaries of what they offer they provide infinite variety. Their units seem to be built by engineers who love to tinker, as I was constantly surprised by little things they did to improve their product (the bevelled pulley in the trike, the wrapping of wires, the housing for the boom adjustment screws, nice upgrades included in the cost, just to name a few). They may not be a large company, but I didn't feel like I was riding a bike made in someone's backyard. Depending on one's needs, these units offer a real alternative to what is available. Their prices seem reasonable for what you get. Their finished product quality seems high class. They are solid additions to the recumbent field. ♦



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A Bread-by-Bike Scheme

by Pat Kraker
patkraker@mindspring.com

Maybe this has happened to you: It's a warm, sunny afternoon and you're out there on your favorite bike trail, wishing your ride could just go on and on, and you're thinking, Wow, wouldn't it be swell if I could be *paid* to ride my bike? Well, be careful what you wish for—you just might get it!

What follows is the story of how I came to be paid for riding a recumbent tricycle, along with some of the ups and downs of being granted my wish. It's a story without an ending— not yet, at least—but far enough along that I hope to convince you, dear reader, that bicycles and tricycles can do useful work and that 2002 might be the perfect time for you to try your own recumbent business.

Herndon is a community in northern Virginia. Many of our residents work in Washington, D.C., and others work at the Pentagon, on the edge of the Potomac River. We're four miles northeast of Dulles Airport. The Great Harvest Bread Company has been a part of the Herndon scene for eleven years. Three years ago, Jack and Laurie, the owners, started a second shop, in nearby Vienna. The new shop has no ovens, hence all the bread and other goodies sold there must be baked daily in the Herndon store and transported to Vienna.

Outside our shop in Vienna sits a 1990 red Chevy van. It has been used to transport the fresh-baked goodies from Herndon to Vienna, and before our scheme got started it made two trips a day, five days a week, on the Dulles Toll Road. But now we transport one of those loads of fresh-baked goodies each day with a Conestoga wagon pulled by a Lightfoot tricycle.

We're fortunate to have a great bicycle path that connects our two communities. An old railroad grade from 1860 to 1951, forty-five miles long and one hundred feet wide, it is known by locals as the Washington and Old Dominion Bike Trail (www.NVRPA.org and www.wodfriends.org). Portions of the trail are slowly becoming the favorite gathering spots for an eclectic group of locals. It has become our very own commons—sorely needed by we northern Virginians, who are so often serene in our individualism.

Unlike most of our roads, the trail is nearly ruler- straight, with a few "bumps." Although it goes under the Dulles Toll Road, much of the area it passes through is wooded and remote. We see deer and fox, squirrel and woodchuck, blue jay and cardinal, turtle and snake, butterfly and moth. What an improbable transition from our high-density jumble of homes, businesses (large and small, high-tech and low), and shopping malls to a splendid, peaceful blue-green forest! It's almost a given that you'll quickly forget exactly where you are once you get on the trail.

The distance between the two shops is about nine miles one way, almost all of it on the bike path. There are only three busy streets to cross; five residential roads also intersect the path, but they seldom have significant traffic.

The elevation for Herndon is 393 feet above sea level. At Vienna the elevation rises to 414 feet. This suggests your basic flat ride, right? I wish. The lowest spot is a creek called Difficult Run, at 225 feet above sea level. It's about 2.5 miles from Vienna, and once you cross Difficult Run you have a steady uphill pull of "only" about 200 feet in elevation gain.

In late 2000, on a whim, I borrowed a work trailer from John, the owner of our local independent bike shop, Bikes@Vienna (www.bikesatvienna.com), just to see if we couldn't deliver some of that bread by bike. We did one trip with about a hundred loaves of

bread, pulling John's 96-inch Bikes At Work trailer behind my old Schwinn mountain bike. It didn't seem that bad, but I must admit I received some assistance from a fellow biker, James, whom I met on the trail (he was wondering what the hell I was doing). We rode along together, and he got behind me to push as we charged the one serious bump on the trail; together we were able to crest it before I lost all forward momentum.

Jump to July 2001. We purchased our own 64-inch trailer from Bikes At Work (www.bikesatwork.com). We built a wooden, ash, and Baltic birch plywood Conestoga wagon frame. Mary, our favorite seamstress, made the cover, and we were halfway home. Our used demo Transporter from Lightfoot Cycles (www.lightfootcycles.com) arrived in late July, and we were 100% ready to go.

We learned a couple of sad truths those first several weeks. Number one: You must have a low gear. The lowest gear on the Lightfoot Transporter is listed at 9 gear inches (that is *low*), but lowness ceases to matter if the driven wheel loses traction and slips, which it did on that serious bump mentioned above. As luck would have it, there's a gravel bridle path that parallels the main part of the trail, and its steepest grade is only 6.5%, in contrast to the 9.5% grade on the paved portion of the trail—now called the dreaded Buckthorn Bump.

Sad truth number two: Pulling 635 pounds (me, 170; trike, 75; trailer with racks and dollies, 165; bread, 225) was a killer, especially that last 2.5 miles of steady pull into Vienna I mentioned above. I was one tired pup come the end of a workweek.

As a frame of reference, it seems only fair here to look at the engine before we damn the whole scheme. Three years ago, I rode, with 700 hundred other riders, from Seattle to Washington, D.C., as part of the first of three American Lung Association fund-raising bicycle rides that crossed the United States. I and most of our group pedaled the entire 3,500 miles, but I was the only one pulling a trailer, a B.O.B. one-wheel trailer (I brought along my cello, Jacqueline), adding fifty pounds to my load. So you see, I have some experience pulling trailers, and I went into this scheme thinking the engine might still be in pretty good condition, even considering its age and mileage.

We had two minor problems getting all systems working in synch, but after our first couple of weeks all components—the trailer, the Transporter trike, and our loading ramps and covers—were working flawlessly. I've grown quite fond of the Transporter. Its padded seat is up to the amount of push one must exert to keep the rig moving, and it's comfortable for however long you're in it (in contrast to the frame-and-web seats found on some trikes). Also, all the controls are within easy reach, so selecting the best gear from the 92 that are available is easy and quick, and the mechanical brakes on all three wheels are adequate to bring the whole rig to a stop in a reasonable distance.

I suppose I ought to point out my conviction—and this comes from a dedicated biker—that bikes and their various component will never be able to compete with the appliance-like durability of a Chevy van, and if we expect day-to-day reliability we need to treat them with a bit more care, with more attention to all new sounds, in accord with our need for a well-oiled, well-kept machine.

Phase II came in September 2001. As I said earlier, I was exhausted at the end of a full week of deliveries. Perhaps I needed a motor/battery assist. We'd had this option in mind from day one, and clearly it was time. With our Heinzmann 36-volt motor laced into the right rear wheel of the Transporter, and with our one 4.4 amp/hour NiCad bat-

tery tucked away in the floor of the trike, our average loaded transit times went from 90 minutes to about 60 (best time: 54 minutes).

Delivery times are important, and without the battery assist we were right on the cusp of taking too much time getting the bread to Vienna. The size of our Herndon shop and our one oven sets limits. Lead times are a function of our bakery schedule, and 60 minutes was our goal when we first started giving serious consideration to the scheme. We still used the Chevy for the other load each day, most often the second load of the day.

But it's still a lot of work, and come Sunday, my day off, I still felt beat, not at all the picture I had in mind when I had that "Wouldn't it be swell . . . ?" dream.

The one 4.4 amp/hour battery has enough capacity that I can use it for a few of the overpasses and when I need to zip across an intersection. And if I use it very judiciously on that last 2.5-mile climb of 200 feet after Difficult Run it almost always gasps its last breath as I pull into the lawn in front of our Vienna shop.

Yes, even with our motor, there is time for soul searching as we plod along the trail. I continue to hope for another biker who would be willing to take a turn at pulling bread to Vienna. Then I might catch a day off, so I might learn: Is the old engine starting to wear out, or have I created a white elephant that's doomed to failure?

Phase III arrived in December 2001. If one electric motor is good, I thought, two should be even better, so we installed a second Heinzmann 36-volt motor in the left rear wheel. Now we use two batteries for each loaded trip to Vienna and two fresh ones for our return. We have a second 36-volt battery charger at the Vienna shop so that all the batteries can be recharged daily. Yes, our delivery times have improved a little, with average times now about 50 minutes (our personal best is now 45 minutes). Yes, our return trip is mellow and the bumps can be leveled somewhat.

But the addition of the second motor was not the magic potion I had envisioned for transforming the trike/trailer rig into a system sure to gratify all we mere mortals, all we bicyclists somewhere on the continuum between couch potato and Lance Armstrong. It remains a lot of work, and even with two motors and two batteries there's a bunch of heavy-duty pedaling needed. Phase III then added another 22 pounds to the rig and a bit more rolling resistance in the newest motor/wheel that must be pedaled on the flat sections. Heinzmann offers three battery/electric motor combinations, and we went for their highest-torque (lowest speed) model: the Carrier, which has a maximum speed of 6 to 7 mph (Light Electric Vehicle Technologies, Pocatell, Idaho, 208-478-5388).

Once you reach the motors' maximum speed, about 7 mph, you might as well release your thumb throttles, as all forward progress is now coming from your pedaling—yes, you



The author hauls bread with his Lightfoot Transporter and custom trailer

can hear a definite change in the sound of the motors and you learn that until you slow down for the next hill, you're just wasting battery capacity.

So we will continue searching for others who might want to help me with these deliveries (and a second data point on the true condition of that aging engine), but I don't think we'll proceed with the original plan for a second trike/trailer rig, for the permanent parking of the Chevy van.

Phase IV: I've been talking with two companies, Real Goods and Edmund Scientifics, both of whom sell solar cells rated at 36 volts with 500 mA output. According to our preliminary calculations (using charts for solar radiation expectations in northern Virginia) that should be plenty to charge our NiCad batteries. To hedge our bets they also market Sun Trackers, which are said to increase the power output of photovoltaic arrays by 200% (www.realgoods.com/renew and www.scientificsonline.com).

Since the sun is our primary source of energy, the first cause of nearly all living, growing beings, this would bring us full circle, as it were—growing our bread, eating our bread, delivering our bread, all with solar power. (Our Great Harvest Bread Company oven uses natural gas—no I will not suggest to Jack and Laurie, the owners, that we convert to a wood-fired oven, as I have no idea how such a conversion would actually affect our environment, but I do know there are limits to their largesse.) Phase IV was to be the addition of photovoltaic cells. Due to the high cost of these cells, this phase will remain only on the drawing board for the time being.

We presently calculate that we save a tad over two gallons of gasoline each time we use the tricycle instead of the Chevy van. And it

really *is* about saving our one earth from the pollution caused by burning two gallons of gasoline, and removing from our already-frantic community traffic patterns one vehicle for a part of each day, five days a week.

I've yet to calculate the negative effect to our atmosphere of the 800 watt/hours of electricity we purchase from Dominion Virginia Power in order to might charge each of those 36-volt NiCad batteries. My intuition—my hope—is that using the tricycle is indeed a significant net gain to the environment. The Heinzmann operating instructions note that a complete battery charge amounts to about 5 pfennigs, and if my math is correct that's only two and a half cents American. But it isn't about dollars, or marks, is it? We hope not!

Getting this first rig on the Bike Trail was very expensive. Our expectation is that our bread-by-bike scheme will continue to operate with few additional expenses over the next few years so as to reduce the unit cost of each delivery. The NiCad batteries are said to give 600 to 1,000 cycles, so we should have a couple of years before we need to replace them.

Early on we mailed out several heartfelt requests to local funding sources for financial assistance, but none jumped to our assistance. Yes, they were heartfelt, but not polished, and I wonder if this was this our downfall. Or is a pilot program to demonstrate the feasibility of using a bicycle to deliver bread passe given our proximity to Washington, D.C.?

As I button up this essay for publication at the end of 2001, the miles pedaled using our trike are 1,301, the gasoline saved is 228 gallons, the total weight of baked goods delivered is 12,923 pounds, with 5,112 loaves of bread, 3,710 cookies, 3,998 scones, 2,460 muffins, and 874 quick breads.

Those numbers should be a bit larger, but in



Above & below: The Transporter hauling bread

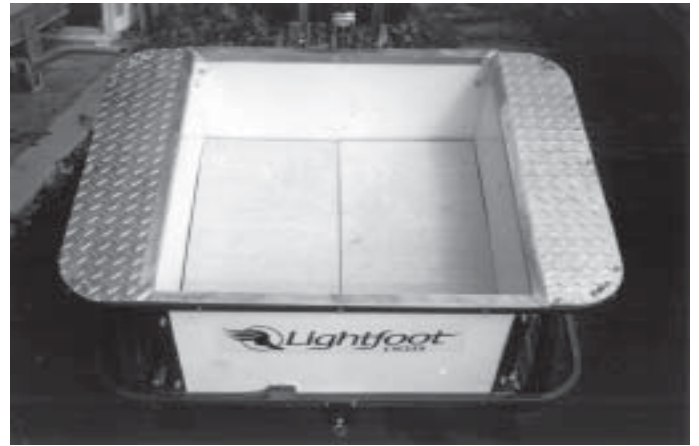


The Transporter's electric assist/drive wheel. The other side has an electric assist too, but is not a drive wheel.

Access

Lightfoot Cycles
www.lightfootcycles.com
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For more about Lightfoot trikes, see RCN#64. We also have a Lightfoot Ranger (dual 26-in.) LWB ASS review coming soon.



The Lightfoot Transporter's cargo bed

the weeks preceding Thanksgiving and Christmas we had to use the van for all of our transfers; the volume of breads and such needing delivery to Vienna was too great for our trailer, and our respective work schedules were too short to get out there and pedal.

In contrast, our last couple of loads after Christmas were unusually sparse, indeed. For our last load on Saturday morning, December 29, 2001 (before we closed out the books giving us the totals above), we had only 70 pounds of goods. That day, we flew: a light load of bread and cookies, two freshly charged batteries, perhaps a hint of a tailwind, a cool and crisp morning. For a short time I felt vindicated. This scheme could be made to work; there are others who will get on board!

As I try to understand this past year, the killing, the terror, the hatred; I return to the concept of community and how important it is for each of us devote our energies toward our homes, our communities. I would ask you to seek out Wendell Berry's essay "Thoughts in the Presence of Fear." I will quote here just one of his seventeen points: "Starting with the economies of food and farming, we should promote at home, and encourage abroad, the idea of self-sufficiency. We should recognize that this is the surest, safest, and cheapest way for the world to live. We should not countenance the loss or destruction of any local capacity to produce necessary goods."

When I'm on the path, when the various leg muscles start protesting, I try my best to practice these ideas. Over the months, we have connected with many of our fellow trail users. If the Vienna shop has baked goods that are more than two days old, we give them away—I do this on my return trips. As you might imagine, this certainly helps with that connecting, but I think just the sight of our Conestoga wagon moving along the trail at a friendly pace brings smiles.

And who cannot believe that the loaves of bread who were lucky enough to ride along the Washington and Old Dominion Bike Trail were happier and more relaxed than those who had to ride in the Chevy van along the Dulles Toll Road, where road rage is habitual. Some have claimed they could tell the difference; is it possible that happy loaf taste better than an anxious loaf?

One gift I hadn't anticipated is being in a position to provide local Herndon/Vienna drivers with an opportunity to make a selfless gesture, the "After you, Alphonse" wave, giving all 16.5 feet of us the right-of-way as we wait to cross one of those busy (frantic) intersections. I don't see this nearly as often when I'm on my regular bike.

A second gift has been working with all the great folks I've mentioned in this essay, and many other individuals and firms not noted here, people who are convinced that the bicycle is one of our best resources if we are to reduce our dependence on petroleum.

And the final gift: all the great response I get from people while I'm out there on the trail, and having a medium in the great outdoors, riding my bike, where I might display my message, my tiny candle proclaiming "228 Gallons of Gasoline Saved" rather than cursing the darkness. Try it, you'll like it! I guarantee it! ♦

The Ultimate Touring Trike!

History

The first Greenspeed Touring Trike, GRT 20260001, was built in 1990, and was used on the 1990 Great Victorian Bike Ride, from Bairnsdale to Melbourne. Orders followed immediately, and in 1993/4 Val Wright and Eric Butcher rode their Greenspeed GTS trikes right around Australia. In 1997/8 Jeff McLean rode his early model (1991, #10) GRT trike from China, through Asia and Europe to London, U.K. Our GTR Touring Trike was selected "Best Trike" by *Recumbent Cyclist News* in 1996, 1997, 1998, 1999, 2000, and 2001.

Development

Continuous feedback from hundreds of Greenspeed owners, worldwide, who use their GTR Trikes to the max, has resulted in the GTO Trike. The GTO has the same high-backed seat as our popular GTR Trike, but is a little lower, giving even better road holding and handling. Yet with the use of a single S&S coupling, it will pack down into two suit cases for aircraft, train, or coach travel.

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The Greenspeed GTO

By Bob Bryant

Ian Sims and family have become the foremost builders of tadpole recumbent tricycles in the world today. I first realized that this was one of those special recumbents back in 1995 when I first road-tested the GTR 20/20. The Greenspeed trikes are robust, stiff, well built, and designed for serious riding by demanding enthusiasts. Since this review, many trike builders have followed tadpole trends set by Greenspeed with their independent brake levers, 3 x 20-inch wheels, and exceptional handling and control abilities.

Our test GTO looked just like the previous GTR, though it has some neat updates. The GTO has one S&S coupler, which allows the frame to be split in half. The boom comes out, and the seat frame, still an integral part of the frame (for rigidity), is now bolted to the frame.

With this trike we opted for some neat upgrades, such as the disc brakes, fenders, and 105/XT components. All were worthwhile and made our road-test experience than much better.

Systems

Frame—The Greenspeed GTO frame is built for Greenspeed in Taiwan. The “look” is better than ever. Ian and company carefully selected a frame builder and set the ball rolling for a one-size GTO that fits about 80% of buyers. The new frames have tapered rear stays and butted tubing and are also fully TIG welded (instead of the former MIG welds found on other Greenspeed models—MIG is a more industrial type of welding with a more pronounced bead). The frames are painted and assembled in Australia. Other Greenspeed frames are still built in the factory in Australia.

The 2002 models will have a new front-wheel axle design. Instead of shouldered cap screws and nut, there is now a special CNC-machined axle that is lighter and takes a self-locking allen screw. The wheels can now be removed with just an allen key.

Steering—Greenspeed has very refined side-stick USS steering controls. The setup is robust and the handling and control feel is spot-on.

Weight—You don’t want a trike that’s too light. Trikes need to be tough and beefy enough to withstand stresses not found on two-wheeled bicycles. The GTO weighs about 40 pounds.

Drivetrain—Greenspeed’s drivetrain works exceptionally well. The chain is managed through a pair of chain tubes and an idler. Our test bike’s 105/XT drivetrain worked flawlessly. The stock crankset is a Sugino RD7000, and the cassette is an 11-32 SRAM. The triple-crank 8/24-speed or 9/27-speed drivetrain is mated to a SRAM Dual Drive 3-speed rear hub (formerly 3 x 7). The new Dual Drive shifts under full load and has less internal friction. The clickbox is at the rear wheel, and rear-wheel removal, though still a hassle, is easier than before.

Braking—This is the first Greenspeed trike we’ve tested that’s equipped with disc brakes. The Hope discs adjust easily, are very strong, and were trouble-free during our test. They are expensive as discs go. They use automobile brake fluid, and the system needs to be drained and flushed at 1-year to 4-year intervals (depending on riding conditions), according to Zach Kaplan. This upgrade, though very pricey (\$450 USD), is recommended, though we sure would like to see Greenspeed offer the more affordable Avid mechanical discs (as reviewed on the Cannondale Easy Rider). Disc brakes seem to be getting more refined and less problematic.

Wheels and Tires—Our Greenspeed had the upgraded wheels. They are light and carefully laced and trued. The disc brakes attach to custom Greenspeed hubs. These hubs are CNC machined from solid aluminum billet. The hub has a taller inside flange. We love the Tioga Comp Pool fat slicks on the GTO. They roll fast and offer a ride unlike any that of other tire. Greenspeed uses the new blackwall version, which

will last longer in sunnier climates.

Comfort

Seat—The bolt-on GTO seat is still an integral part of the frame. This is one aspect of the Greenspeed that is especially appealing. There is virtually no movement of the seat while riding, regardless of how much body English or pressure is put into the seat. The seat itself is a basic full mesh. The mesh itself is a tough nylon fabric, but it’s not the nicest-feeling material. The ergonomics of the seat are not the most comfortable we’ve tried either, but the design works with the ergonomics of the trike.

Greenspeed does not offer a reclinable seat. Customers must select a seat angle in the ordering process. I much preferred the more upright GTO seating position to the 35-degree, more laid-back seating of our previous test bike, the GTR 20/20. This is personal preference; commuters may prefer the more upright seat, while racer types may prefer the more laid-back one. At least that’s the way the models/seat reclines seem to be set up.

Even at 45 degrees, the GTO seat is rather reclined, and the pedals are rather high. Ian Sims has made it clear to us that he is not interested in building trikes with low(er) pedals. So, if higher pedals don’t work for you, we suggest you look elsewhere. I found the GTO ergonomics worked much better for me than that of the more laid-back GTR 20/20.

Ride/Handling

The Greenspeed GTO has effortless straight-ahead tracking—perhaps the best handling, steering, and tracking of any trike we’ve tested. The ride is about as refined as you can get with a trike.

Maneuverability—With the refined steering geometry, short(er) wheelbase, and three 20-inch wheels, this is a very maneuverable trike. The only more maneuverable trike would be the new series of trikes with 16-inch wheels (from Greenspeed and ICE).

Speed/Efficiency—Though Greenspeeds are robust trikes capable of just about any use, Ian Sims definitely has a performance ‘bent. Therefore, the Greenspeeds are fast trikes. For the most part, trikes are not as fast as comparable two-wheeled (performance two-wheeler to performance trike), though this may not be the case for every rider.

User-friendliness—Once you’re down into the seat, the GTO is very user-friendly. Everything fits well and the trike rides easily. The riding position is rather advanced, so understand recumbent ergonomics and pedal heights before you send your deposit off for a new trike.

Fun Factor—No recumbent has a bigger grin factor than Greenspeed. The rock-solid handling and feel of this trike and its elegantly integrated systems work together like a fine Swiss watch. The recumbents that work this well can be counted on one hand. Greenspeed is certainly at the head of its class.

Owning/Purchasing

Versatility—This is a fast and tough trike. It doesn’t twist or flex, nor does the drivetrain or chain management system make unwanted noises. Nothing feels weak or under-designed., and you can seemingly push this trike as hard as you care to.

There are several Greenspeed models including a handcycle, faired model, solar electric, child’s trike, and several variations of the classic Greenspeed style. We tested a GTR several years ago, and the GTO shows many marked improvements, most notably in the packing, shipping, and braking departments.

There are five stocking dealers in the United States, most of whom advertise in RCN.

Shipping/Assembly

The trike and accessories arrive in a very small box, packed tightly and efficiently. I spent nearly as much time unwrapping this expertly packed trike as I did assembling it. In contrast, I was unable to get the trike back into the box for reshipping it (I used two boxes, each about the same size as the first).

The setup instructions leave something to be desired. I'm an amateur bicycle mechanic (though I lack the patience to work on anything but bicycles). I was able to figure it out, but I managed to mangle the plastic liner that goes between the boom and mainframe. Greenspeed airfreighted me another after a brief e-mail. I had to believe that this had happened before. Greenspeed is working to update its manual and assembly instructions.

The one-coupler GTO will pack and stow much smaller than any trike without such a neat and simple system. A more expensive GTO with three S&S couplers will pack even smaller. In fact, it goes into a suitcase. However, at press time, the suitcases were not available (Greenspeed is looking for another source).

Quality/Durability

The quality of our Greenspeed GTO was impeccable. It is truly the finest-quality trike we've seen. Greenspeeds have a reputation for durability, and our GTO appears as tough as our previous GTR.

Cost/Depreciation

Greenspeeds are expensive, and the price can fluctuate with the Australian and US dollar. With this test GTO, the strong US dollar really worked in our favor. With the long delivery times (during peak months) of Greenspeed trikes, resale is very good, perhaps the best of any trike.

Options and Accessories

Our trike had the 105/XT drivetrain upgrade, some beautifully crafted/modified fenders (front and rear), and the Hope disc brakes. All are highly recommended. The bike comes with a new Masload tubular aluminum rack that weighs 370 grams and is rated for 55 pounds of cargo.

Market Competition

Recumbent trikes are really hot right now. In February 2002, Zach Kaplan reported an increase in recent business, whereas many dealers are reporting slowdowns. There is more demand than supply.

Greenspeed has strong competition from Wicks, ICE (Trice), and Wizwheelz. All are fine trikes, but none have the years in business, overall reputation, or design expertise of Ian Sims and Greenspeed.

Additional Notes—The GTO sells for approximately \$3,300 USD including shipping (ships cheaper than non-coupled versions). The hydraulic brake upgrade is \$460, panniers are



Greenspeed's wonderful GTO trike

\$150, and front mudguards are \$60. An exact price on anything is difficult as everything must be converted into Australian dollars. The Aussie dollar has varied from 40 to 55 cents US. Check the Greenspeed website for the current exchange rate.

My Analysis

Verdict—Greenspeed has been building trikes for over a decade. The small factory in Ferntree Gully, Australia, now has 10 employees working on shipping trikes throughout the world (70% come to North America and Europe). Refinement is spot-on. Only Easy Racers rivals Greenspeed in the highest-quality presentation of a mail order-recumbent, and their reputation of being the best is well deserved. This is the upper echelon of recumbent manufacturers—and one we're proud and confident to recommend.

Rating/Summary

Comfort: B+ (for laid-back riders)
Design/Style: A+
Drivetrain: A+
Chain Management: A
Brakes/Braking: A+
Finish Quality: A

Pro

1-month delivery (ours took longer)
Good value (Australian currency exchange)
Best trike we've ever reviewed
Ackermann Centre-Point steering
Most professional trike company
Great accessories (rack, fenders, etc.)
Our best experience with disc brakes
Coolest tires ever (Tioga Comp Pool)
Trikes are assembled and test ridden and then carefully packed for shipment

Con

Pricey disc brake option (how about Avid me-

chanical discs?)

Laid-back seat and high pedals not for every one (Ian Sims does not like moderate or low pedal height)

I was unable to repack into that same small box it came in

Frame is built in Taiwan—this has a stigma for some

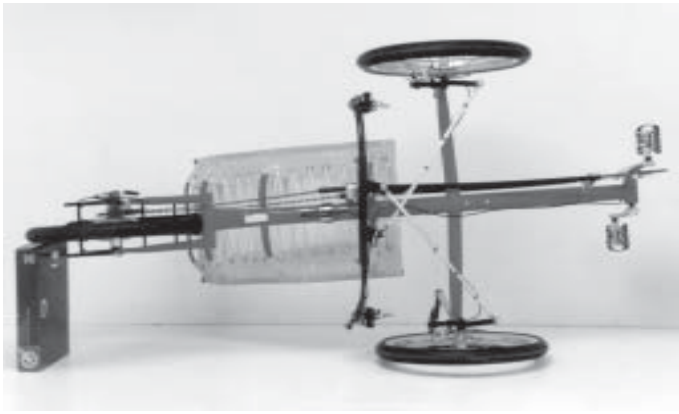
Access

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Above: Note the new Greenspeed rear rack. Below: Note the S&S Coupler, chain tubes, and criss-cross steering controls





The GTO's underside



*Note optional disc brakes, computer/mirror mount
and our favorite bar-con bar-end shifters*

Specifications

Model—GTO; Type—trike; Steering—USS; Seat back angle—40 degrees (optional 35 degrees); Wheelbase—37.4"; Width—35"; Seat height—10"; Pedal height—15.75"; Weight—18 kg (39.7 pounds); Frame—MIG (Australia-built MIG or Taiwan-built TIG) CroMoly; Extras—Bosses for one water bottle. Mounts for fenders, rack, speedometer and sensor, headlight. Grease fittings for steering bearings. Adjustment via telescoping boom. Ackermann Centre-Point steering. GTO has one S&S coupler and removable yet integral seat; Cost—\$3,300-\$3,700 (varies by options and exchange rate)

Components

Crank—Sugino RD7000 30/42/52; Bottom bracket—Shimano sealed; Derailleurs—Shimano RX100 (f), Deore¹ (r); Cassette—SRAM 11- 32; 8/72-spd. or 9/84 spd.; Chain—SRAM; Gear-inch range—13- 125; Pedals—NA; Wheels—(3) 406 mm 20"; Rims—Velocity Aero Heat; Tires—1.75" Tioga Comp Pool; Hubs—Sachs or optional Greenspeed disc hubs (f), SRAM (r); Brakes—Sachs drum brakes²; Colors—8 choices.

¹ Ours had the optional XT/105 upgrade

² Ours had the optional Hope hydraulic disc brakes ♦



The Greenspeed GTO in Sherbrooke Forest in Victoria Australia (photo courtesy of Greenspeed)

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Touring Puget Sound

The San Juans, Port Townsend, the Olympic Peninsula and Victoria Canada

by Chet Rideout

“Miles flow by as effortlessly as the tides on this tour in the friendly, cool climate of northwestern Washington.” As I read this description to my wife from *Biking the Great Northwest* by Jean Henderson, we thought it sounded like the perfect tour to follow my tour of six parks with Piero Tassinari (RCN 64). I was looking for something a lot less demanding, a ride with fewer of those long, killer climbs. My wife, Lynn, wanted to leave our dry environs to tour near the ocean on a not-too-demanding ride. We weren’t going to be strapped for time, since we planned to take ten days to cover 200 miles!

After a family visit in Everson, Washington, we drove south to the ferry terminal at Anacortes on Fidalgo Island and bought long-term parking for our car. We quickly packed up our LWB recumbents (a Vision R40 USS with a B.O.B. trailer for me, a RANS Stratus with front and rear panniers for Lynn) and set off, following our trusty guidebook.

We experienced a brisk climb from the parking lot and headed over as directed to Washington Park to do a sightseeing loop. A long, swooping descent almost to the water was followed by a seemingly endless climb at grades of better than 8% up to a high viewpoint. “What about that gliding along effortlessly stuff?” cried Lynn. “What was that all about?” I mumbled an apology, saying I agreed that this was *not* the way to start a self-contained tour!

I found, in fact, that the routes proposed in this guidebook were frequently quite strenuous, evidently the result of an effort to keep us off of Highway 20 and away from its heavy traffic. We stopped at tourist information stations, where we seemed to get better advice. Our first overnight was at Deception Pass State Park, where we camped at a hiker-biker campsite for only \$6.00. Here we had access to lovely Cranberry Lake and to the ocean shore, and we were visited by rufous-sided towhees and pileated woodpeckers at our campsite.

The next day was enjoyable, with great ocean views and visits to fruit stands. We stopped at the chamber of commerce in Oak Harbor, where a suggested route on West Beach Road, followed by a spin down Madrona Way, proved to be very scenic. Sleepy Coupeville, with its many bed-and-breakfasts, looked like an attractive little town. We continued to the ferry at Fort Casey State Park and rolled our bikes aboard, bound for Port Townsend. This was the first of five ferry rides, all of which we found delightful. Comfortable and inexpensive, they added quite a flavor to the trip.

Port Townsend is a beautiful port with an outdoorsy flair but an old-fashioned feeling. Here in Colorado I suppose I would compare it with towns like Durango or Steamboat Springs. We had a beer overlooking the oceanside action in Port Townsend, where a colorful sea kayaking class was departing. Our overnight was at the campground at nearby Fort Worden, the site of the filming of *An Officer and a Gentleman*.

We rode out of Port Townsend on Highway 20, as there aren’t many options here that don’t mean lots of extra miles. Shoulders were OK on our side, and there was a very long hill we rode happily down—some bike tourers we met the day before bemoaned the lack of much happiness in the other direction, what with heavy traffic, no shoulders, and that long climb. After a great sandwich in a railroad car/restaurant on Highway 101, we rolled uneventfully into Sequim Bay State Park, where we camped two nights under the tall trees.

On our rest day we visited the John Wayne Marina in Sequim Bay, where we had a great breakfast and looked at the boats in the marina. The next day we had a quick and easy ride to Port Angeles, where we rolled onto the Vancouver Island Ferry. Failing to find a vacant bed-and-breakfast upon our arrival in Victoria, we checked into the Surf



Chet and Lynn in the San Juans (Lopez Island)

Motel and explored the town on our unloaded bikes. This was an unusual year on Vancouver Island and much of the Pacific Northwest—they were in the midst of a severe drought, and brown lawns were everywhere, water being reserved for outside flower boxes and flower beds. The only rain we saw on this entire trip, in fact, was during the drive into the Seattle area, and our biking was completely dry.

On the next day we crossed a bridge and found the Galloping Goose Bicycle Trail, which we rode all the way to Tulista Park in Sydney, the point of our next ferry departure. This is a delightful trail, and quite well marked. It alternates between asphalt and crushed limestone on old railroad beds, and also includes sections of the Lochside Trail and Lochside Drive. This trail, dedicated in 1989, is a picturesque portion of the Trans-Canada Trail, a 9,000-mile shared-use trail system extending from coast to coast.

The daily ferry to San Juan Island did not depart until 6:00 p.m., and we had ice cream in town and enjoyed a Dixieland band at Tulista Park near the ocean during the afternoon. At 4:30 p.m. we got in line for the ferry terminal and met Rob and Doug, each touring on an upright racing bike pulling a trailer. They had biked the day before up Hurricane Ridge—an 18-mile ride out of Port Angeles that climbs 5,300 feet to the top of Olympic National Park, which, for some reason, Lynn and I had not found an appealing route! Rob was engaged in a big tour, biking the Pacific Coast to Mexico, whereas Doug was riding with him for only a week or so. The four of us, looking at the map in *Biking the Great Northwest* (not carefully enough, perhaps), planned to camp on the far side of the island at Limekiln Point State Park.

Lynn and I made it through the customs check at Friday Harbor before the rest of the crowd, and we promptly pedaled up and out of town. Since it was already after 6:30 p.m., we knew we’d have to make good time. The road around the south side of the island proved to be very hilly, and after riding up the last huge climb we were treated to a fantastic sunset over the water. We then rolled down to the state park, only to find that there is no camping, and that another mongo climb would be necessary to get us to San Juan County Park, where there is a campground (our guidebook didn’t show a campground at the county park; better information on the county park is available in *Bicycling the Pacific Coast* by Kirkendall and Spring). It was really dark as we



Lynn riding the Galloping Goose Trail



Arriving in Victoria harbor on the Ferry



A kayak group leaves the beach in Port Townsend

rolled into camp at the county park, and we were totally beat, but we were quickly situated in a great hiker-biker site with an ocean view. Rob and Doug rolled in about a half hour later and tented near us—they'd had a similar experience at the state park, and no doubt biked at higher speeds, but they had horror stories about the delays they endured at customs at Friday Harbor. If I did this tour again I would definitely look for lodging in town for the first night because of the late arrival.

Rob and Doug made an early departure, and Lynn and I walked down to enjoy the view of the ocean and watch the sea kayakers. Later that morning, while Lynn relaxed, I biked to Roche Harbor for groceries—quite a fantastic place. It has a huge marina, including shops, grocery, restaurants, and public restrooms with showers, and rentals and lessons are offered on almost all kinds of watercraft. Going and coming from camp I passed a field full of very strange-looking grazing animals. They were black and long legged, with amazingly long, skinny necks topped by large heads, looking like they belonged in *Star Wars*. It turned out that these improbable animals were recently sheared alpacas.

After a evening sing-along with some other campers and a good night's sleep, we biked the central route (the steepest and hilliest route, we found) back to Friday Harbor. On the way a stallion made a loud and strong statement about our recumbents, galloping and neighing back and forth along the fence. We boarded the ferry to Lopez Island, this time at a logical hour. Lynn and I biked to Spencer Spit State Park and settled into a campsite right on the water. We then rode to Lopez Village and had a welcome swim at Hummel Lake, where you can also borrow a boat and preservers and paddle about. At the village we found a decent grocery and had supper at one of the restaurants on the water. Lopez was a nice island for cycling, with far fewer hills than San Juan Island or, reportedly, Orca Island.

The next morning we met Larry and Ken and their wives, who were camping near us and had arrived by sailboat and car. Larry and Ken took us out on the sailboat, which was a fantastic experience. The wind was a little fickle (apparently a common occurrence between these rocky islands), so we had to motor back. We spent quite a bit of time talking with them that day, both of our parties moving tents to nearby campsites to make way for incoming campers. In the afternoon they planned to go into town, and offered to let us use their two-man sea kayak. This boat, a 22-foot-long fiberglass beauty, had a foot-operated rudder. It was maneuverable and fast, and we paddled joyfully along the cliffs. We stealthily approached some small islands and watched the antics of ten harbor seals. What a fantastic addition to our island adventure!

In the morning we packed up early, pushing our loaded bikes up the steep trails to the roads of the park. After a short ride down the middle of the island, we loaded onto the ferry and returned to Anacortes and our car. We then drove off to a few days of adventures at Mount St. Helens, the Oregon coast, and Multnomah Falls before, now feeling fully rehydrated, we again took the long drive over the prairies back to Colorado. ♦



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"A real hoot"
Bob Bryant, RCN



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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 mic 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



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

this 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 recumb-bent 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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