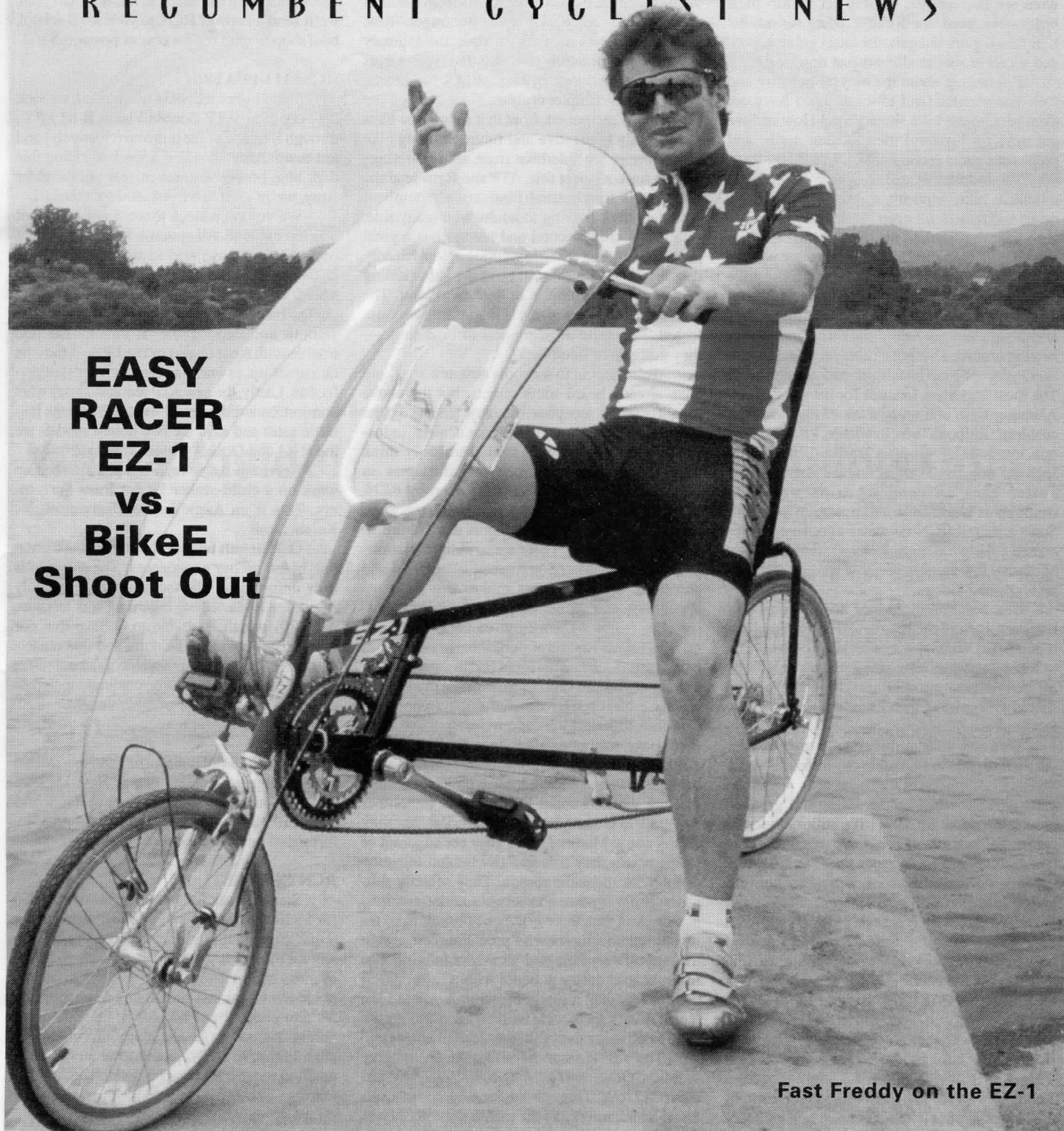


RCN

RECUMBENT CYCLIST NEWS

**EASY
RACER
EZ-1
vs.
BikeE
Shoot Out**

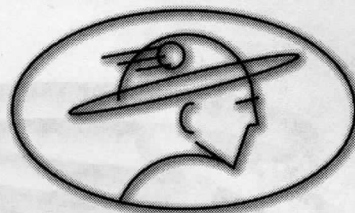


Fast Freddy on the EZ-1

Editorial License

By Robert J. Bryant

Email: DrRecumbnt@aol.com Voice mail: Ph#206-630-7200



WHEN WILL THEY LEARN.....AND BOB RANTS

These guys make me so angry. No matter what we do, we just cannot get it into their heads—we need comfortable bikes for adults! Lets face it guys and gals, the latest gel seat, padded shorts or rise handlebars just don't cut it.

I'm ranting about the bicycle industry and their latest antics (and to think that I have not even been to the bike show yet....) How can we get them to disregard their ancient myths and prejudices about recumbent bicycles?

The industry is still searching for the next mountain bike—and it's right in front of their noses and they don't even see it. Why?

Last year we had the return of the Cruiser, and now the bicycle trade magazines are writing how difficult they are to sell at enthusiast price levels (over \$350 for a Cruiser). Admittedly, I'm part of the select few who do like the hi-tech cruisers, though they are heavy and tiring to ride. For beating around, I've got a mountain bike. It was hand-selected local bike supermarket warehouse. The most important features for me were a non-Aheadset stem and upright "rise" bars and the cushiest "Tailbone" seat available. I ride it in the rain, tow son Danny on his Trail-A-Bike and run Jack the dog (he likes recumbents better). The beater goes on camping trips when the recumbents won't fit or the roads are unpaved. Since I started RCN six years ago, I've always owned a wedgie along side my recumbents. I buy one every few years to see how wedgie-state-of-art is coming along...

The best summation of horsey-bikes that I've seen is from the Internet HPV list, administrator, Brian Wilson, who after taking his upright on vacation wrote, "I experienced the full range of wedgie-bike complaints. No sane person should ever go more than 25 miles on one of these things..."

So every year at this time as we plan our yearly trek (pun intended) to the Interbike Trade Show in L.A., it's fun to speculate what revamped stuff will show up as the latest and greatest bicycle products for 1997! It's still really difficult to get recumbent press releases into mainstream bike and trade magazines, and there is virtually no mainstream media recumbent info available aside from that coming from ATP and BikeE (where is ReBike these days?), so it's a safe guess that the industry has bypassed recumbents (again) for the upcoming season. What's going to be the next big thing. My Crystal Ball says, BMX! Yes, Bicycle Moto-Cross. The trade magazines are full of the latest high-tech BMX whiz-bang and news of upcoming BMX stuff. Some mountain bike companies got their start in BMX, GT, Haro and Mongoose. Being right on the mark (20 years late), many of the biggest names in the mountain bike industry

have gone BMX. Look for high-tech bikes for juveniles with deep-pocketed parents from the likes of Trek, Cannondale, Fisher and Bontrager. Wow, BMX.....so innovative. What does the industry have in store for adults now that they've got ages 7 thru 20-something covered....BMX for adults? Gee, a lighter, simpler cruiser....

On the recumbent front that sells to the likes of the really innovative and future-thinking bike shop owners the Interbike trade show offerings will be from a select few. ATP and Rans lead the way as the trendsetting innovative recumbent manufacturers catering to adults who really ride. BikeE is a close second and always has a great presence catering to those wanting a user-friendly deluxe cruiser. Linear will be at the show selling cool folding recumbents to dealers as well. The secret message here is that if manufacturers want to sell their recumbent models in bike shops—they gotta go to Interbike.

We're hoping to see some neat new stuff, and have already heard some secrets, but the above manufacturers are your industry leaders at the Interbike Trade Show. Most bike dealers, industry folk and mainstream media probably think these are the only recumbent manufacturers in existence, at least until they pick up a copy of RCN.

The recumbent industry may be its own worst enemy. The first aspect of this is that we are so damn experimental. There are so many variations of recumbent bikes. Some great, some good and some not so good. This makes our industry appear immature. Then there are the manufacturers who really do work out of back-yards and garages (almost as bad as publishers printing from home offices, eh?). This is not bad in itself, as long as you can keep a professional image (key point.....). Next you have manufacturers who won't cut loose with dealer lists so we can publish them (and make recumbents easier to find). This is a catch-22, as they really do work hard to find good dealers, so they are sacred. Then there are dealers that are worried about losing a sale to another dealer or to a manufacturer of a model that they do not carry. Many of these guys are so afraid of losing a sale they'll hide RCN behind the shop counter for the same reason. They secretly subscribe to RCN, though probably under assumed names. And then there is the one or two really arrogant manufacturers who proclaim their design the end-all very best and all others inferior. The result is an industry at battle within itself. All of this for less than a single percentage point of the North American bicycle market. Seems to me we need to do more evangelizing, recumbent style.

The resolve can be summed up in three words: *COOPERATION*, *ORGANIZATION* and *EDUCATION*. This can be done by riders, dealers, manufacturers and the media alike. RCN was

founded back in 1990 with the primary goal of accomplishing these tasks, so lets do it. Oh yeah, we'll send a copy of RCN to your local school, bike shop or club for the cost of postage, \$1.

RCN#34 UPDATES:

Shortly after RCN#34 was mailed, we took delivery of an **ATP Double Vision R-82 I.P.S.**, through it on top of the minivan (creatively) and left town. After spending a week of riding this dark blue beauty with seven year old daughter Amy, we're even more ecstatic about the DV.

We've kept it stock to see if our chain rant was too extreme. All systems, including our test proto-kid-back have worked properly. This is one of the smoothest riding recumbents we've ever tested. The drivetrain is quiet, it shifts better than our test bike and the I.P.S. drivetrain is flawlessly smooth and dependable. If anyone has had trouble with front chains or the I.P.S., it must be due to set-up, as ours has been the model of perfection. Lastly, the new ATP seat epitomizes what comfort on a bicycle *can* be. ATP reports fantastic sales and says the two hottest models are the R-44 and Double Vision. Way to go guys!

Kelvin at AngleTech has just finished up work on a **child-stoker** kit for **Rans Screammers**. This is an AngleTech exclusive, so give Kelvin a call.

Our **Stealth test** was bold, but 100% accurate based on our experiences. The situation is truly unfortunate. The fact that we've had only one letter to the editor regarding this test (see page 29) which leads me to believe that our experiences could be the norm and that readers agree with our findings, which is a sad statement about this manufacturer who continues to bypass RCN readers a in favor of other venues.

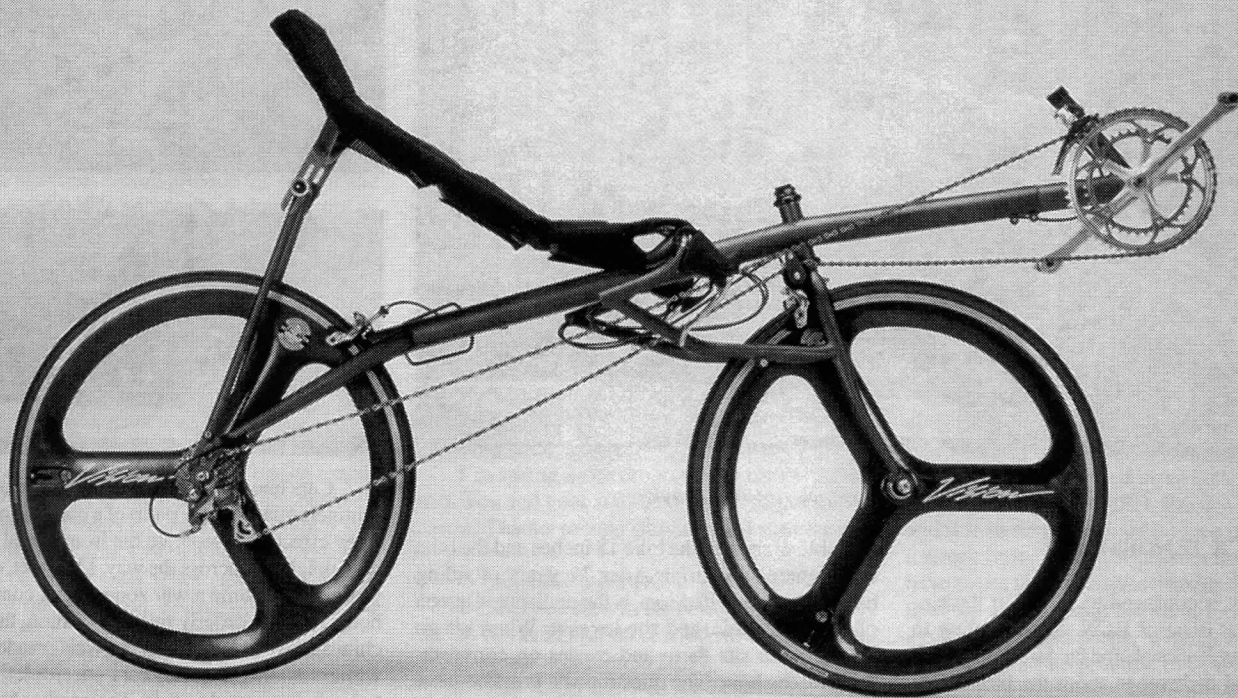
RCN#36

The next RCN issue is the Oct/Nov/Dec'96 issue. The target mailing date is Nov. 15, 1996 and distribution takes three days to five weeks (standard/4th class). See page #35 for more information on our schedule and renewals.

RCN COVERS

Starting with RCN#36, RCN will pay \$50 for a suitable cover photo (vertical) and \$25 for a title page photo (horizontal) (readers only/no pay for mfr.'s). If we *do not* use the photo in one of these two spots, we retain the right to use the photo elsewhere in a current or future issue with no compensation. Photos *can* be part of an article. If you would like more information on contributing to RCN, please send an SASE or email to request RCN writer guidelines.

Viva Recumbent!
Robert J. Bryant



Above Photo: The dual 26" wheeled experimental ATP Sabre! See page 28 for more info on this cool bike—photo courtesy of ATP

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What's Coming Up!

Look for the long awaited Rotator Pursuit review, a Turner 2000 review and a reader written P-38 article. We'll also have our annual Interbike report. We have a Crystal (Peter Ross) EuroTrice, suspended Haluzak Traverse and a 1997 Rans Rocket in the house awaiting testing. If you would like to see a bike tested, send a letter to us and "cc" it to the manufacturer. We also have more touring, bike building, tech tips and other cool stuff! RCN is printed on a bimonthly schedule—6 issues per year. See pages 35 and 39 for details.

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RCN#35 Cover: Fast Freddy and the Easy Racer EZ-1.

Photos courtesy of Easy Racers, Inc. Cover design by Mark Colliton, Kensington Heights Design.

Disclaimer: RCN/Robert J. Bryant writings are editorial based on the experiences and opinions of Robert J. Bryant and are for entertainment purposes only.

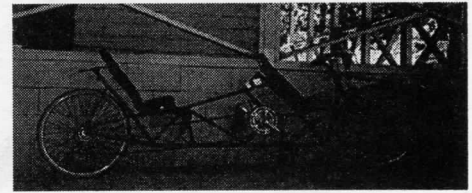
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Recumbent Mail



Traylor FWD tandem photos courtesy of Tom Traylor



BACK-2-BACK TANDEM

Dear Robert,

I was very encouraged to see all of the tandems in the last issue of RCN. Most cycling in this country is recreational, and tandem riding with a spouse, friend or lover is about the best recreation I can think of. I have been involved in designing and building tandems for years. In fact, the second bike that I built was a tandem for my kids back in 1979. All of my tandems have been two wheel drive, which of course means totally independent drives and gears for both captain and stoker. It's interesting to note that manufacturers are just beginning to realize what an advantage independent cadence is. They have even began using it as a selling point, like it was something new, oh Well.

I have built two types of tandems, one with stoker facing forward in the traditional manner, and the last two I reversed the stoker (back to back). This, of course, is a radical break with tradition. After building an adult version of my kids tandem for IHPVA competition, I realized that the aerodynamics of having the captain and stoker so far apart was not very good, so I turned the stoker around so the riders would be close together. I then brought the rear wheel of the bike in between the stokers legs to further shorten the bike. I then reversed the gearing so that the stoker would not have to pedal backwards. With these changes, I

was able to shorten the bike 18 inches and the bike was lighter and stiffer. After 12 years of riding backwards, my wife Sima, is the undisputed queen of the backwards, and she loves it. When we go on rides she sits there and carries on conversations by the hour. The question she is asked most often is, "what is it like to ride backwards?" She will tell you that it is no different than riding backwards on a train or trolley. She doesn't get sick, and it takes about five seconds to get used to it.

A few years back we decided a new Back-2-Back bike would be nice. The bike shown here has a monoque frame made of carbon and kevlar. This bike was my first venture into composite frames, and turned into a very difficult project. I don't recommend a tandem for your first composite bike project. After nearly two years it finally came together and I am very pleased with it. Compared to the older bike, it has better aerodynamics and gearing. It is the fastest unfaired bike that I have ever built. We are both 60 years old (and Sima only rides once per week), though we can still leave all but the most determined road racers in the dust.

About six years ago, we decided to add a new dimension to our cycling and built a recumbent tandem boat. I could go on and on about the boat, but since this is a bicycle magazine I will shut up and wish all of you happy tandem riding.....on a recumbent tandem of course.

Tom Traylor
Torrance, CA

Ed. Note: Tom is the most experienced front-wheel-drive designer in N. America. He sells great plans for his FWD recumbents. You can contact him at 22407 Warmside Ave., Torrance, CA 90605 (SASE for info).

CARS STINK!

Dear Bob,

I just read your RCN#34 Editorial License piece, "Cars Stink....," and applaud your call to action to recumbent riders to re-vitalize the HPV movement. RCN and BCQ are my anecdotes to the despair I often feel about the savage streets of my town.

Cars line the curb-side in tight formation like sentinels guarding the paths of a conquering army. They effectively separate me from casual contact with neighbors across the way. My street, over the years, has become a war zone during commuting hours. In fine, orderly military fashion, these machines move in "hurry up and wait" mode. I daily witness endless lines of cars encapsulating frustrated but resigned people. Their radios blare, creating cacophony. Stalled in gridlock, or barely creeping along, they sit idle within their individually controlled environment, as their vehicles spew noxious fumes into the air around my home. Many will momentarily roll down the window to toss cigarette butts, fast food wrappers and empty cans onto my deserted sidewalk. They seem to perceive themselves as being in a virtual neighborhood on a virtual street, vacantly staring straight ahead, as though watching TV and desperately trying to believe the myth that those relentless car commercials sell.

As I glide through this morass on my recumbent, I feel very fortunate that I have the real freedom of movement in my town and am able to use my own human power to transport myself with efficiency, ease, economy and comfort. Those in cars experience only virtual movement. After all, an automobile operators usually sits quite still—while their town moves backwards.

Tim Sawyer
Cambridge, MA

PS: I recommend to your readers, "The Geography of Nowhere: The Rise and Decline of America's Man-Made Landscape", by James Howard Kuntsler, Touchtone/Simon and Schuster, 1993. An entertaining and in depth look at how we created this mess.

RCN#34 RESPONSE

Dear Bob,

GREAT August/July issue! Loved the "shootout" article; now, if I win the lottery, I'll buy both tandems!

The Editorial License article was excellent. However, I think it is a bit unrealistic to think we can convert people to being bike riders. There will always be a percentage that will never, never, never give up driving by car. Also, I've commuted the

RECUMBENT MAIL

Directions for use: Send your cards, letters, RANTS, gum wrappers, feedback, response, pictures, articles, newsletters, newspaper clippings and whatever you like to:

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13 miles to work, but there are just too many negatives to make it practical right now. It's a high risk endeavor in the traffic, the heat and sweat make a shower and change of clothes essential and time-consuming, icy roads make it dangerous even if you have a fairing to keep you warm, hills make you sweat and chain grease gets on your pants.

The solution to all of this is fairly simple and low-tech; a covered wide roadway, like an old wooden bridge, throughout the city at a median level, channelling through the hills and rising above the lowlands would provide the shelter and isolation from traffic necessary. A double roof of automatically opening and closing opaque slats and transparent slats could provide ventilation and passive solar heating or shade. A simple plywood deck supported by 2 x 4s could handle the light weight of human powered vehicles. Perhaps a vinyl or some other new kind of surface could be laid over it to extend its life.

I'm not an engineer, so the details are not worked out, but years ago a similar overhead transit-way was suggested in one of the biking magazines for Seattle. The biggest difference between my concept and theirs is mine is a bit simpler and perhaps more do-able. Could it be done? Yes. Is it likely to be done? Only if we can get people to recognize the need and desirability of such a project.

Oh, by the way, I've started a recumbent group here in Omaha called the County Cruisers. Its not called a club because I don't want to be that formal; we have ten members so far and I know there are more out there. I'll publish an announcement in the Omaha Pedalers newsletter and perhaps gain a couple more. At any rate, we're trying to do what you suggested in the Editorial License.

Armand Gibbons

ANOTHER STOLEN WINDCHEETAH!

Dear Robert,

Last year I ran a classified ad looking to trade my new Windcheetah and extra parts for solar panels. Recently, I received an inquiry from a man in Southern California. The man called himself, "Rob Rab." He spoke with in a low voice with a foreign accent and said he was from Egypt. We agreed on a trade and the Windcheetah was shipped to the West Los Angeles UPS depot. The Windcheetah was picked up, but I never received the solar panels.

Since then I have found out that all of what "Rab Rob" told me was fictitious. The Police have traced "Rab Rob's" phone number to a woman that had her purse stolen.

If anyone has any information, please call me collect at ph#414-774-5000. I am offering a \$1000 reward for the bikes return.

Bob Rainek

CARS STINK....

Robert,

Congratulations, this issue was excellent! Your editorial was right on, and I only hope all readers take notice and help all of us promote the recumbent movement. If everyone spent 5 minutes looking at what they spend on their cars per year, they would change their toon. I also got a kick out of the pros and cons of the SWB response. We have

some very independent thinkers...seems they worry more about their specific recumbents than the big picture, which is get more people on recumbents period. 'Bent riders need to spend more time enjoying riding, and less time fussing about the pitfalls of other bent's. Let's spend more time educating the public on the benefits of recumbent riding, i.e. less neck pain, low back pain, numb crotch, etc. We are on the cutting edge of a new movement, we don't need to spend time bickering. Each bent rider has his or her own preference...great, use that energy to get others to see the miriad of advantages we have over the traditional dimond frame riders. Keep up the good work. Your magazine is number one with me, and I have been here since the first publication rolled off the press. My patient's also enjoy reading RCN

In Health and Recumbency,
William L. Ross, D.C.

RECUMBENTS ON TOP OF THE WORLD Go Bob and Company!

I'm seeing more & more recumbents on the road. You and your staff have got to be part of the reason! Thanks to your publication I now own:

- 4-Tour Easy's-per RCN.
- 1-Linear-as seen in RCN.
- 2-Turner LB (2000 & 1000)-as seen in RCN.
- 5-BikeE's-as seen in RCN.
- 1-Easy Racer EZ-1-as seen in RCN.
- 1-ReBike-as seen in RCN.
- 1-Brike-as seen in RCN.
- Next one will probably be a tandem!

Bob, I was so angry to read about the lawsuit putting an end to Counterpoint. Let's hope the lawyers aren't going to put the same hurt into the recumbent industry that they are into the small plane and so many other industries.

I've been in the construction business for over 18 years and have avoided.....lawyers that are the highest per capita in Alaska than anywhere else except Washington, DC. However, I recently succumbed to a midlife crisis and ran for mayor here in Barrow, Alaska. I didn't realize how good I had it before, even though I was told several times I would never get elected, because if nothing else, I was a non-conformist because of the weird bikes I'm partial to. Guess what? Alaskans like non-conformists and I am now the mayor of the farthest north city in the United States! I ride a Tour Easy, EZ-1, or BikeE to City Hall almost every day.

Yours, From The Top of the World!

Jim Vorderstrasse
Barrow, AK

Jim, congrats on the your mayorship and excellent recumbent stable. The RCN advertisers will be happy to note that you are the typical RCN reader (I wish)—Robert.

OFFROAD STEALTH

Dear Bob,

This winter I bought a Stealth frameset with the 20" wheel option and set it up with full knobbies, 2.125" in front & a 2.35" tire in the rear & experimented with offroad riding. From the viewpoint of riding a bent offroad it was a success, I was able to ride many of the trails I ride on

my MTB. Until recumbents are designed specifically for offroading it will be difficult to know the limits. Here are some of my offroad experiences on the Stealth.

Technical climbing gave me the most trouble. When it gets steep and rough its very hard to keep the rear tire from breaking loose and coming to a stop. Its much harder to get started again when this happens. The worst aspect of technical climbing is how much more tiring it is on a bent. On climbs where I'd be at about 80% effort on my MTB, I was maxed out on the Stealth, my legs and lungs screaming in exhaustion. I think this was mostly due to the rear tire breaking loose just a bit each time I pushed on the pedals. On an up-right you can reduce this by weight shifting. Offroad, MTB's climb much better than the Stealth did.

Descending technical single track is where the bike worked great. There was a very technical single track decent I was planning to avoid because even on a MTB it's difficult. All the other single track was snowed in, so I attempted the trail somewhat fearfully. I made it down with zero dabs and was so surprised I did it twice more and made it every time. This trail is steep enough that you have to put your butt over the rear tire on an MTB to avoid an endo, and its full of loose rocks. With a fully suspended properly designed recumbent I think it would be possible to beat lots of MTB's down certain descents, but the really good MTB descender would always be faster. Suspension would help another problem I encountered, it is a very bumpy, bouncy ride descending rocky trails.

My favorite offroad riding on the Stealth was easy to moderately technical single track, it was possible to cruise this at normal MTB speeds. Weaving through the trees and around big rocks on a bent was a blast! The looks MTB riders faces when I caught up to them was priceless. This riding was the most fun I had on the Stealth.

Loose gravel, mud, wet leaves, anyplace where the traction was unpredictable also caused more problems on a Mountain Bent. I fell several times, but never even got a scratch. I had to stay much more alert watching for any slippery patches of trail, when my tires broke free a little I was more likely to fall.

Full suspension with 3+ inches in the rear and a quality MTB fork up front would dramatically improve things offroad. Seat height is an open question, but I'd like to try a bent with even lower seating than the Stealth. Another unanswered question is which format to use, SWB/MWB, CLWB or LWB. LWB would probably be fastest on fast fireroad descents, while MWB would have the edge climbing & on technical single track. CLWB might be the best format for easy offroad stuff, but climbing anything steep would probably be impossible.

A BMX 20" wheel is the minimum necessary on the front of an offroad bent. A 16" is too small. The MWB format offers the best overall offroad performance because of the weight distribution and maneuverability.

Overall, I was a good 10-20% slower on the Stealth than on my MTB. I had to walk most of the really steep rocky sections that I can climb on

Continued on page 29

Feature Story—Easy Racer EZ-1 vs BikeE



by Robert J. Bryant

The BikeE may be the recumbent that puts recumbency over the top. It's a user-friendly city cruiser with a trendy look and excellent quality for its price. It's a refined package that is attractive to cyclists, non-cyclists and bike dealers alike. BikeE has an aggressive marketing campaign that seems to be working. The only problem with this scenario is that some recumbent myths may actually be promoted by the BikeE brochure pitch, "So fast, it'll blow the spokes off most other bikes..." and "So comfortable, you can tour on it for weeks..." Is it just me, or does this sound like a bit of a stretch?

Don't get me wrong, I love what BikeE has done and it's a great cruiser, city and recreational bike, but it wouldn't be my choice for a touring bike and it's a lot slower than the bike I currently ride. My point is that BikeE can achieve recumbent greatness without these overblown claims seemingly written by some ad agency. To give BikeE some due, the current *Bicycling* color ad is the nicest recumbent ad we've seen in a mainstream magazine.

The Easy Racer EZ-1 is the entry-level compact recumbent from the builders of the famed Tour Easy and Gold Rush Replica high performance/touring recumbents. And the proof of this heritage rests in the Smithsonian Institution as the Gold Rush won the DuPont prize for breaking 65 mph ten years ago. Easy Racers doesn't make overblown performance claims about the EZ-1. Most Easy Racer customers will know full and well that the EZ-1 is not as good a touring bike as a Tour Easy, nor is it as fast as a Gold Rush Replica, but it's one heck of a compact recreational city cruiser.

DESIGN

These bikes look so similar, however, there are many differences in the design, theories and style. The BikeE is compact and the systems are

as small and as simple as possible. The seat is small, the seat back is small. The handlebars are narrow MTB style bars (slightly swept backward). BikeE is one of the first recumbent manufacturers to offer the easy-to-use Sachs 3x7. This unique hub has seven freewheel (cassette) gears with an internal three speed that replaces the front derailleur. The design goal seems to be a recumbent for the masses that breaks barriers of a hundred years and uses forward earth-friendly logic to accomplish its goals.

The EZ-1 uses tried and true Easy Racer design, a welded steel full triangulation frame, a standard mountain bike style drivetrain and those great Easy Racer handlebars. The bars are longer and wider than the Tour Easy bars and offer a more relaxed wrist position.

The bikes are different directions of a similar design concept. One look and ride generally is all it takes to find your preference. The CLWB design uses tried and true LWB recumbent design combined with a designers conscious effort to make the bike more compact. This is done by raising the seat up over the back wheel and using a smaller more compact wheelset. The result is a bike that can be a foot shorter than a LWB, and it's a noticeable difference.

The best uses for CLWB bikes would be as a city bike, recreational cruiser, travel bike for a motor home or camping or as a compact travel bike for that European trip. The high center of gravity, heavily loaded rear wheel and upright riding positions do effect performance. The seats may dictate and even limit the rider's mileage potential, though a few riders are choosing them for tours because they ship, set-up and travel easy.

The weight distribution is relatively poor with 75% on the rear and 25% on the front. This can change dramatically as the seats on both models slide for adjustment. A 6' rider on a BikeE or EZ-1 makes for a bike that wants to bunny-hop the front wheel up hills. For this reason, Easy

Racers offers a second large size that adds 3" to the wheelbase. BikeE does this on a special order basis, but they are difficult to get (we couldn't get one for our test bike). For short or medium riders, the weight distribution is acceptable. Tall riders should live in a town that has no hills or wait for the longer frame.¹

FRAME

The BikeE utilizes a custom aluminum extrusion with steel cantilevered mono stays and a custom designed CroMo fork. The handlebars and stem are a stainless steel telescoping affair that will adjust perfectly to nearly any rider size. The integrated custom handlebars are narrower than the EZ-1's by 4-3/4 inches. The EZ-1 uses a 1020 Hi-Ten square steel frame that is TIG welded by Fast Freddy Markham with the same care that he gives the Tour Easy frames. Our only criticism of the frameset is in the rear stays/dropouts. The seat-stays are at a more vertical angle than the dropouts were designed to accommodate. This is an aesthetic issue and has nothing to do with the integrity of the frame.

BikeE and Easy Racers should be commended on their high standards and excellent values on models priced under \$900. At first glance, the EZ-1 frame appears to be a bit tougher, as it's TIG'ed steel, though the BikeE aluminum extrusion is very tough and more attractive. The bolted-on mono-stays could be a concern, though we've never heard of a problem and the BikeE has a limited lifetime warranty on the frame, which is better than the five-year frame warranty of the EZ-1. Both framesets are of fine quality, though the BikeE's slick aluminum frame is more refined.

COMPONENTS

Choosing a clear winner in the components is really tough, as each bike clearly has its strong points. The BikeE has a better drivetrain with the 3x7 and Sachs Centera derailleurs shifted by the much improved Sachs Twist Grips. The '96 BikeE offers the best shifting Sachs drivetrain we've ever tried. The EZ-1's stock Shimano thumbshifters need to be changed. The Speed Wheel² upgrade does this and is the only way this bike should be purchased. The EZ-1's Sakae crank is high quality, though no longer made. It is superior to the BikeE's Dotek crank. The EZ-1's Shimano Altus derailleurs and optional Grip Shifts shifted flawlessly, though not as user friendly as the BikeE's Sachs 3x7 (see page 21 this issue and RCN#34).

The EZ-1 had the best brake combination with a Suntour XC Pro cantilever in rear matched with a Dia Compe FSE dual pivot long-reach side-pull in front. The BikeE uses generic low-end Chang-Star cantilever brakes, though the direct brake cable runs made up for the brakes themselves and offers a very good stopping power. The BikeE front cantilever is mounted behind the front fork—why, I don't know. When manufacturers do this it makes for difficult set-up and adjustment, luckily, it was done for us by BikeE. The front brake cable comes too close to the chainring and we had to use a zip-tie to keep it clear of the chainpath.

The BikeE has a better headset, an Aheadset, while the EZ-1 uses a basic YST. The BikeE has a YST cartridge non-threaded bottom bracket and the EZ-1 a Shimano cartridge. We've had reports of a few problems with the non-threaded YST bottom brackets, and the threaded ones for that matter (on other makes).

We usually don't care about pedals, though on a CLWB riders are more likely to keep the stock pedals on the bike (rather than upgrade to clipless). The BikeE comes with quality Odyssey anodized BMX style pedals. The EZ-1 came with Wellgo platform pedals. The Odyssey's are better, though not wide enough. These cruisers need some nice wide platform/bear trap style pedals (old style wider MTB pedals), some platform/SPD combination pedals or Shimano's new BMX SPD.

WHEELS

The 20" rear wheel and 16" front wheel combo seems to work the best with the CLWB design models and is found on both bikes. The 16" front wheel keeps the wheel out of the crank-arm path (with close tolerances!). The 20" rear wheel works well in combination with the front 16" that is needed to hold the 75% of the riders weight. The 20/16 is also the most aesthetically pleasing choice for a CLWB and it keeps everything packed closely together. For the BikeE, the 16" front wheel is the key to the sloping³ main-beam design and how it works.

The BikeE uses a tough BMX sized 406mm 20" x 1.5 rear wheel with a Pyramid (Kenda) 90 psi tire. The rear wheel has 36 spokes with an odd half-radial, half-crossed spoke pattern (radial on the non-freewheel side). The BikeE front wheel is a 305mm 16" x 1.5" half-spoked (18 spokes on a 36 hole rim) with reflective tape covering the empty holes. The front tire is a 16" x 1.5" Kenda 45 psi front tire. Eighteen spokes is probably enough for most riders as the front wheel is so lightly loaded. The BikeE tire choices match the bike's design intention, though the performance of the smaller diameter front tire is not as good as what can be achieved with the taller 16" x 1-3/8" size, with the correct front tire. BikeE reports that the new front fork will accommodate the 16" x 1-3/8" wheel/tire.

In comparison, the EZ-1 has a 20" x 1-3/8" 451mm 36 spoke rear wheel with a Pyramid (Kenda) 90 psi rear tire. The front wheel is 36 spoke 349mm with a Kenda 16" x 1-3/8" 45 psi tire, though the new ATP/Primo 90 psi tire will fit the rim and is a definite upgrade. Neither the BikeE or EZ-1 wheelsets are built with stainless spokes, which means upgrades may be in order for serious touring or the daily commute.

The Easy Racer wheelset is more geared towards performance, especially with the Speed Wheel² upgrade. The 20" x 1-3/8" is a lighter duty tire. Availability and tire choice are clearly not as good. The tires made for this rim are *not* the toughest, especially in the side-wall. The heavily loaded rear wheel complicates this issue even more. We prefer the sheer bulk of the 406mm BMX 20" size on the BikeE. With the lightly loaded front wheel, the best choice is the better performing EZ-1 16" x 1-3/8" size, though the bike is not spec'ed with the new ATP/Primo tire. As for the wheels, the EZ-1 set was more dependable. The more tradi-



The new '96 EZ-1 seat has an aluminum shell with a foam base and back. The updated foam is higher quality, though the new lumbar makes rider sit more upright



The '96 BikeE seat is a definite improvement and offers separate seat back/base adjustment.

tionally spoked 36 hole front and rear are strong and we had no problems reported to us. The BikeE front wheel arrived trued, but built off center, a definite oddity, though BikeE replaced the wheel quickly. We've heard a few reports of spoke breakage on 21 speed BikeE rear wheels, though this problem seems to have been corrected.

The best wheelset comes on the EZ-1 (with Speed Wheel option) by an edge, though we'd like to see the rear wheel traded out to a tougher 406mm BMX 20" x 1.5."

A good lesson is to be sure your wheels are true and checked after break-in, especially with mail-order purchases.

SEATS

Neither the BikeE or EZ-1 offer world class recumbent seats. Both are compact, get the job done with reasonable comfort and both are improved for '96. Where they both fall flat is when compared to the excellent new seats from the likes of ATP and Rans available on bikes at the \$1000 level (R-40, Rocket and Tailwind).

The new BikeE seat was hailed as a superior upgrade when it first came out, though it still has a few glitches. The quality is superior. The stainless steel seat frame is fantastic. The mesh back is nice quality, though it lacks mid and upper back support. Riders have a tendency to lean into the seat at a reclining angle which demonstrates its lack of support. The seat base is small and our first impression is that it was a tiny-hiney seat. BikeE is using a space-age seat-base foam⁴ that takes some time to set-up for your shape. Once accomplished, the seat base is comfortable. Also, the seat base slides backward and forward and tilt/reclines separate from the back. The dual-quick-release seat adjuster that holds the seat onto its track (built into the new extrusion) is the best in the industry. It's smooth and adjusts easily and stays tight.

The EZ-1 seat is improved in some ways,

though it still needs some work. The quality is there, in fact, Easy Racers has been using a better quality foam and has reshaped it from last season. The mid/upper back support is much better than the BikeE, making for a good brace for when you push into your seat for acceleration (this is probably the key performance difference). The seat-base foam supports your base better than before, though there is a potential problem. The seat has a new lumbar curve in the seat-back foam and if your are not proportioned correctly to utilize the curve, the seat forces you into a non-adjustable very upright seat angle that heavily loads the seat base. The EZ-1 seat frame is made of 6061-T6 sheet aluminum which is shaped and riveted to form the complete seat. We found a few rough edges on the under-side of the track area which makes the seat quick releases harder to access. The only reason this is an issue is that the BikeE seat quick releases and adjustments are so good.

Overall, we liked the new BikeE seat better with its fore-aft base and seat recline adjustments. The NASA-style seat foam⁴ was impressive, though we feel both seats could use some work to make them as good as more enthusiast oriented (performance) recumbents. We'd like to see a Tour Easy style seat on the EZ-1 and a seat that was about 25% larger/taller on the BikeE.

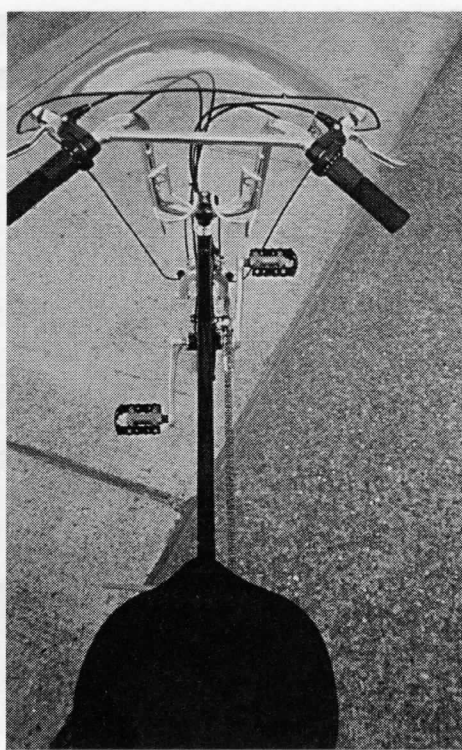
OPTIONS

The BikeE has a long list of options, from a neat 20/16 fender-set (that would work on other makes and models...), to a great chain-tube chain guard, a trick pannier rack that mounts under the seat, one of the best recumbent kickstands and mounts ever to be found on a recumbent (built in chain-stay bolt-on mount) and finally the great BikeE Zipper fairing with MTB style bar-ends for upper mounts. The BikeE has one water bottle mount on the handlebar stem/riser. We've tried all of the options except the Zipper fairing, though we have seen it. BikeE options are among the best of any recumbent manufacturer today.

Easy Racers offers the "Speed Wheel"



The cockpit of the BikeE



The cockpit of the EZ-1

A potential problem arises when a new rider gains a bit more confidence and wants to venture up to speeds above and beyond the bike trail speed limit. Neither model offers world class high-speed handling to match the easy-to-ride low-speed user-friendliness. And don't expect world class performance or try to hang loaded panniers on the back of either model for a solo tour. These are just the limits of the 20/16 CLWB configuration. With this in mind, be sure that the EZ-1 and BikeE are enough bike for you.

THE LOOK

The EZ-1 has the Easy Racer look, though the "coolness" factor is not as refined as on the upgrade Tour Easy and the ultimate LWB, the Gold Rush Replica. The BikeE is considered by some to be avant-garde trendy and possibly the most modern (and marketable?) recumbent for the new millennium. To others it is the most geeky bike on two wheels. It seems to depend on the perspective of the rider or critic. Both bikes seem to work best for small/medium height riders (or get the long frame), flat-landers or those wanting the ultimate urban recumbent.

THE DECISION

The redesigned BikeE will make the choice a difficult one. It seems to come down to which ergonomic mix you like best between the seat style and handlebar width. And most importantly the planned use of the bike. The 21 speed EZ-1 is more enthusiast oriented of the two and would be better for extended mileage rides. The BikeE would be the optimum recreational bike trail and urban cruiser thanks to the user-friendly drivetrain. The BikeE has the most refined package between these two CLWB bikes. The '96 model is really slick. There is a difference in style and those who are drawn to the Easy Racers mystique should go with the EZ-1. We'd like to see Easy Racers redesign the seat, add the fatter BMX size rear wheel and dump the thumbshifters. We'd like to see BikeE increase the seat base and back size to offer better support (a second size seat maybe?) and upgrade the brand of bottom bracket and brakes or offer a more deluxe model for those of us who are hard to please. Lastly, we'd like to see better tires across the board on both the BikeE and EZ-1.

Both bikes are loads of fun and offer among the best values in the recumbent world today. The recreational appeal just cannot be beat.

option, dual water bottle cages that mount on either side of the handlebars, and an underseat pannier rack as well as a rear-view mirror and a Super Zipper fairing specifically for the EZ-1. We have tried all of the options and all are recommended. Our only comment about the EZ-1 Super Zipper has to do with the mounts that make brake-lever hand clearance a bit tight. Also, we had to adjust the lower mounts inward to position the fairing properly. Zipper fairings are an excellent addition to any recumbent. We did not care for the kickstand mount on the EZ-1. It is a hole drilled in the frame and the kickstand base is wider on either side than is the frame tube.

HANDLING AND USER-FRIENDLINESS

Both the BikeE and EZ-1 are worthy of chapters in the book of recumbent user-friendliness, though both have relatively quick handling. This is most likely due to the low pressure mediocre 16" front tires. Some newbies may think both are too quick and quirky. ReBike solved this with a self-centering spring between the fork and frame.

So the question remains, do riders at this level want a "handling feel" or ease of use via some sort of steering dampener?

Both bikes have great steering geometries that include custom designed CroMo forks that are specific to the bikes. The new BikeE geometry and fork adds a bit of oversteer to the neutral/pivotal handling of the previous model—and we like it! The EZ-1 has a more upright head-angle (3 degrees) and the bars are higher and less swept back than they are on the long Tour Easy, though we wish the EZ-1 had more of the Tour Easy handling traits.

Seasoned recumbent riders will respect the handling of both bikes. The BikeE just makes riding easy, while the EZ-1 initially is not as user-friendly, but seems to have a slight performance edge, which is the Easy Racers heritage.

Bike shop owners will often invite riders to try the EZ-1 or BikeE as their first test ride due to the easy and predictable low/medium speed handling, which is darn near perfection on both bikes.

BikeE SPECS

Model	BikeE 21 Speed
Designer	Atwood/Ullman/Rau—1992
Design/ Steering Type	CLWB ASS
Wheelbase/BB height	52"/17.25"
Seat height/recline angle	25"/70° Adjustable
Weight (mfr. supplied)	#28
Weight distribution (bk./ft.)	75/25 (5'9" rider)
Headtube Angle	58°
Frame/ Fork/ construction	6005-T5 alloy/Cro/Mo/TIG
Seat frame/material	Stainless steel/foam-nylon
Derailleurs (ft./rr.)	Sachs Centera/3x7
Shifters	Sachs Twist 21 spd.
Crankset	Dotek cold-forged 46-T.
Freewheel/ cassette	Shimano 11-28 7 spd.
Gear Inch Range	23-108
Brake (fr./rr.)	Chang-Star cantilever
Rear Wheel/ hub/rim/ spokes	20" Sachs/ Wein./ UCP/ 36°
Front Wheel/hub/rim/ spokes	16"/Sachs/ Wein./UCP/18°
Bottom Bracket/Headset	YST cart. sealed/Aheadset™
Paint/ colors	Red, Blue, Black, Violet
Suggested Retail Price	\$895

EASY RACER EZ-1 SPECS

Model	EZ-1
Designer	Gardner Martin—1994
Design/ Steering Type	CLWB ASS
Wheelbase	53"and 56"
Seat height/ recline angle	25"/70°
Weight (mfr. supplied)	#29
Weight distribution (bk./ft.)	70/30 (5'10" rider)
Headtube Angle	63°
Frame/ Fork/ construction	HiTen/CroMo/TIG
Seat frame/material	Alum./Foam/ Lycra
Derailleurs (ft./rr.)	Shimano Altus C50/ C10
Shifters	Shimano Thumbshifter 18 spd.
Crankset	SR SX 32/46/53
Freewheel/ cassette	13-28 6 spd.
Gear Inch Range	23-84
Brake (ft./rr.)	Dia Compe FSE/XC Pro Cantilever
Rear Wheel/ hub/rim/ spokes	20" Shim.Par./ Wein./ UCP/ 36°
Front Wheel/hub/rim/ spokes	16"/Sovos/ Wein./UCP/36°
Bottom Bracket/Headset	Shimano cart. sealed/YST
Paint/ colors	Powdercoat red/black
Suggested Retail Price	\$795 (\$99 upgrade 21 spd.)

For more information on the BikeE and EZ-1, contact:

BikeE
5460 SW Philomath Blvd.
Corvallis, OR 97333-1039
Ph#503-753-9747 or 1-800-231-3136
Fax#503-753-8005

Easy Racers
2891 Freedom Blvd.
Watsonville, CA 95019
Ph#408-722-9797
Email: Tooeasy@aol.com
Web page: <http://www.easyracers.com>

Both of these bikes have had complete road tests in past RCN issues. The BikeE—RCN#17 and the EZ-1—RCN#28 and originals are in stock.

MEASUREMENTS COMPARED

	BikeE	EZ-1
Handlebar width:	17.25"	22"
Seat Height::	25"	25"
Bottom Bracket Ht: 17"	15"	15"
Wheelbase:	52"	53/56"



¹ A proper fit (long frame for tall riders) is essential. We recently heard of a BikeE rider who is sitting behind the rear wheel due to his height. Be patient and get the right size bike. Any savings of time or money will not be worth the pain caused by a bike that does not fit you.

² The "Speed Wheel" upgrade consists of a Shimano freehub/cassette, wider range gearing and Grip Shifts, all improving the drivetrain performance.

³ We're fans of the sloping top tube recumbent design aspect. Whether its sloping up or down, this seems to solve design problems for bikes that have them, and create problems for those who don't. With the BikeE, a shorter riders seat height will be lower—thanks to the sloping top tube. Generally, seat horns are required on designs not utilizing the sloping top tube (hold you in the seat). BikeE is pretty secretive about this NASA-like, Temperfoam-like substance found under their non-removable seat cover. Here is an internet blurb on the subject, "Temperfoam is the material used in NASA space vehicles' couches. The foam will not rebound (you can drop an egg on the seat and it won't bounce). It is quite stiff but yields some as your body warms it up. It is quite expensive. This is the hot setup in experimental aircraft. You can buy this from one of the aircraft supply outfits: Aircraft Spruce (west coast) 1-800-824-1930, 1"x16"x18" PN 01-09310 \$21.80 each; Wick's Aircraft (east coast) 1-800-221-9425."—Scott Trepod.

Editors Note: We expect one or two new CLWB models into this hot new market for 1997. For more enthusiast oriented riders, consider the Rans Tailwind, a bike that offers the recently upgraded Rans seat (thicker foam) and dual 20" wheels for added performance. □



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View From The Big Chair: BikeE Zen



The 1996 BikeE—Photo courtesy of the BikeE Corp.

BikeE Zen by BJ Strass

My favorite book of all time is "Zen and the Art of Motorcycle Maintenance" by Robert Pirsig. Mr. Pirsig gives an unusually clear perspective of quality in our lives. He states the quality of an item is determined by its ability to complete or exceed the expectations for its assigned task, consistently. A shiny cover, glossy paint or flashiness of an object is not its true beauty. Often times simple rough items may have the greatest quality, and consequently, beauty because of their capabilities in usage. Usually the high quality items cost a lot more but sometimes they actually cost less because the hype and flash are left out and they typically last longer. I have always had a keen appreciation of simple, useful, quality items. Here are a few items I consider my treasures because of their quality; a Volkswagen Vanagon, a BMW motorcycle, a Phillips sound system and Craftsman tools. These are items that have given me exceptional quality and pleasure in use over time. This year I made a new addition to my "Treasures of Quality" the 1996 BikeE.

What's New?

Now let's look at the 1996 BikeE. The BikeE is an object of true beauty and quality. If I had to pick only one bike, of any type, to do everything, the BikeE would be it. I have owned BikeEs since their introduction. From the start I knew that the

BikeE would make a big stir in the industry. And to be totally truthful I am a bit jealous I did not come up with the BikeE design myself.

To consider the BikeE to be strange looking would be like calling the Space Shuttle ugly. Its beauty lies in its design and use. After all, how can someone consider one recumbent "macho" looking and another not. We are talking about recumbents here and after all recumbents are still considered to be the "Lunatic Fringe" of the bike industry. As for the BikeE the 1996 model has quite a few differences from the two prior models. The initial BikeE weighed in at around 35 lbs. The second model dropped down to a near even 30 lbs and now the newest edition is about 27 lbs (21 spd. is 28 pounds). The handling of the second and third models are nearly identical except for the weight difference and lots of little improvements and refinements. I do highly stress the word "refinement" when talking of the '96 BikeE.

Previous BikeE models used a nice rugged extrusion of 6000 series aluminum for the main frame with screwed on seat rails to allow the nice slide adjustment. This arrangement made for a nice strong simple monotube of billboard proportions but made it difficult to save weight. This is often a problem for a manufacturer/builder when design is dictated by "available materials." For the '96 model, BikeE adapted a costly update—a custom designed extrusion that allowed the seat rails to be an integral part of the frame tube and tai-

lored down the size and thickness to make a lighter frame. Also new is a more adjustable seat and CroMo front fork. The new seat has longer slide adjustment (due to the new extrusion), a separate angle/slide adjustment for the seat bottom and an angle adjustment for the seat back. The angle can be adjusted as well as the distance of the seat bottom in relation to the seat back. This is nice as none of us have the same size bottoms or depths of torso. The ability to center the seat correctly under the rider aids comfort greatly. The nice breathable mesh on the seat back has been extended to the seat bottom.

Also new is the front fork. The prior fork and headset was of an unusual offset design looking a bit like a fork off an antique motorcycle. The headset was a custom item using huge cartridge sealed bearings. The bearings were overkill on the BikeE as they were of the same type used in industrial engines and probably could last to the next Ice Age. This system worked well and generally proved to be rugged enough but had an odd look, was heavy and the stiffness of the fork made it unforgiving on rough roads. The new system is more traditional but maintains BikeE's high standards for ruggedness. The new fork also utilizes an extremely rugged but more common 1-1/4" threadless headset. This headset is the same found on high end mountain bikes and tandems and is more than tough enough for the BikeE. This new fork/headset system also proves to be more shock absorbing, lighter, and better looking.

While on the redesign board the frames rear profile was also changed. The extension of the frame which is over the rear wheel was altered in shape by trimming it at a sharper angle giving the bike a more streamlined appearance. This also helped in saving a bit of weight. Also there have been a few other minor, but nice refinements.

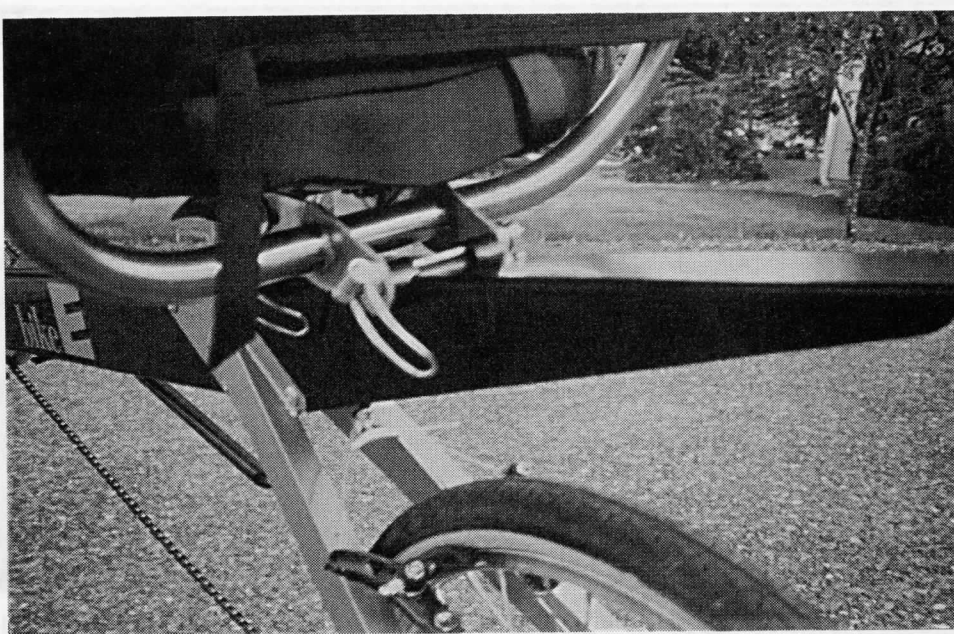
Riding The BikeE

When my new black BikeE arrived I had already started to miss my solid and reliable '95 model. Sure the '96 looked great and was lighter but would it perform and hold up to my near daily use? I was at first skeptical in regards to the stiffness of the new lighter, specially extruded frame but quickly found that no lack of rigidity could be found. In riding, the handling is basically identical to the '95 model except for the weight difference which was noticeable, particular on the front end. The front to rear balance of the bike felt better when I easily hoisted it on my shoulder to go up some steps. Probably it felt a bit faster due to the weight difference also but at my size this was minor.

I have probably put more miles on the BikeE than any other bike, and for me, the BikeE is the "Swiss Army Knife" of bicycles. I use it in commuting and recreational riding. I run errands and use it for giving my dog a run. It really is very versatile. Earlier this spring my wife and I took a short vacation to Las Vegas and took a couple of BikeEs ('95's) along. In busy Vegas they handled the heavy and erratic traffic on "The Strip" in stride. Really the BikeE is as happy in traffic as

an Army Hummer in a mud hole. Zipping along was easy and stressless. While there, we also drove out to Red Rocks. This beautiful scenic loop road winds steeply uphill for four miles and then rewards you with a sweeping nine mile downhill. The BikeEs handled the climb like a train on a mountain pass, chugging along in those nice low gears. On the backside they were smooth and stable at speeds up to 45 mph on the downhill.

Last year, Jean Seay, a friend and long time recumbent enthusiast completed a thousand kilometer tour of Northern Europe on her '95 BikeE. Prior to this she did most of her riding/touring on her Tour Easy. Why switch? The BikeE was easier to pack and required less disassembly. The wide range, easy shifting Sachs gearing was perfect for the varied terrain. The compactness and excellent manners made it great for maneuvering in tight European cities. Overall Jean says she loves the BikeE. After arriving back home she did make the addition of a '96 seat as she said the seat bottom needed an adjustment of which it was not capable. Jean still rides her Tour Easy but mostly just for club rides as it is a bit faster but for everything else she uses the BikeE.



My Gripes

I have been disappointed often by perceptions of the BikeE as a "Toy" or a bike only for beginners and non-serious riders. The fact is that the BikeE is a "very serious" bike with the best component selection and overall quality of any recumbent in its class and many costing a lot more. I have found better quality in the BikeE than many recumbents costing more than double its very reasonable \$795 starting list price. The BikeE is undoubtedly the most user friendly, versatile, and cost effective recumbent on the market today. You want to run to the video store, jump on the BikeE. You want to commute to work, jump on the BikeE. You want to make a day ride through the Napa Valley, jump on the BikeE. You want to tour across Europe, jump on the BikeE. Really it does most everything well.



Now The Bad News

With all of this raving about the BikeE I should go into the few things that could be considered drawbacks. Bad news? Not really. Personally, it is the name that most bothers me. I have never liked it and get many people referring to it as the "E-Bike," or just "Bike." I have always felt that such a great bike deserved a name that doesn't sound like a mispronunciation or stutter. Though the seat on the BikeE is really comfy it is not as large as many other recumbents and big riders will notice the difference on long rides. If you are a "heart rate watcher" and have the "need for speed" the BikeE may disappoint you. The BikeE is not a fast bike, but neither is it a slug. When asked to rate the speed of a BikeE, I usually compare it to a nice hybrid or touring bike. Speed is not its best feature but neither is it a part of its design.

As for things I would like to see changed I really have to start searching because I really consider the BikeE to be the most refined recumbent on the market. I dislike the fiberglass rod along the back of the seat used to tension the seat fabric. It looks cheap and is too flexible for strong riders.

The excellent underseat rack handles loaded panniers better than any other rack system but at \$70 it scares some people off. Though in standard form the BikeE will fit riders up to around 6'4" I recommend riders over 6' special order the "stretch" version which is around 4 inches longer and gives a better weight distribution. On my personal stretch 96 BikeE I have made a few changes. I immediately switched the rear tire from the 1.5" Haro to a higher pressure and more flat resistant Peregrine 1.75." The addition of a "Mirrycle" rear view mirror is a real necessity. To replace the fiberglass rod seat strut I custom made a chrome moly conversion alleviating the flex. I also special ordered the handlebars 2" wider to better clear my knees as I have long legs and my knees come up quite high. I leave the underseat rack equipped with medium sized panniers on the bike all the time. Though the Sachs 7 speed and 3x7 21 speed systems are excellent and extremely usable sys-

tems I have converted mine to the Sachs Super Seven 7 speed internal shifting hub in experimentation. It seems to work well on the bike and is effortless to use.

As for the future of BikeE they are expanding their markets internationally with good acceptance. Also they are working on a few variations I hear from the rumor mill. The Sachs Super Seven system and the yet to be released 12 speed (internal hub shifting) system may make their way to the public on the BikeE. There may be a tandem model soon. Just rest assured the gang at BikeE is continuing to look into the future and not resting on their laurels.

So if you have an appreciation of quality and refinement and whether you can afford one bike or a dozen bikes, own a BikeE. Like a "Swiss Army Knife" you will find it pleases you and will do a bit of everything.

Relax and Ride.....BJ ☐

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GTR 20/20 Touring Tricycle, suggested base retail price \$3,500 US

COMFORT ☺

Reynolds 531 seat frame; laid back with open weave mesh, and shock cord lacing.

"The most comfortable "chair" in my house." - Orlando Weibe, Winnipeg, Canada.

"Finished the "Great Eastern 1,000" event with no sore rear end or pain anywhere."

"The Greenspeed is definitely the machine to ride on long distance events." - Pete Gifford, North Clifton, England.

"It is fun to ride, incredibly comfortable and motorists give me more room than I used to get on my old bicycle." - Michael Payze, West Footscray, Australia.

SAFETY ☺

"For me the greatest benefit was the stability and the ease of handling." - Diane Eager, Canberra, Australia.

"The brakes are hooked up independently, but you can brake 100% on one side with no problem. It is certainly the most well-balanced trike I have tried. It seems to be impossible to lift up the rear wheel, and the turning radius is super tiny." Robert Bryant, USA

"The Greenspeed is great. You ride like on rails even when it's very icy." - Andreas Falschluger, Schwoich, Austria.

PERFORMANCE ☺

Low center of gravity, low frontal area, centre point steering.

"The sudden acceleration, light and positive steering, fast cornering and powerful braking are an experience not to be missed." - Jim McGurn, "Encycloepedia" 1993/4, U.K.

"The trike is beautiful. The design of your trike is the best I've seen. Boy is this thing low! And a blast to ride! I have never

experienced a trike with this good handling and super positive and light steering. The steering/front end geometry is fantastic, the best I've tried." - Robert Bryant, USA

"Universally there was great acclamation both for the performance and the construction." - Joe Blake, Perth, Australia.

ENGINEERING ☺

Cro Mo 4130 main frame, 90 ton steel axles, and sealed wheel bearings.

"As for the craftsmanship, the frame tubes are excellent, some are hand ovalized on only one end. The boom is exquisite. The frame with integral triangulated seat (as part of the frame) is a great design. It's stiff, but very light at the same time. The stiffness and strength of the seat, handle bars and all systems together seem to offer the durability (and gorgeous simplicity) that is missing from the other trikes." - Robert Bryant, USA

"What a marvellous life it was! Fourteen months, 206 riding days, 15,035kms. That was our ride around Australia. The Greenspeeds did not let us down once." - Val Wright & Eric Butcher, Ocean Grove, Australia.

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"The Greenspeed is an electrifying ride, making my sluggish body feel like a powerful engine." - Jim McGurn, "Encycloepedia" 1993/4, U.K.

"I will check the alignment but I think it (tyre wear) has been due to my inability to control myself on those corners! It is the best toy I have acquired." - Dr. Lincoln Brett, Perth, Western Australia.

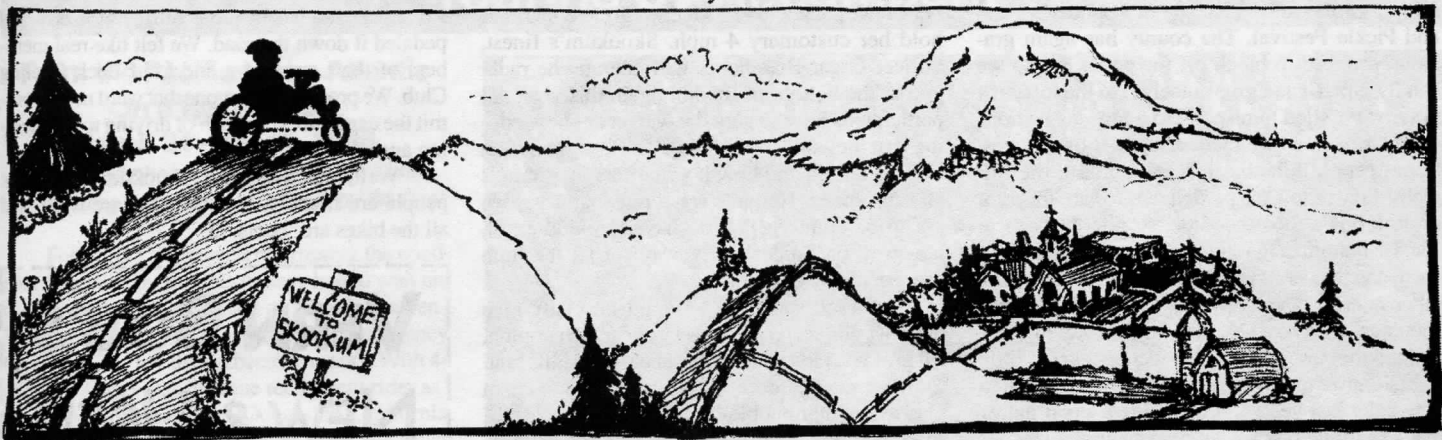
"The feeling of freedom and enjoyment I get when I am riding is amazing." - Philomena Macdonald, Box Hill, Australia.

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Well, as you know from the last issue of RCN (#34), my wife, Felicity, and I made our move from the hostile suburbs to the friendly countryside in order to escape from the ridicule and abuse that recumbent cyclists have heaped upon them. We chose the small, rural town of Skookum where I got a job as a high school teacher and my wife pursued her love of weaving. We both are recumbent enthusiasts and figured that we would be merely curiosities in this tiny town, but we were unprepared for what we found. We'd landed smack dab in a hot bed of recumbent activity. The pastor of the local church rode a low-slung European model, and many in his congregation had made not only a religious conversion but also a recumbent conversion as well if the number of 'bents in the church parking lot on Sundays was any indication. Sven, the proprietor of the local grocery store, had told us that recumbent interest was so high in Skookum that a club had been formed that met every Tuesday night in the church basement. Felicity and I had seen twelve or thirteen recumbents out and about on our rides in and around Skookum. We wanted to find out who these recumbent devotees were, so we resolved to attend our first meeting of THE LOW-DOWN AND LAID BACK CYCLING CLUB OF GREATER SKOOKUM. Let me tell you about that fateful evening.

We'd been in Skookum only two weeks, and we'd settled in to our little rental home on the outskirts of town. We'd seen an announcement on a 3x5 card on the bulletin board down at Sven's Stop'n'Shop encouraging any and all recumbent cyclists to attend the club meeting. We didn't quite know what we were getting into, but we thought we might find some kindred spirits there and possibly some riding companions. What could we lose? The meeting was at 7:30 PM, and, since we weren't sure what the light conditions were going to be at the end of the meeting, we decided to drive down to the church. We did put our bikes on our roof rack in case anyone had doubts about our recumbent credentials. We hopped in the car and drove down to the church. When we arrived, we were surprised. There were no cars in the parking lot.

"Are you sure we got the day and time right?" I asked Felicity as I looked for signs of life around the church.

"It is Tuesday and it is 7:25, but maybe it

was an old announcement on the bulletin board."

Just then a fully-faired, homebuilt recumbent whipped into the parking lot and pulled up next to us. The fairing appeared to be made of old refrigerator boxes bonded together with duct tape and rivets. The strange fairing was painted in an approximation of camouflage. The top of the fairing opened and out popped a bearded, helmeted rider who wore a "camo" fatigue jacket and pants. This guy was really "one with his bicycle."

"So you're the guys been flittin' around on those factory built. You here for the meeting?"

"Well, yeah," I said, "but there doesn't seem to be anybody here."

"No cars you mean?" Nobody drives to these meetings. It'd kinda be a sacrilege to drive to a cycling meeting, don't you think? They're probably all down in the basement already."

With that, our fatigued friend rolled his machine to the side door of the church, opened it, and began to descend into the basement. Before he disappeared completely, he stopped and gestured for us to come on down. We got out of the car and timidly walked down the stairs. Laughter and conversation were rising from the depths. We reached the bottom of the steps and looked around. There were nearly twenty people gathered there, and recumbent bikes ringed the room.

"I found these guys outside. They're the new folks who've been riding the 'pretty bikes' around town lately. I told you they'd show up sooner or later," the rider from the parking lot announced.

Everyone turned and stared. Felicity and I smiled meekly back.

"Hello. My name's Gern Fairing, and this is my wife, Felicity. We're new in Skookum. We've seen fleeting glimpses of some of you on our rides. We just couldn't believe there could be so many recumbents in this area. We just had to come and see what was up."

The place erupted in laughter and people greeted us right and left. Then an imposing man stepped in front of us.

"Good you could come. Pastor Bob Supine's the name. I passed you on the road the other day. Sorry I didn't slow down, but I was 'in a zone.' Kind of a Holy Spirit speed thing. We'll be starting in a few minutes. We've got some decisions to make, and we'll be talking about our annual Hunzicker Hill Gravity Drop. I see you met Ol' Fred already. Don't worry about him. He took to

wearing camouflage after the county police started to ticket him for exceeding posted speed limits on his 'bent. When he's not doing fifty, he's generally hiding in the brush avoiding prosecution. He's got a good heart, though, and can weld like a man possessed. Ol' Fred is always full of surprises."

Felicity and I glanced around the room. There was a curious mixture of people at the meeting. They wore more flannel than spandex. Felicity wasn't the only woman there, but still the men outnumbered the women about four to one. The recumbents included some factory built and a variety of homebuilts including Ol' Fred's "Camo Missile." Pastor Bob started the meeting.

"Remember we voted one week term limits for our club's presidents, and this is my week. Just want to welcome Gern and Felicity to our town and the Low-Down and Laid Back Cycling Club. We've got some things to decide before we move on to other business tonight. First, Madge Dinkler's got the two official T-shirt designs, and we've got to choose so Madge can start silk-screening them. Madge..."

A woman rose and stepped to the front. She held aloft T-shirt choice #1.

"Remember the slogan and design is only on the front because the back is just not a factor on a recumbent shirt. This design will be on high-visibility canary yellow, and you can see the design...a recumbent screaming downhill with the slogan, 'LOVE AT FIRST SIT....VIVA RECUMBENCY!'"

There was scattered applause indicating some support for design #1.

"Design #2 is my personal favorite. This'll be on neon green, again for visibility. Sorry Fred. If you wear this one, the cops will find you and ticket you for sure. Anyway, the design on this one is a contented 'bent rider seen head-on with the slogan underneath, 'ONE LESS LAWNCHAIR...VIVA RECUMBENCY!'"

The room broke into thunderous cheers and applause. Their choice was clear.

Madge broke in, "These'll be ready for Skookum's Founder Days and Pickle Festival in two weeks. Have your money ready next week. It'll be six bucks because the pickle factory will handle some of the cost if we put their logo on it somewhere. I don't want to be stuck for the bill, so it's going to be a no money...no shirtee kind of thing."

"Thanks Madge. Now remember folks, we'll be doing our now famous Hunzicker Hill Gravity Drop as a part of the Skookum Founder's Days and Pickle Festival. The county has again graciously agreed to block off the entire hill so we can fly down it and give ourselves to the forces of gravity. We tried to respond to a few suggestions from last year so we made a number of changes. Some people felt that just descending the hill really didn't allow the participants to earn the right to drop down the other side, so now the course starts at bottom of the slope, climbs to Hunzicker's crest, and then ends at the bottom of the hill on the other side. Also, we've always lined the downhill shoulders with hay bales, and a few of you complained that last year's bales were packed a little tight. Realize that Wayne Pringle just purchased a new baler last year, and the bales popped out of that like little grass bricks. Wayne apologizes for the several cases of straw rash at last year's drop but assures us that this year they are packed loose. He says that in the event of some untoward circumstance during your particular drop run, give yourself to the bales. He guarantees that it'll be like falling into your mother's arms.

Some laughter and applause filtered through the basement.

"There will be no divisions or categories this year. If it's got wheels and no motor and can be stopped by a hay bale, you're in. No pedaling is allowed on the downhill side. Gravity's got to do it all for you. Funny but recumbents make up most of the entries every year even though some of the high school kids have been making noises about street luge. Prizes will be awarded for the fastest speed measured at the bottom of the hill and also

for the slowest. Madge thought she was going to win the slowest prize last year, but she wore down her break pads with 150 feet to go and couldn't hold her customary 4 mph. Skookum's finest, Officer Oscar Breedlove, will operate the radar gun at the bottom of the hill again this year. All participants have to sign the waiver acknowledging that they understand the effects of gravity on sloping terrain and how it will affect their minds and machines. Helmets are a must, and you've got to be eighteen. We do have the kiddie hill, however, on Snider's driveway for all the little droppers. Any questions?"

Ol' Fred spoke up, "I don't normally give out my trade secrets, but, as last year's champion, I'll give you Hunzicker Hill wannabees a little hint. You can make a decent fairing out one of them plastic skylight bubbles. If you're interested, I'll show you how after the meeting. Added advantage is that it'll keep straw debris out of your eyes should you graze one of Wayne's bales."

"Thanks Fred. That's big of you. Anything else? Again a warm welcome to Gern and Felicity even though they did drive a car to this meeting. We all know they'll soon get over their dependence on fossil fuels," Pastor Bob said with a wink in our direction. "Next week Madge will serve her term as president. She promises a lively meeting with slides from last year's Gravity Drop. Also Ol' Fred has agreed to be our keynote speaker and tell us how he incorporates common household items into his homebuilt recumbents. That's about it for the formal meeting. Stick around, eat a few cookies, and try out a few of these machines."

Felicity and I met nearly everybody after the meeting as we chomped on cookies. We gradu-

ally gravitated up to the parking lot where everyone tried each other's bikes. It was the first time I'd ever crawled inside a refrigerator box and pedaled it down the road. We felt like real members of the Low-Down and Laid Back Cycling Club. We promised everyone that we'd never commit the cardinal cycling sin of driving to the meeting again.

Well, that's it from Skookum where the people are friendly, the shoulders are wide, and all the bikes are 'bents. □

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Touring by Recumbent

From the Pacific to the Atlantic On a Recumbent

March 24 - May 1, 1996

Article and photos courtesy of Jim Kellett
Bike building and editing assistance by Bill Cook

For years I'd dreamed of crossing the continent on a bicycle. But this fantasy had to wait until I retired, which happened on March 1, when I left the Federal Emergency Management Agency. On March 22, my dream became reality. With 44 other cyclists, I was the lone recumbent rider as I started pedaling east from Oceanside, California. Thirty-nine days and 2500 miles later, we rolled into St. Simons Island, Georgia.

Although this was, by far, my longest bicycle trip, I'd made one other extended tour. In 1993 my daughter and I rode from Portland, Maine, to Orlando, Florida, with the League of American Bicyclists' "Pedal for Power" group. On that trip, I rode an Infinity, which is a long wheelbase bike with underseat steering. For this tour, I chose another support organization, "Wandering Wheels," which I selected from ads in ADVENTURE CYCLING. I'm 60, and one attraction was that the participants on this ride were about my age. In this tour, the median age was in the mid-fifties; the two oldest were both 69.

As I prepared for this trip, I asked friends about what kind of bike I should consider. At lunch in Washington last fall with my good friend Bill Cook, of Falls Church, Virginia, he suggested that he'd be willing to build a bike for me. He had in mind a bike similar to the one he designed and had been riding for the past year. He loaned it to me to try out on a holiday trip to the south. But he made a mistake of showing a design that he was tinkering with. It was much lower to the ground than his own. I persuaded him to build the new design, even though he warned that it was untried. The new bike became the "Barcroft Trans-America," or *BTA*.

The Bicycle

The "Barcroft Trans-America" frame was built by Bill during the four days in January when the whole east coast was closed down because of the great blizzard of '96. Karen Rawls of Blue Ridge Schwinn in Winchester, Virginia, built the wheels. The BTA is a short wheelbase bike, although at 45 inches, the wheelbase is much longer than, say, a Vision or a V-Rex. It has above-seat steering with very short handles. The frame is cro-moly steel and is somewhat similar in overall concept to the P-38. The top tube, bent downwards at the head tube, is 1 inch diameter .035 tubing. The rest of the frame is 1-inch .028 tubing. The bike is fitted with a Rans seat, Blackburn rear carrier, Weinmann sidepull brakes, a 700c rear wheel and a 20-inch front wheel with a Kenda 20 x 1 3/8 inch tire. Initially, I specified a Sachs 3x7 hub in the rear with Sachs twist grip shifters. That would have eliminated the front derailleur. But I soon decided that I needed a broader range of gears, so we ended up with two chainwheels on



The Barcroft Trans-America MWB with Rans seat.

the front, a 36-tooth and a 40, giving a total of 42 speeds forward. The rear outside cluster is a 13-28. Overall weight is approximately 34 pounds.

The Route

We started in Oceanside, California, a suburb of San Diego, and biked to St. Simon's Island, Georgia, through southern California, Arizona, New Mexico, Louisiana, Mississippi, Alabama, and Georgia. The route took us through many small towns, but included the metropolitan areas of Phoenix; Dallas/Ft. Worth; Shreveport, Louisiana; Vicksburg, Mississippi; and Waycross, Georgia. That'll give you a rough idea of the course line.

The Statistics:

•Total Mileage.....	2,500.66
•Average Mileage per Day.....	72.18
•Average speed.....	13.82
•Days on road.....	39
•Days Actually Riding.....	35
•Longest Day (Brawley to Blythe, CA).....	97.10
•Shortest/Shortest Day (Alamogordo to Mayhill, NM).....	39.96
•Fastest Day (71.51 miles, Salome, AZ to Buckeye, AZ).....	22.1
•Vertical Feet Climbed Approximate.....	60,000
•Best Roads.....	Texas
•Worst Roads.....	Mississippi (ROUGH!!)

(Louisiana is close second)

Recumbent Reflections

There were a total of 44 starters on this coast-to-coast trip, including a staff which, depending

on how you defined staff, amounted to about half a dozen. This was the largest group this company—Wandering Wheels—had ever taken on this particular route.

My BTA was the only recumbent in the group. The company told me they had had recumbents before, but could not tell me what kind or even what style (e.g., LWB/ASS, etc.)! I'd called them earlier to make sure there would be no problems in transporting the machine, since part of the deal included their bringing it by truck from Upland, Indiana, to Los Angeles, and from Brunswick, Georgia to Atlanta. I was assured there would be "no problem."

The tour's mechanic (an excellent mechanic!) was a thirtysomething wife of the tour director. Although she was extremely knowledgeable about bicycles, she had and has an unshakable bias against recumbents—which did not change during the trip. At no time was her attitude really troublesome, but I was surprised that so knowledgeable a person had and retained so many of the myths about recumbents throughout the trip. However, because she was so respected by the tour members (and understandably so), her subliminal bias inhibited many from expressing any interest in the machine. For example, on more than one occasion when a "stranger" approached the group to ask a question about the "funny-looking bike," the mechanic would ignore me and immediately start answering the questions! Her major comment was that they were very slow climbing hills, heavy, and more comfortable—in that order. She once described recumbents as the automotive equivalent of "eighteen wheelers!" Another staff member's first question to me was, "So, do you

have back problems or something?" Only toward the end did some people sort of grudgingly express any interest in the machine.

On these tours, after a few days little cliques of people form, based on their performance, sex, personality, and other factors. These cliques usually ride together, and riding together is encouraged for safety and maintenance reasons. Because my pace was so irregular, I rode with a group only three out of the 35 days of riding; I'd usually ride solo, and sometimes moved from pack to pack during the day. Riding alone a lot probably didn't do a lot to promote dialog, since it made me appear a bit "standoffish".

And I was very slow climbing hills. In the west, there were very long stretches of very slight grades, maybe half a percent, 1 per cent—that ran for miles. I was surprised to discover that even these slight grades degraded my performance a lot. And when we did a major climb, like 4,000+ feet in 16 miles with no flats or downhill, I crawled up in my granny running about 3.5 - 4.0 mph, while wedgies easily moved past me doing about 6 - 10 mph. My no-wind dead flat "maximum cruise" speed (the speed I could maintain for more than an hour, probably about 75 percent maximum output) stabilized at 17.5 mph.

One thing that continues to amaze me is the disparity in cyclists' performance. You certainly can't tell who is going to be fast just by looking! One of the strongest, fastest riders in the tour was a 62-year-old retired paint factory owner, about 6 foot, 4 inches, and a real dynamo. He was paired with a 25-year-old recent med school graduate, and boy, could they fly. Age, weight, and general appearance are no indicator of how a person will ride a bike! The BTA and I were described by one rider, I think accurately, as "the last guy in the fast group." Riding a comfortable pace and stopping when I wanted to for touristy things, I generally got to the destination about one-third down in the overall group. It's important to remember that in this kind of ride, it's silly to "race," and most of the riders were certainly in no hurry, so we're talking about a comparison of tourist riders, not racers. One day near the end, however, I was not so interested in the places to stop, so pretty much kept up the pace and finished about 15 minutes ahead of the others. There was amazement and skepticism abounding! And this was after a month of riding together!

Which brings me to a very wild hypothesis—not a theory, but a hypothesis—about why so often I seem to encounter so much surprise, even something close to hostility, from cyclists who are stronger and more experienced than me. Anyhow, maybe it'll provide something to argue about for a few days. The hypothesis is that we're programmed by nature and evolution to evaluate certain postures in a certain way that's "violated" by recumbents. For example, we all know that wolves signal their place in the social hierarchy by their postures; the subordinate wolf exposing his neck, or rolling over on his back to indicate submission. The animal kingdom is full of examples of how various species demonstrate dominance or submission through posture. (A poster in my old agency suggested that "effective communication" was 50 percent posture, 30 percent voice tone and inflection, and 20 percent content!) Anyhow, I

think you're getting the drift of the hypothesis. Wedgie riders look aggressive and dominant—heads thrust forward, bodies poised as if ready to lunge. Here comes some dude clearly signaling submission: He's lying on his back, feet flailing around in front like a bug that can't turn over. The problem comes when the submissive signaler doesn't perform submissively! If the recumbent rider keeps up, or even doesn't fall behind badly, or, heaven forbid even runs faster, it signals "deception." This is confusing to the wedgie rider, and it generates mixed emotions that can border on hostility since at a hormonal level it appears to the wedgie that the recumbent rider must have "cheated."

Is There Any Such Thing as a Best Bike?

No. This was my second long tour. The first was the 1993 trip on my Infinity, a long wheel-base bike with underseat steering. This was on a shorter bike. In addition, I've done many one- or two-day trips over the last thirty or forty years on both wedgies and the Infinity.

I thought I'd reach some definitive conclusions on this tour about which kind of bike "I liked best", but I did not. Although these two bikes represent the extremes of recumbent design, each has its advantages and disadvantages. Once again, the stock answer to the person seeking information about what kind of bike to buy is "whatever you personally like."

The LWB/USS Infinity, which was equipped with a Zzipper fairing, had the advantage to the tourist of having lots of places to hang things. I found it convenient to have my camera, wallet, Halts can, and other miscellaneous little things readily accessible hanging on the fairing mounts or the top tube. Maybe the BTA will be equally "handy" when I fit a fairing to it. The LWB bike also was a bit easier to ride, not having the traditional "heel touch" problem of SWB bikes.

The SWB BTA is easier to transport than the Infinity, since it fits into a standard rooftop bike rack and can more easily be shipped by UPS. It also has a very comfortable seat, thanks to the Rans seat. This leads me to make the one "absolute statement" I'll probably ever make about recumbents. The Rans seat is by far the most comfortable seat of any bike I have ever ridden—and that includes the Lightning, Tour Easy, Linear, Vision, Horizon, Infinity, P-38, Presto, or Ryan. Hands down, the Rans seat is the most comfortable of them all.

Performance-wise, there's little difference. I really cannot tell any difference in hill climbing ability between the SWB and LWB bikes, although this observation is very subjective. In flats or downhill, they are also about the same, although my experience on the LWB Infinity has all been with a fairing and the SWB BTA does not have one yet. The bikes weigh about the same (34 lbs), and I think the SWB bike will be a trifle faster when it's faired.

The ASS BTA can *almost* be ridden hands-off, while I cannot on the USS Infinity at all hands off. (Other riders, by the way, have ridden the BTA hands off, so this may be a personal idiosyncrasy.) Many people (including me) will get puffy hands from riding a bike with underseat steering for long periods (e.g., 6-10 hours). It's a harmless condition (edema), caused by pooling of fluid

outside the cells. It's caused because the hands are the lowest part of the body for so long. The short-coupled ASS of the BTA is very comfortable and, of course, there's no swelling in the hands on a long ride. I found myself riding long stretches with one hand simply hanging over the handlebars.

Compared to wedgies, I am surprised once again to find it really is personal choice. My companions on both tours rode everything imaginable—tandems, racing bikes with one-inch sew-up tires, hybrids, graphite frames, aluminum frames, full suspensions, etc. But about a few things there is no real debate:

1. Recumbents are slow hill climbers.
2. There's not really much difference between 'bents and wedgies in OVER ALL speed on a tour.
3. The 'bents are VERY comfortable. I'm the only one on this last tour without a sore butt and who did not keep the Bag Balm people in business.

Personally, after all this experience, I remain convinced that the 'bent is an ideal touring bike, primarily because of its comfort. No, I'll go further: a 'bent is the ideal touring bike. Staying in the saddle for over 180 hours over 35 days on this last ride was proof positive that one can ENJOY the ride better without all the hassle a wedgie puts you through. But other riders, with different priorities on a tour than me, may well (and appropriately) prefer a wedgie.

Why Do This?

There is an old saying: I hear, and I forget; I see, and I remember; I do, and I understand. In Louisiana, I stopped for a Coke at a little country store where one of the natives and I discussed the reasons why a person would ride a bike from coast to coast. Early in the conversation, he asked how much I was getting paid for this. After fifteen minutes of talk, he remained unconvinced that I was actually paying someone else for the privilege! A major credibility gap.

I had nearly finished the ride before I discovered the best reason I'd never considered such an undertaking before. It's educational. Although I'm 60 years old, have three university degrees, have read something every day for over a half-century, visited every state in the Union (except Alaska and Hawaii) and several foreign countries on either business or for pleasure, and have (I thought) a good understanding of such basics as geography, economics, anthropology, American history, and politics, it took an "up close and personal" experience like this ride to actually understand this fantastic country we live in. I believe I now have a sense of this nation that nothing I had read or seen or studied for over a half-century had managed to convey.

I recall a story, maybe apocryphal, about Japanese prisoners of war during WWII who were transported by train from the west coast to a POW camp in the east. They remained convinced even after the war that the Americans had put them in a train and run it around in circles for several days because "no country was that big." Riding across the United States allows the terrain to change, slowly but very distinctly, at a pace that allows

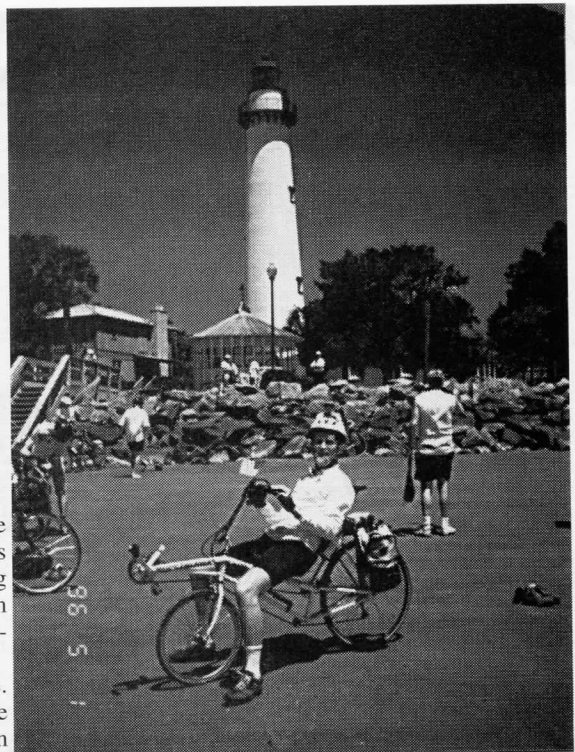


reflection and appreciation. This is really a big country. And so very, very different in its particulars.

It is also very hard to articulate what I'm thinking about. Perhaps in part because it is an example of the subtle difference between understanding and "wisdom." While I understand the difference between plains and mountains and basins and piedmonts, it is still a bit of a beautiful revelation to see how the people who inhabit these domains have different lives as a result. And how the politics and economics follow those different lives. To explain, I risk using cliches that don't carry the full message, like "there really are a lot of very poor people in this country, but they are not always unhappy." And for sure the priorities of the different cultures we shared time with are

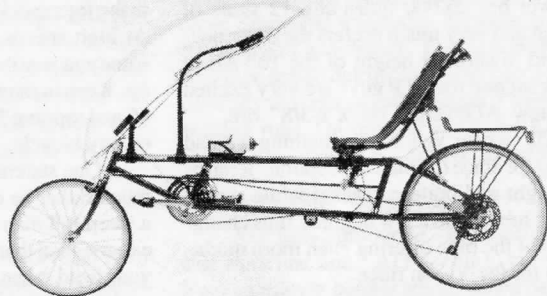
about as different as one can get! (Like the big church sign on a street in Texas proclaiming Clinton's sin concerning abortions located just a few miles from the strip mall lined with "adult" entertainment centers.)

Would I do this again? Maybe. Certainly not this same route, since the fun is in the discovery of new things. I'm still fascinated by the very small group (e.g., two or three) ride without sag support; I met one couple on their SECOND cross-continent tour, riding Tour-Easys and pulling Burleys loaded with EVERYTHING (including little boom-boxes playing books-on-tape while they rode!). They were in no hurry, and they expected to take three or four months to go from California to Washing-



ton, DC. Maybe something like that is in the future. One thing for sure: the biking across America is not as hard as it looks, and it's an experience like none other. □

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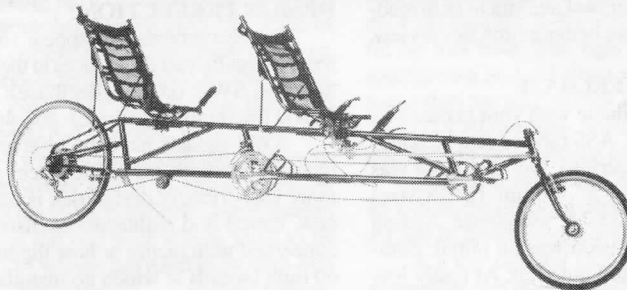
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Road Test: The ATP Vision R-44



by Robert J. Bryant

The top-of-the-line ATP Vision is the R-45 SWB. It's a featherlight CroMo 23.5 pound enthusiast SWB with one of the best factory component specs in the industry.

In an exceptional marketing move, ATP has brought this top-line R-45 frame to the masses with the more affordable R-44 spec which includes powdercoat paint and R-42 components. This makes for a value-added enthusiast package that has become a best seller during the '96 season.

With updates in fabrication tooling, the new seat and some hot new models, the '96 Visions are the best ever from this company on the recumbent-fast-track. If you are considering a Vision for the first time, your decision as to whether it's the bike for you will most likely depend on your ideas on wheelbase length, heel interference and ASS/USS steering considerations. All aspects that are hotly debated in recumbent circles. We've made our best attempt to help readers understand the issues better within this review.

WHEELS AND WHEELBASE

The R-44 is available with your choice of a 16" or 20" front wheel, ASS (above-seat steering) or USS (under-seat steering). Our test R-44 was equipped with a 20" x 1.5" 406mm¹ (BMX size) front wheel and has a 37.75" wheelbase. Adding the 20" wheel to the Vision was an initial compromise that has worked out well. At really low speeds the bike is a bit quirky and has some wheel/fork flop, though once you are cruising, the handling is fine. The steering geometry is not quite our ideal "slight oversteer" but it's close. The 20" Vision's borderline fork/wheel flop stems from

adding a 20" fork and wheel to a bike designed for a 16" wheel, though it's hard to criticize this as both Rans and Lightning vary wheel sizes on some models.

When asked my opinion, I feel the 20" wheel is an improvement and will be preferred by large/tall recumbent riders. I've always favored 20" front wheels when given a choice, though small/medium build riders often prefer the 16." ATP's Grant Bower has 25,000 miles and 12 years of SWB riding and very much prefers the more neutral feel and lower seat height of the 16" wheel version. Grant and the ATP guys are very excited about the new ATP/Primo 16" x 1-3/8" tire.

The 20" wheel Vision is something we had been asking for since the bike's inception. It raises the seat height and bottom bracket while reclining the head tube angle a few degrees, thus changing the feel of the bike offering even more modular choices for the Vision rider.

DESIGN PERFECTION?

For recumbents that appear so very similar, there are really vast differences in the design theory between SWB (short wheelbase): 33"-39" and MWB (medium wheelbase): 40"-46."

SWB models have the least amount of heel interference with the front wheel making for a more user-friendly design that is much better for new, casual and enthusiast cyclists who are not concerned with racing or how the bike handles at 40 mph (speeds at which no manufacturer would want you to ride anyway).

MWB recumbents stretch the wheelbase about 3"-7 inches,² which makes heel interference with your heel and the front wheel. Some riders feel that this improves high speed handling

(those speeds at which manufacturers really don't want you riding...), occasionally improving weight distribution and always making the bike a bit less user-friendly.

The bottom line is that you cannot obtain the perceived MWB benefits without heel interference which ultimately effects ease of ride-ability. Each rider must ask themselves what they really want to do with this bike, and whether the additional wheelbase is necessary.

So, here's is the scoop on SWB recumbent design. All designers start off with a list of design aspects, compromises if you will. The designers then sort the list according to their personal design priorities based on what they want from a given recumbent design.

When you choose each design aspect, it can effect other items on the list and this is how your bike begins to take shape. With this simplified formula, you can see how like-designs end up being so different.

For example, if you choose direct USS, it is difficult to have a wheelbase more than 38" long, otherwise the handlebars are too far away. Next, you choose your front wheel size. If you choose a 16", you can keep a low seat. If you choose 20" wheel, a low seat becomes more difficult (20" Vision seat height is +1.5" higher). Your wheelbase and front wheel size also dictates how much heel interference there will be with your design.

You can now see how ATP has come up with their idea of the optimum SWB recumbent. They found direct USS and the smallest amount of heel interference a very important design aspect. What you end up with is a user-friendly direct steering SWB. The R-44/45 are the ultimate version of ATP SWB perfection.

The Vision's short 36"-38" wheelbase can make for a quick maneuvering, quick feeling bike. At high speeds, the ride will be exhilarating to some and possibly a hair-raising experience to others. Keep in mind that speeds approaching 30, over 40 and topping 50 can be a hair raising experience on any bicycle.

One statement that's easy to make is that I'd much rather be on a Vision SWB speeding down a steep hill than any upright bike. Have you ever experienced that *deja'vu* feeling of going over on your head when going down a steep hill on your wedgie? It's nice to know that the odds of this happening on a recumbent are very remote.

R-44 FRAME

The 25.5 pound R-44 utilizes the petite and lightweight Vision R-45 frame.³ The frame has a smaller diameter 1.75" CroMo mainframe as compared to the R-40/42's 2" mild-steel frame section. The fork is also the same J & B CroMo, though the handlebar and stem are R-44/45 specific, lighter and more petite in design. The frame quality is excellent, and the workmanship is ATP spot-on predictable and looks great.

With the R-44/45, you are more in-touch with the road as the smaller diameter CroMo mainframe is livelier and more responsive. There is a bit of boom-flex (apparent on many monobeam SWB/

MWB bikes), more so than the R-40/42, though it only measured to about 1/2 inch and was only experienced climbing steep hills. Also during steep climbs we noticed the main-beam flex slightly under the seat,⁴ which can be expected from such a light responsive frame.⁵

WEIGHT DISTRIBUTION

ATP states that an R-44 Vision SWB with a 20" wheel has 50/50 (bk/ft) weight distribution (46/54 with a 16" wheel). This is down from 60 (front)/40 on our test bike in 1993. Since that time, the seat has been moved rearward with an additional seat mount to allow adequate clearance for the ASS option and the seat design has been updated. The 50/50 weight distribution is based on a 5'8" 165 pound rider with the seat in the rear position and the middle of the recline range. Keep in mind that the c.g. (center of gravity) on most recumbents will be at the riders belly-button.

THE ATP SEAT

The R-44 seat is the most comfortable seat we've tried this year. Sling mesh seats have proven themselves as the most comfortable for long distances. The mesh base suspends the rider, a foam cushion on the suspended mesh is icing on the cake. Along with the sling/mesh comfort, comes a slight performance drawback. It's really tough to develop the same level of power from a sling/mesh as you can get from a shell/foam seat.

The seat mounts via two quick releases, one at each end of the seat. This also makes for a variable seat recline, which has almost become expected on new recumbents these days. The ATP seat has a light and stiff top-quality aluminum frame. The new integrated foam pad and lower cross-section make the seat even more comfortable and easier to put your feet down.⁶

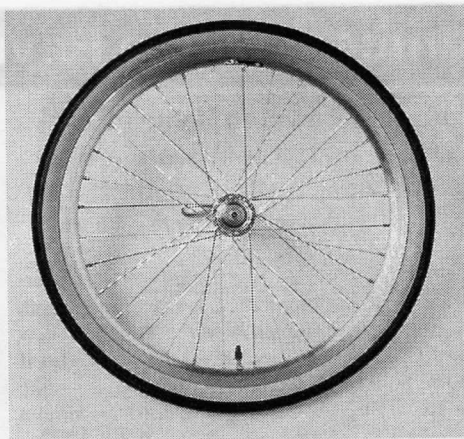
The only seat criticisms we can make are based on the quality of the mesh and seat cover material. Compared to the seats we've reviewed, the mesh quality is very good, though Haluzak and Presto owners like to think their "Sew What" brand seat mesh is better quality. That may be so, but it's our contention that the ATP seat has the comfort edge, though I plan on experimenting with different base-foam densities to dial-in the seat-base comfort even further.

USS STEERING

The USS direct steering handlebar and stem arrangement on the R-44 is different than that of the R-40/42. A tube is welded on to the back side of the fork and a custom ATP stem replaces the inverted/backward road bike stem found on the lower-line models. The new double clamp fork/stem (available on all models) arrangement holds the USS bars tight and keeps them from twisting.

The ATP USS works better than other SWB direct USS steering setups we've tried. The biggest complaint we get about USS in general relates to rider arm-reach to the bars and high-speed control. ATP offers the best adjustment of any SWB USS, though it's extremely important to take the time necessary to adjust the stem position and the tilt-angle of the bar.

My opinion is that USS takes more attention to the road. Greg Bower believes just the opposite and feels the direct USS connection offers opti-



The new ATP/Primo 16" x 1-3/8" tire that is optional on the R-44.

mum control. We both agreed that it may it may be more related to the individual riders learning curve which seems to be longer with USS. I've seen Greg ride and he has no problem with "attention to the road" on his R-44. ATP USS was designed to emulate the least stressful, most comfortable hands down-at-your-sides arm position and it shows.

The majority of Visions (90%) are delivered with USS, though the ASS is readily available. My only criticism of the ATP ASS is the height of the stem bolt which can be a bit close to the vital parts of the human anatomy. Some RCN readers have installed Haluzak ASS on Visions as well.

R-44 DRIVETRAIN

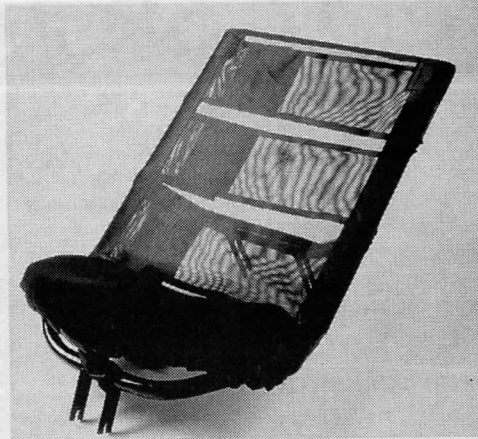
Our test R-44 was outfitted with a Shimano Deore LX rear derailleur, a SunTour XC Pro front, and a SunTour XC LTD crankset⁷. The drivetrain is shifted via SRAM Gripshift SRT 600 with KMC chain. The brakes stop well and in their day were Suntour's top-of-the-line. The bottom-bracket is a Curve cartridge sealed unit. The USS Vision has close chain-line tolerances between stays, cable housing and handlebars. The custom ATP brand cartridge sealed delrin chain idler carries the chain carefully through its path, though it's amazing that nothing rubs. On our test R-44, the KMC chain shifted fine, though it's not our favorite brand.

BRAKES AND WHEELS

ATP uses Suntour XC-Pro cantilever brakes that work just fine.⁷ ATP seems to have the SWB front cantilever hanger set-up down pat resulting in the best working front cantilever brakes of any SWB/MWB recumbent we've tried. We'd like to see ATP use a current model cantilever brake on the high end models, as the outdated XC Pro brakes are found on every ATP model from the \$995 R-40 to the \$3400 R-82 Double Vision.

The R-44 wheelset includes the trademark "no-dish" rear wheel which to some gives the appearance that the frame is built off-center, though don't let anyone tell you your wheels need to be rebuilt. The R-44 wheels are hand-built with Sun M14/CR16 32 hole rims with stainless spokes. The wheels work well and were true for the entire length of our test. They are a marked improvement over our R-40 wheelset, which had rim-ridges that you could feel every time you brake.

The R-44 comes with a 26" x 1" Ritchey Tom



The most comfortable seat we've tried this year is now standard on all ATP models.

Slick in the back and a 20" x 1.5 (406mm/BMX size) Kenda front tire which will soon be replaced by the Schwalbe City Marathon tire. The 16" version comes with the new ATP Primo 16" x 1-3/8" 90 psi tire⁸ which looks to be the best 16" tire in recumbent history.

OPTIONS

The ATP option list is extensive. ASS or USS, 16" or 20" front wheels. There is an excellent seat bag that slips over the top of the seat back. The chain guard is made of clear Lexan and seems to work well, though the one on our test bike had broken from being jammed into something and was noisy and clunky. We'd like to see a plastic "chain-tube" like that of the Greenspeed and BikeE. The ATP Zipper fairing has updated mounts that hold it down better and there is now a rain poncho for the wet Seattle winter months (...and wet spring, and wet summer and wet fall....). This fairing will work on other SWB recumbents as well, though it's not a guaranteed bolt-on.

PERFORMANCE

This light bike will be the fastest SWB around. R-40/42 riders will notice the difference in the light frame within ten feet. At 25.5 pounds, the R-44 is 3 pounds lighter than the R-42 and a full 4 pounds lighter than the R-40. The weight loss is noticeable in every aspect of the ride. On the flats, you can ride in a higher gear and you can power over small hills where you may have shifted down on your R-40. Higher average speeds are also maintained easier. On the downhills, the bike seemed quicker and in need of more attention to the road than the R-40. Hill climbing is wonderful on this bike. The light weight, limited heel interference and excellent rider ergonomics (BB lower than the seat) makes hill climbing a breeze. The USS allows easy breathing in a less restrictive cockpit as compared to ASS short bikes.

For SWB riders and ATP owners, the R-44/45 will be the ultimate performance upgrade. Add a Zipper fairing and this bike will be fast.

It's my opinion that the R-44/45 is not as aggressive and quite possibly not as fast as more performance oriented makes, though this may be it's strong suit—SWB performance with user-friendly ergonomics and without complication. If you're serious about speed and racing, you may want to consider a recumbent manufacturer with

ATP R-44 Road Test Continued

a race team and speed records.

In saying this, the Vision R-44 is no slouch, and we know riders who claim to eat Lightnings for breakfast with their R-45's. Performance generalizations are difficult to make and are highly dependent on the individual riders. With this in mind, our best advice is to ride one and find out for yourself.

RECOMMENDATIONS

ATP is attempting what no other recumbent company is—the mass marketing of SWB recumbent 100% through dealers. There is no doubt that the Vision line is getting better and more refined with each passing season. In getting up to speed, we have experienced some glitches in ATP's quality control, though the '96 models are the finest Vision's built to date. We do not recommend that readers buy this bike mail-order as it needs to be setup by a competent bike mechanic. This bike that appears so straight forward in design actually requires additional setup time by an experienced dealer to achieve optimum chain and boom length.

The R-44 spec is pretty good, as long as you don't mind the old stock Suntour parts. Our only recommended update is to change-out the chain to a Sachs Sedis. The R-45 offers one of the nicest component specs in our industry and is not a bad buy, even at \$500 more. ATP really backs up their products with an exceptional lifetime warranty on the frame, seat frame and fork.

SWB recumbents can be the most fun to ride and own. They are compact, easy to stow and haul around. They actually fit on most bike racks, though they are a bit wider than your road bike with the USS. The ATP bikes are also among the quickest handling recumbents made today thanks to their sub-38" wheelbase and Vision riders seem to prefer it this way. ATP's Joel Smith put it this way, "the bike is the sports car of recumbents." Greg Bower adds, "if you think the SWB is too quick, buy the Vision R-40/42 LWB." An excellent point.

One thing is for certain, the ATP bikes are the easiest to buy in North America. There are many dealers and modular variations of the Vision models. The optimum R-44/45 customer is probably average height and weight, or a Vision rider looking for the ultimate upgrade. Another application would be for the lightweight, shorter or lower-power rider looking for lightweight and user-friendly high performance. In saying all this, I should mention that there are many big and tall riders who love their Visions, including ATP's own Greg Bower who stands at 6'4" and graciously loaned us his R-44 test bike and gets five stars in road test participation.

With the new seat, upgrades in the way Visions are built and the unbeatable warranty, ATP is the most serious and committed recumbent manufacturer in North America. All of the company owners and employees ride and test the recumbents themselves and their livelihood depends on the successes of Vision recumbents.

The R-44 sells for \$1800 (US\$) and \$1825

Human Powered Vehicles CD-ROM Take a spin around the wide, wide world of recumbency

by Vinny Minchillo

If you're looking for a seamless user interface with jazzy graphics and lavish 16-bit sound, you may not like Human Powered Vehicles, a new CD-ROM compiled by Oliver Zechlin. But if you're hooked on recumbent compendiums like the RCN Buyer's Guide you can't live without this CD.

Human Powered Vehicles is a few hundred megabytes of photographs, movies, animation, audio files, computer programs and other digital odds and ends that cover practically every kind of human-powered conveyance on the planet. Look at pictures from your favorite events, compare your favorite types of recumbents and, best of all, see these machines in action.

As soon as you get the CD into your machine, go straight to the movies folder. The kinetic sculpture and hydrofoil wipe-out videos are a hoot, but the movie from International HPV Championships in Lelystad is the highlight. Over six and a half minutes of the most diverse collection of recumbents you've ever seen racing head-to-head, roaring around town and generally making a spectacle of themselves. This movie alone is worth the price of the CD.

As an added bonus, there's even a movie that shows a partially faired recumbent leading a peloton of uprights. Kind of gives you a warm feeling right there.

In compiling this disk, Zechlin appears to have gone to the ends of the earth to show us anything and everything human powered. There's great coverage of the recumbent bikes and trikes we all know and love, but also plenty of megabytes dedicated to one-off creations that are decidedly on the edge. Of course, which edge they're on is open to your interpretation.

In taking this everything-but-the-kitchen-sink approach, Zechlin does something wonderful for those of us who enjoy a good-natured bike argu-

ment. No matter what theories you may subscribe to, Zechlin includes some evidence to support your position. Front wheel drive, rear wheel steering, arm power, linear power, and one of my personal favorites, impossibly high bottom brackets - they're all in there. Argue it anyway you want, Oliver's there to back you up.

If you like your data served up on a shiny silver platter, this may not be your CD. Forget the slick graphical interface, this ain't Microsoft Encarta. When you start it up you're presented with tons of folders and then left to your own devices to find what's interesting. The exploring is fun and always fruitful, but still, we'd like to see some kind of search engine that could help us locate our favorite bikes. (Word is Zechlin is planning a more user-friendly interface for HPV-CD II which is in production now.)

One place the CD really shines is as a collection of word-of-mouth wisdom. Zechlin's CD contains some of the lesser-known, but more useful, pearls from the recumbent world. Homebuilders will love the shareware tube mitering program and you can't help but get sucked into the several years+ worth of mail from the Internet's HPV mailing list as you follow discussions on every subject from which 16? tire is fastest to ways to make your own fairing from old political candidate signs.

Running the HPV-CD requires patience and dedication, but riding a recumbent does, too. Opening the files themselves often requires patience and considerable fiddling, especially if you're running it on a Mac. But it can be done and, in the end, it's definitely worth the effort.

While it may not be the end-all of recumbent bike resources, Human Powered Vehicles is the most wide-ranging and interactive. So if you're ready for the wide, wide world of recumbents, load up Oliver Zechlin's CD-ROM and take it out for a spin.

Human Powered Vehicles CD-ROM, by Oliver Zechlin available through People Movers, ph#714/633-3663.

(ASS). The dream-spec R-45 is \$2320 and has the same frame.

For more information on ATP Vision Recumbents, contact your local dealer or Advanced Transportation Products, 952 Republican St., Seattle, WA 98109, Ph#206-467-0231 Fax#206-467-0175, Email: ATPVision@aol.com, Web Site:<http://cyclery.com/vision>

¹The fat front 1.5" 406mm tire is a good choice for the R-44. Keep in mind that if you change to a 451mm skinny 20" front wheel, your steering geometry will change and the handling will be faster, quicker and more advanced...though you will probably go faster.

²The Vision R-44 wheelbase is: 36" (16" ft. whl.) and 37.75" (20" ft. whl.). The Rans Rocket and V-Rex have a 40" wheelbase, and the Lightning P-38 has a 45" wheelbase. Heel interference generally occurs during low-speed pedaling turns and can even surprise the most seasoned rider.

³The R-44/45 frame weighs 7 pounds 1.5 oz. with the seat, seat mesh, seat struts, fork, and idler.

⁴To track the main-beam flex, we simulated it with a sit-flex test where we put pressure on the pedals while braking, standing still.

The main-beam does indeed arch slightly under the seat.

⁵If you are a big/strong/tall rider, you may want to opt for the stiffer R-42 frame, though benefits of the light R-45 frame will be noticeable for any size rider, especially when climbing steep hills.

⁶See RCN#34: tandems for more ATP seat info.

⁷The SunTour components are excellent quality, though now out-of-production.

⁸A 20" x 1-3/8" version of the Primo will be out in a taller 451mm size later this summer, though it changes the steering geometry and takes a different brake braze-on (not available from ATP).

Editors Note: Sometimes riders with "roadie" backgrounds place too much importance on gram-counting when they should be more concerned with aerodynamics. In my neighborhood, two local riders, Joe Kochanowski and Nick Hein are well-known for dusting wedgie-riders and expensive commercially built performance recumbents on their Kochanowski designed and built 90 pound, cardboard-faired, low racers. I pay attention and learn a lot from these guys.

Homebuilders Corner



Well, here it is... a kinda Vision... kinda Rans...

by Tony Licuanan

I've been cycling ever since I can remember. Growing up in the Philippines, my first bike was a BMX type cheapee though for me, it spelled *freedom*. Not only could I get from point A to B... but man, I went all over town with it. By the time I turned 12, I knew every part and everything about my bike.

But it didn't stop there. At age 14, I butchered the frame and fabricated a rear swing arm (of course with a lot of help from a local welder), and VIOLA!, I had just a hell of a time with it until I finally cracked the head tube, took a nasty spill and the frame had to go bye-bye.

Years went by and I had just about every kind of bike you could name but, it still kinda got boring. And about the comfort of a road bike, well you all know about that...

Then it happened! Seattle Bike Expo 1993, I made the mistake of trying out this funny looking bike called the BikeE. I thought it was just a toy but, the thing zipped me around the Seattle Center pretty good. I was impressed. I went to the Portland Bike Expo a month later to try it out again and possibly to buy it, when I came across the ATP Vision. Enough said, I placed two orders, one for me, the other one for my wife.

The Vision performed well for us on the '93 and '95 STP (Seattle to Portland). My recumbent bug is just getting started. I wanted to butcher one of our Visions but, I'm just too civilized for that. I figured, I'll just butcher some little kids' bike instead.

After months of careful thinking, planning, designing and redesigning, I finally settled on this design. A SWB ASS Vision-inspired-bike with suspension. Kind of like my old cheapee BMX—though this time with suspension—and not as cheap. Rick Gnehm, a frame builder for the Davidson bikes put the main frame together. Matt Houle, a frame builder/painter for the Rodriguez bikes did the boom and the paint.

The bike was completely assembled and was functional last February. I named it C.A.T., for "Clean Air Transportation." The first ride was on the Burke/Gilman trail in Seattle. The bike performed flawlessly and handled great. It is plenty fast even with the 3x7 Sachs and the supposed friction losses (from internal gearing). I used a Rans seat and to be honest, it is the most comfortable recumbent seat I've tried yet. The Marzochi



suspension is connected to a rear swing arm that holds the Rans seat and is adjustable via Schraeder air valve that is set up with the geometry of the bike to work only on big bumps. It's a suspended seat design and the frame stays in one piece. I'm not an engineer and I chose this design to make sure that there wouldn't be any pogo effect from the suspension. I used two 20" x 1-1/8" IRC Roadlite EX 100 psi tires just so I wouldn't have to carry different sized spare inner tubes. The caliper brakes from Dia Compe are somewhat weak, but they pull on the right side and do not interfere with the chain. (necessary on a SWB).

After a few hundred miles of getting soaked in cold NW rain, I purchased a front fairing from ATP, (I decided on ATP's fairing mainly because it hooks up really clean on the bike and that it doesn't taper too much on top like the Presto Zzipper). Not only did the fairing keep me warm and half dry, I felt that it helped increase my average speed up to an extra 2 mph. That's a lot of help for me. I'm not a strong rider and every bit of help counts. I was so impressed about this whole fairing deal that I purchased the new ATP Rain Poncho that attaches to it. This combo really keeps the rider warm and dry. Bravo Zulu to the ATP crew.

The last phase of testing that I would like to do with the bike is the STP. This 200 mile ride would prove to me that the bike is truly road worthy. I'm not judging this only by speed, but also with the overall comfort, ride and feel of the bike. Besides, I've always wanted to do the STP on my own homebuilt. And as far as the speed, the bike compares faster than my Vision R-40. My wife, a veteran Vision rider of 3 years, concurs.

Basically, I'm really happy with my C.A.T. But then again, I've already got another set of plans in my head for a CLWB or maybe a LWB, slightly lower than the Tour Easy though similar to the Rotator. Lately, I'm obsessed with all this fairing stuff—but that's a story for another time....

SACHS 3X7 TECH UPDATE

It was quite an accomplishment to finish the STP on my homebuilt. Mostly, the bike performed well. While it rained, the front fairing & poncho kept me warm and dry. The only thing I didn't like about the bike was the Sach's 3x7. I found the it to be great on bike trails or on quick commutes, however, the 3x7 does not replace the smoothness of the front derailleur. The Sachs just doesn't shift too well under load or while you're pedaling hard.

On bike trails the 3x7 seems to work out fine. The advantage of being able to shift coasting or while stopped is unmatched. Having without the front derailleur with the extra chainrings makes a cleaner bike and besides there's always something cool about internal hub gearing.

Q: So, is the 3x7 better than the conventional front derailleur set-up?

A: Almost, and it's a good try... however, this set-up still isn't as smooth as the norm. Sorry 3x7 users, but let's not be in denial. Try hammering up a short 1-mile Northwest hill. It gets clunky, stuck, and you would have to ease up on the pedals or back pedal a bit to make it shift. By this time, (now that you've lost your momentum with a few magi-

cal words thrown in the winds) all the cool things about the hub dissipates.

Other than the advantages of the 3x7 mentioned above, it still lacks the free-flowing changing of the gears, (uphills) and smoothness of the hub. It definitely has more friction. You may not feel this on short 15-mile quick bursts, but on 80-plus touring miles you'll definitely Notice the difference.

To conquer rolling hills on a recumbent, what I normally do is I go as fast as I can on the downhills to make the uphills as short as I can make them. This means you hammer on the downs until you run out of gears while counting on your hubs to propel you forward as smooth as possible, making the hills up ahead smaller and easier to climb!!! And, without friction to slow you down.

YEAH or NAY... just try spinning a 3x7 wheel beside a regular hub wheel. You'll notice the difference. □



C.A.T. SPECS

DESIGNER: Tony Licuanan
 WEIGHT: 30.5 pounds
 WHEELBASE: 36.5"
 SEAT HEIGHT: 22.5"

BB HEIGHT: 24"
 FRAME: CroMo
 FORK: CroMo
 SEAT: Rans

ASS: Vision
 WHEEL SIZE: 20" x 1-1/8"
 TIRES: IRC Roadlite EX
 BRAKES: Dia Compe



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Recumbent Tech: What I Learned About Knee Pain

by Richard Drdul
Email: drdul@mindlink.net

Towards the end of last year, my wife began experiencing mild knee pain while riding her recumbent, our upright tandem and her commuter bike. She went to see several doctors, including a couple of sports medicine specialists. It should have been no surprise to us that they all gave her conflicting advice. One doctor even wanted her to ride really hard for a few days so that her knee would become inflamed and he could better diagnose the problem!

Faced with dismal prospects for successful treatment at the hands of the medical profession, we decided to do it ourselves. We read a lot of books and magazines, solicited advice over the Internet and found one doctor who was helpful. I am pleased to report that six months after we began treating her knee, the pain is gone.

If cycling is as important to you as it is to me (after all, it *is* the reason we get out of bed in the morning, isn't it?), you'll want to keep your knees healthy. The reason I wrote this article is to pass on what I learned about knee pain from my wife's experience, and to describe what I'm doing to prevent knee problems. Of course, I'm no doctor, so don't rely on my advice alone — if you're experiencing knee pain, do the things I suggest *and* see a sports medicine doctor.

Treating and avoiding knee pain is simple. You shouldn't have to spend a lot of money or time on your knees. Basically, all you need is the right equipment, proper fit, a high cadence and strong leg muscles.

Pedals

More than any other piece of equipment on your bike, pedals have a big effect on your knees. The old runner's rule of thumb applies here — if a given joint hurts, the problem is at the next joint down. In this case, if your knees hurt, look at your feet.

If you're not using clipless pedals, you should be, if for no other reason than safety. Clipless pedals are essential on a recumbent — they prevent your foot from sliding off the pedal, which can lead to major embarrassment and/or injury when you run over your legs.

Don't run out and buy any old clipless pedals, though. Get pedals with *free* float, where your foot is free to rotate without resistance. Avoid sprung float, where your foot is pushed back to a "neutral" center position, and definitely avoid pedals with no float at all. I prefer Speedplay Frog pedals.

Set up your cleats so that the center of the cleat (usually where the screws are) is aligned with a line drawn between the widest parts of either side of your foot. Some recumbent riders prefer shifting the cleats back from this position so that the foot is farther forward on the pedal.

Cranks

The other piece of equipment which affects

your knees is your cranks, or more accurately, how long your cranks are. Most people ride cranks from 170mm to 175mm long. I wish I could describe how to figure out the correct length of cranks for yourself, but as I learn more and more about crank length, I become more and more confused.

Everyone has a different opinion and experience. I have heard from short people who find long cranks most comfortable, short people who prefer short cranks, tall people who ride short cranks to save their knees, and tall people who ride long cranks for more power. There are so many rules of thumb for determining crank length that I simply ignore them all.

My advice is that if you're not experiencing knee pain, leave your cranks as is and focus on all the other things you can do to prevent knee problems. If you are experiencing knee pain, try shorter cranks (start with cranks 5mm shorter).

For what it's worth, these are the crank lengths recommended by *Bicycling* magazine:

Inseam cm/inches	Crank Length
<74/<29	165 mm
74-80/29-31.5	170 mm
81-86/32-34	172.5 mm
87-93/34.5-36.5	175 mm
>93/37+	180 mm

Clothing

Keep your knees warm. I wear tights whenever the temperature is 15 degrees or less (that's 60 degrees for the metrically challenged). The reason is that if your skin becomes cold, the body responds by retaining blood in the core and reducing blood flow to the extremities—including your legs. Less blood in your muscles means that they can be strained and will fatigue easier, which increases the chance of damaging your knees.

Fit

Most people who ride upright bicycles have their seats set too low. This flexes the knees too much, putting too much stress on the kneecap area. Setting your seat to the proper position does a lot to prevent knee damage.

It's relatively easy to set the seat height on an upright (high enough without causing your hips to rock). It's more difficult to set seat position on a recumbent. My recommendation is that you position your seat so that your leg is bent about 20 degrees at maximum extension.

Don't set your seat position yourself. Simply pushing your leg out to maximum extension while you're stopped or coasting is not meaningful — your ankle bends at a different angle than when you're pedalling. The best way to determine your seat position is to have someone ride beside you as you pedal, observing the angle that your legs bend.

Once you've set your seat position, consider it a starting point. After you've ridden with your seat in this position for a while, try moving it back

slightly to see how it feels. You will probably find this feels better. Don't move your seat more than 2 or 3 mm at a time, however, so as to avoid straining your knees.

Spinning

When I made the transition from an upright to a recumbent, I had to learn to spin. Too often, I found myself bracing against the seat and pushing. If I had kept that up, my knees would have been mush in no time. And interestingly, the only time my wife still gets any twinges of knee pain is when she pushes hard against her seat trying to keep up with me (a recumbent tandem will fix that!).

If you don't already have one, get a computer with a cadence readout. I prefer the Avocet 45 because it's reliable and the wires are easy to splice if you need to lengthen them, which is usually the case on a 'bent. Practice spinning at 90 to 100 rpm. Make a conscious effort to gear down one or two gears and spin, rather than pushing along at 75 or 80 rpm.

And on a related note, don't over do it. Build your mileage gradually so that when it comes time for the first century of the season, you're ready for it. My wife's knee problem began after we did a double metric century (200 km). Before that, the most she had ridden in one day was 80 km.

Leg Muscles

Your knee is not like a ball-and-socket joint. Rather, the knee moves up and down in a groove in the kneecap (I'm avoiding using the correct medical names for all the parts of the knee because I've forgotten them, and you likely would too). The muscles in your legs hold the knee together, and position the knee in the groove. What this means is that if these muscles are weak, your knee is more likely to be pulled out of alignment and track incorrectly, leading to one of the major causes of knee pain.

There are a variety of simple exercises that you can do to strengthen the muscles which hold the knee in place. The best exercises are those which don't bend the knee, or which require the knee to bend only up to 20 degrees. Exercises which bend the knee a greater amount—such as squats, leg extensions and lunges—are safe to do if your knees are okay, but avoid them if you're experiencing knee pain.

Some exercises you can do to strengthen the important leg muscles are described below. Doing them all can take more than half an hour. I do them in front of the TV when I would be watching a show anyway, so that they don't require any additional time.

- Sit on a bench or chair. Extend one foot until the knee is straight, and hold the tension for 20 seconds to a minute. As your muscles become stronger, you can add ankle weights for greater tension. This exercise can be done almost anywhere (boring meetings are especially appropriate).

- Lie on your back on the floor with your legs together. Lift one leg about a foot off the floor, keeping the leg straight or bending the knee about 20 degrees. Hold it for ten seconds, then lower the leg to the floor. Immediately raise it again, hold for ten seconds, and lower. Do this ten times, then repeat it with the other leg. After a few weeks, this will become too easy, so you can add ankle weights (up to 5 kg or 10 pounds).

- Lie on your side, one leg on top of the other. Raise the leg on top a few inches, and hold it for five seconds. Raise it another few inches, and hold it another five seconds. Repeat four or five times until you've raised it as high as it can go. Then start lowering it a few inches at a time, each time holding it for five seconds. Now repeat this as many times as you can!

And the award for the all-time killer leg exercise goes to "dumbbell squats." If you're experiencing knee pain, don't try this one until your knee has healed.

- Start with no weights at all. Stand upright with your feet shoulder width apart. Slowly bend your knees and lower your body, keeping your back straight. Don't rock forward or backward on your feet. When your thighs reach a horizontal position, stop, and then straighten up.

- It's very important that you keep each knee aligned with the second toe on each foot. This causes the knee to track correctly in the knee cap. I find that doing these exercises in front of a full-length mirror helps.

- The first day, do three sets of eight repetitions (a total of 24 squats). The next day, do three sets of ten reps. Increase the number of reps by two every day until you're doing three sets of 20 reps on the seventh day.

- For the second week, speed up the squats as fast as you can. Start with three sets of eight reps, and increase it to three sets of 20 reps by the seventh day. Remember, keep each knee aligned above the second toe.

- For the third week, hold a 2.5 kg (5 pound)

dumbbell or similar weight in each hand. Start with three sets of eight reps, and increase it to three sets of 20 reps by the seventh day.

- For the fourth week, use 5 kg (10 pound) weights in each and. For the fifth and sixth weeks, use 7.5 kg and 10 kg (15 and 20 pound) weights.

- After the sixth week, follow a maintenance regime of three sets, 20 reps each using 10 kg (20 pound) weights, three days a week.

And don't forget to stretch! When I was younger, I rode all the time and never stretched my leg muscles. Now I'm 35, and if I don't stretch I'm in trouble — my leg muscles tighten up and I risk damaging them if I overdo it. Stretching your muscles before and after cycling keeps them limber, and helps keep your knees properly aligned while you pedal.

What To Do When Your Knee Hurts

If you do experience knee pain, ice your knee immediately. Don't ice it for longer than 15 minutes, however, as the blood vessels will actually begin to dilate in an attempt to warm the area back up. Remember, the idea in icing the knee is to constrict blood vessels and capillaries to reduce swelling. After 15 minutes, give the knee an hour to warm back up, and then ice it for another 15 minutes. And don't apply the ice directly to your skin — wrap ice cubes in a cloth.

Rest the knee. Stop cycling for a few days until the pain and any inflammation are gone. Avoid activities which might stress the knee, such as running, soccer and some weight lifting exercises. Then take it easy when you start cycling again, and be sure to spin your pedals at 90 rpm or more.

Some people are into non-steroidal anti-inflammatory drugs like aspirin and ibuprofen. I'm not, so I can't tell you anything about them.

A couple of people told me that they found a knee brace helped position the knee correctly. The brace they recommended is the "Original Cho-Pat Knee Strap." It's made of a soft, flexible material, about the size of a cigar. It fastens around the leg just below the knee cap with a hook-and-loop fastener. The brace costs \$13.50, and can be ordered from Cho-Pat Inc. at 1-800-221-1601, or PO Box 293, Hainesport, New Jersey 08036.

And most importantly, find yourself a good

sports medicine doctor. Ask lots of questions, and if you're not satisfied, find another. The best knee doctor in North America is Andrew Pruitt (Table Mesa Family Medicine, 805 S. Broadway, Boulder, Colorado).

And take heart in the fact that most people with knee problems are advised to ride a bike as part of their rehabilitative therapy.

Further Reading

A good reference I found for bicycle-related injuries is *Bicycling Medicine* by Arnie Baker. He's a physician in San Diego, and one-third of his medical practice is cyclists. He's been on *Bicycling* magazine's fitness board, is a medical consultant to the USCF and a Cat 1 racer, and apparently owns two recumbents! You can order the book from Argo Publishing, 1820 Washington Place, San Diego, CA 92103, and you can reach Arnie himself at ArnieBMD@aol.com.

Bicycling magazine regularly publishes articles on knee pain. Check out page 79 in the January 1995 issue, and page 76 in the September 1995 issue. I also got a freebie booklet a few years ago when I renewed my subscription (I know, I know — they don't like recumbents), entitled *Bicycling and Your Body*, which includes a chapter on knee pain.

Check your local library for books on knees and sports medicine books. We found several, most of which were way too technical, one which was too gory, and a couple which were just right.

□



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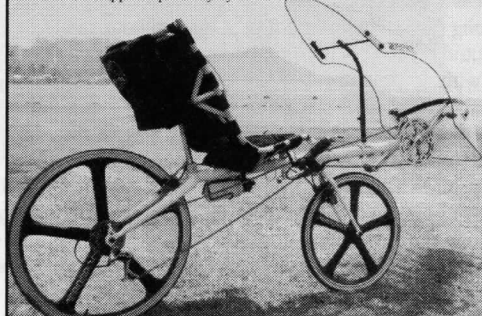
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Recumbent Tech: Zap Assisted Commuter

Story and photos by Dainuri Rott

My current commute is a flat 9.4 miles and 15 minutes by car.

The alternative, a hybrid electric/human powered vehicle made from an "off the shelf" Easy Racer Tour Easy recumbent and Zap electrical assist unit gets me the same distance in 25-30 minutes, for a fun, efficient, no shower commute.

Since the "standard" Zap rear drive unit was made for a mountain bike, a few changes were required to fit it to the Tour Easy. For the mountain bike, the unit hangs on the seat stays as shown in the pictures. On the Tour Easy, I substituted the seat brace aluminum "U" bar for the seat stays and hung the motor on this bar. But the "U" bar is not part of the frame, so I reinforced it with a couple of aluminum stays and an upright aluminum rod. You could probably get away without the two stays, but the upright rod is particularly important because it is a brace for the "L" angle piece on the motor which forces the motor against the tire for regenerative braking. On a mountain bike the standard battery bag is hung in the middle of the frame. I hung the batteries in the middle of the frame and put the relay unit (normally in the bag) underneath the seat. All of the control wires just barely reach the places they need to go.

A friend installed the exact same unit on his mountain bike and has a top "no pedal" speed of 17 or 18 miles per hour. The Super Zipper equipped recumbent (no body sock) will go 22 mph, which gives you a pretty good idea of how much additional efficiency you're getting.

The Zap assist came with one 18 Amp Hour battery and on my first commute trip, I thought this would be sufficient. The headwinds on the way home created enough additional drag, that I ran out of juice at the 7 mile mark. I now have two 18 Amp Hour batteries in parallel and at least twice the range as before. A big warning on lead acid gel cells—don't run them too far down because it seriously decreases the life of the battery, which is another reason I feel more comfortable with two batteries.

I am figuring on about 400 charges or 200 commutes which works out to .60 cents a day bat-



tery costs. Though you could probably ride in the rain, I will switch back to a car on wet days. It's not just the additional rain gear, but reduced braking and poor steering, plus danger associated with riding in the bike lane on Central Expressway where people drive too fast and sometimes confuse the road with a freeway.

An additional plus for the Zap unit and batteries is the great head light that plugs into the relay unit. This is the only bike light I have used that has illumination comparable to a car, which brings peace of mind when riding at night. The headlight will definitely cut down the overall range of the vehicle when in use.

This machine is definitely tuned for my flat 9.4 mile commute. Two cautionary notes: I do not think the performance is particularly good going up hills because of the additional weight on the bike. And tire wear is definitely accelerated but I have not been riding enough to estimate tire life.

The best part about these trips is having kids yell out, "Hey, cool bike" and going through quiet tree covered streets at a comfortable "no pedal" speed of 22 mph. The motor makes almost no sound when gliding through urban streets which makes for a silent and eco-friendly commute. □



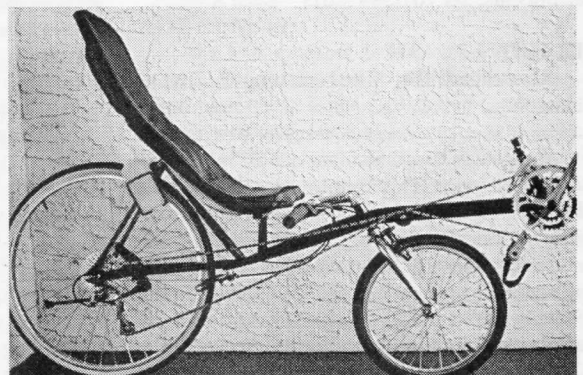
Editors Note: Zap has been unable to offer any help in kit selection for the proper fit to any given recumbent bike, which makes it necessary for the owner to do some speculation and experimentation. If you contact Zap, please let them know you read about their product in Recumbent Cyclist News. You can reach Zap Power Systems at 1-800-251-4555. Easy Racers can be reached at 408-722-9797.

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RECUMBENT NEWS & RUMORS

BENTECH TO OFFER NEW RECUMBENT DIY BUILDING PLANS

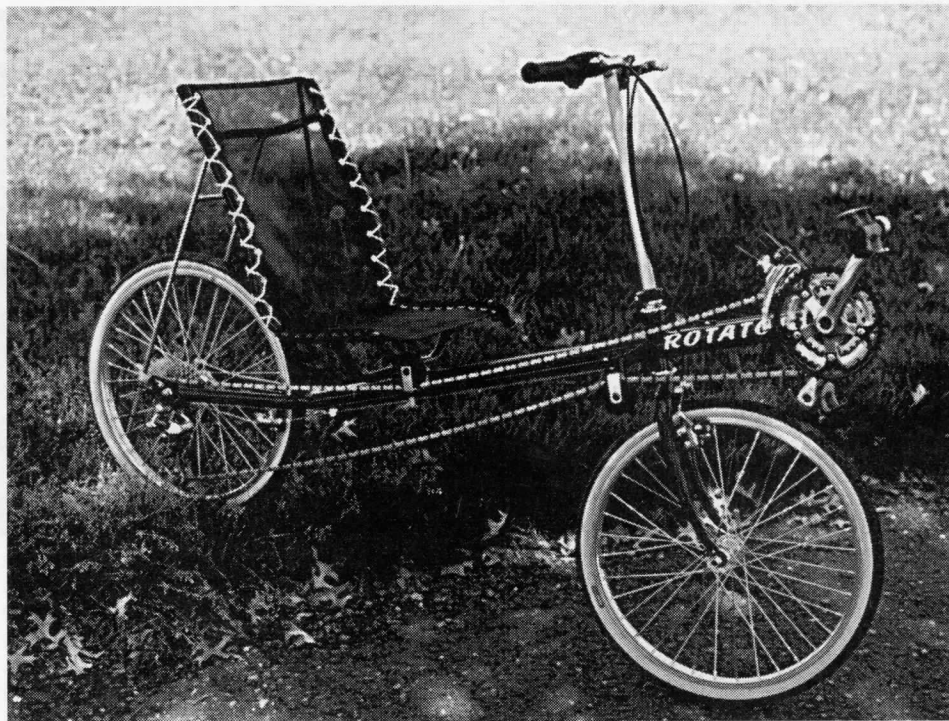
McKean, PA—To fill the need for SWB-MWB plans for the home builder, BENTECH introduces their DIY plans set. The DIY fills the gap among existing plans by virtue of its traditional medium wheel base (40"), monobeam design and 20" front wheel. The plans set is comprised of 3, D-size CAD drawings and a 12 page, fully illustrated, construction manual that guides the first time builder, step by step, through the process of building their own recumbent bicycle. The keystone of BENTECH's design philosophy is that the design be simple, functional and easy for anyone to build. To accomplish this, BENTECH has come up with plans for comprehensive welding jigs for seat and frame. The only tools necessary to build the DIY are basic woodworking tools, clamps, and a drill press. Tube bending and welding can be subcontracted out to professionals. Price of the DIY plans set is \$29.95 + 3.00 Shipping and handling. For additional information send e-mail to: domerie@aol.com or snail mail at: P.O. Box 198, McKean, PA 16426. Visit their web site at: <http://members.aol.com/domerie/bentech.htm/>

ROTATOR INTRODUCES MWB TIGER

Muir Beach, CA—The Rotator Tiger is the all new high performance design with a high bottom bracket and very laid back mesh seat with above seat steering. The Tiger has 20" wheels front and rear. The frame is a clean monotube design with a straight main tube running from the chainstays to the bottom bracket. The seat slides back and forth for adjustment (the bottom bracket does not slide). The wheelbase of the Tiger is 43." The seat height ranges from 17-20" depending on how far back the seat is and if it has 406 or 451mm wheels. The BB height is 26-27" depending on wheels used. The Tiger framesets has an aluminium seatframe, seat stays, and handlebars with integral stem and the seat back angle is adjustable. The frame is powdercoated black. The Tiger drivetrain has a 35 speed wide range gearing system (single chainring + 5 speed intermediate freewheel + 7 speed rear freewheel). A complete ready to ride Tiger weighs 28 pounds. The price for the frameset is \$950. Complete bike pricing for the Tiger is the same as the Rotator Pursuit and Interceptor. For more information, contact: Rotator Recumbents, Tel.707/539-4203—*Zach Kaplan*.

STEALTH UPDATE

Muir Beach, CA—The Lightning Stealth has undergone some changes since its original introduction in the Autumn of 1994. The first significant change was the availability of a 20" (406mm) front wheel option. This option uses a shorter head tube and longer fork blades. It increases the seat height by about one inch to 19" which is low compared with other 20" front wheeled recumbents. The standard tire used on the 20" Stealth is the Schwalbe 20" x 1.25" (32-406) though there is also plenty of fork clearance for the Avocet 20" x 1.75". The 20" front wheel has many advantages.



The 1996 Rotator Tiger—Photo courtesy of Rotator

It greatly improves stability of the bike and improves rough road performance. I can't ride the 16" Stealth no hands but can easily ride the 20" version no hands. The 20" wheel raises the bottom bracket and reclines the seat more for a given pedaling angle resulting in better aerodynamics. High quality, high pressure 406mm tires are much more readily available than 16" high pressure tires. This is particularly important in the event of emergency tyre failure while touring. In an emergency an inexpensive BMX 20" tire will fit the rim. I find riders 5'10" and above can easily put their feet flat on the ground with the 20" front wheel and highly recommend this option for taller riders. Most of the Stealths I have sold this year have had to 20" front wheel option.

The next change involved the seat mounts. Formerly the seat was bolted to the mounts via 4 bolts. This system has been replaced by Cateye clamps with thumb screws allowing the seat to be quickly removed and making seat adjustment easier. Regrettably the under seat mount which the seat clamps on to is still fastened to the main-frame with a hose-clamp. This clamp only needs to be adjusted for the initial for-aft seat adjustment. The Stealth is one of the few recumbents which has both a sliding seat and sliding boom.

The most recent change to the Stealth involves the frame itself. Formerly the boom tube was welded to the main tube at the head tube in such a way that ran horizontally, parallel to the ground. This allowed the bottom bracket to remain at the same height in relation to the seat regardless of extension. The problem with this configuration on a MWB was it prevented the BB from being slid farther back for shorter riders due to crank arm to tyre interference. To overcome this

problem the new Stealth frames have the boom tube welded so it is at a diagonal angle, almost the same angle the main tube is running at. This raises the bottom bracket 3/4" when it is all the way back and more so as it is extended forward. Crankarm interference is eliminated even with the 20" wheel option and heel interference at low speeds is reduced. The higher bottom bracket also provides for a more aerodynamic position—*Zach Kaplan*.

200 MPG RECUMBENT COMMUTER

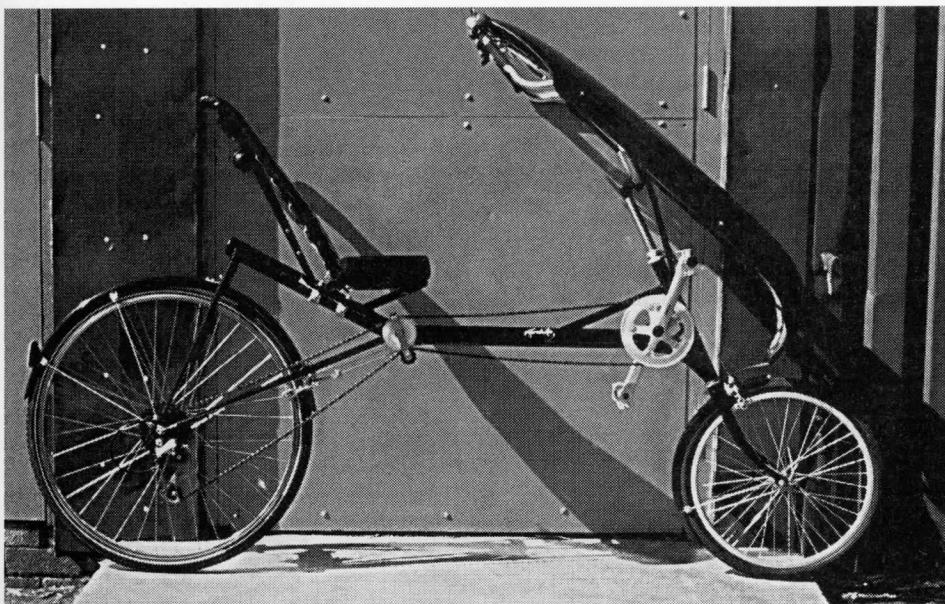
Billings, MT—N.I.C.E. Holding Company is pleased to announce production of an environmentally and health conscious auxiliary power supply that now retrofits recumbents. Successful, highly efficient, installs have been performed on ReBikes, ReTrikes, BikeE's, Ryan's models, et al. The patented auxiliary power device retrofits virtually any style of bicycle and many three and four wheeled human-powered vehicles.

Would-be bicyclists are no longer discouraged from using a recumbent for commuting because of hills, headwinds, or heat barriers. Recreational cruises can include a power assisted climb "to the top" allowing the pleasurable non-assisted downslope glide.

Senior citizens are able to exercise without the risk of over-exerting or overheating. Bicycling becomes stress free. The body always says, "Let's do it again tomorrow." Instead of, "Well, maybe."

College students and local commuters enjoy the fun and freedom offered. Statistics show the product saves time when compared to other popular forms of transportation.

Benefits include relief from traffic congestion and parking hassles. Other benefits are environmentally positive concerning wasteful fossil



Fool's Crow Cycle in Florida is the first Aerobike dealer in the USA—photo by Aerobike

fuel usage and pollution issues.

The product, called Dimension EDGE, rarely needs to be licensed, registered, or insured because the company worked with the DOT, CPSC, and many DMV's during developmental stages. It exceeds 200 mph and total kit weight is about 10 pounds. System includes interchangeable drive ratio's and all-weather/all-terrain applications.

Kits retail for between \$329 and \$450 depending on the application. Installation has been made easily using basic tools. No frame alterations necessary. Call 1-800-652-8495 for more information. See our web page at: <http://www.wtp.net/~edgekit>.

FOOLS CROW TO BE AEROBIKE DEALER

Tallahassee, FL—Fools Crow Cycles will soon have an AEROBIKE in stock. AEROBIKE is manufactured in Scotland. Its a CLWB/ASS bike w/rear suspension. It also has an integral fairing and underseat pannier racks. AEROBIKE can be seen in '96 Encyclopedia. It's a FINE riding bike, nicely designed and a very comfortable ride. Ed Deaton, Fools Crow Cycle Ph#904-224-4767. Email: edde@freenet.tlh.fl.us

TURNER PRODUCT UPDATE

Kent, WA—Milt Turner called to say that prices on some models have increased. The CroMo T-Lite frameset is \$725; the complete T-Lite is \$1250; and the Deluxe T-Lite is \$2195 and comes outfitted with Sachs New Success components, Ritchey and BOA brakes, a 26"/700c rear wheel with a 16" x 1-3/8" front wheel. Each Deluxe comes outfitted with a Vista 410 Lightning system, tail-light, kickstand, waterbottle cage and freight is paid. For more info on Turner Recumbents, Tel. 520/290-5646.

SR-1 BY RIDE-RITE AVAILABLE IN 1996

Veradale, WA—The SR-1 ADVANTA semi-recumbent bicycle will be manufactured by: RIDE-RITE Bicycles, Inc. in Bellevue, Washington, and available to the public this fall.

The superb riding position, adjustable seat, and agility of the original Advanta have been in-

corporated into the production design. The SR-1 will be of welded construction. Changeable-geometry bolted rear triangle construction is still available in custom bikes. Ride-Rite plans to feature the bolted rear construction on the bikes as future growth allows.

Production Ride-Rite Bicycles specs for the Advanta SR-1:

- Frame: 4130 CroMo fillet brazed construction fits riders 5'6" to 6'2"
- Wheelbase: 40"; seat height: 32"; bottom bracket height 24"
- Seat: Adjustable tilting back rest, Dual density foam padding, replaceable cover. 4130 steel and anodized aluminum frame.
- Wheels:(front) 16" x 1.75" alloy rim with Sachs drum brake and Duro 1.75" 75psi tire (rear) 26" x 1.5, alloy rim, Sachs 3x7 hub, Tioga City Slicker 90psi tire.
- Gear inch range: 26-112,
- Finish: Hammertone silver/black powder-coat
- Price: \$1495

For more information, contact: Ride-Rite Bicycles, Inc./AABC, 1408 S. Shamrock, Veradale, WA 99037. Fax 509-924-1029.

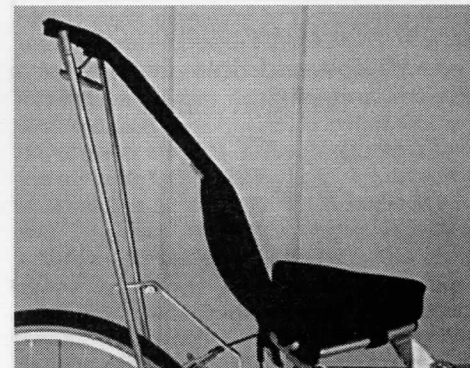
SPY™ MIRROR INTRODUCED

APTOS, California —During a race, nothing can deflate your spirit faster than being overtaken without warning. Confidence comes from being in control and that means knowing who's behind you. CycleAware has developed SPY, an adjustable rear view mirror for a variety of sports. The SPY sticks to the inside of your sunglasses where it's invisible to others. The tiny 3 mirror mounts with a ball and socket arrangement.

SPY is very simple to use. The base comes with an adhesive attached to it. For safety reasons, CycleAware has chosen to use a high quality, high impact mirror material that will not crack like a glass mirror. CycleAware's unique, patent pending design is compatible with a wide variety of eyewear designs and conforms closely to the lens of your eyewear so that your eyelashes will not hit the mirror.

First time users of SPY are surprised that it can provide such a wide angle of view without interfering with forward vision. While cyclists mainly use SPY to spot competition and traffic, they're also using SPY after they're done with their race or workout. "It's like having eyes in the back of your head," explains Lee Sharek, President of CycleAware.

Introductory Offer: SPY will be available in stores in the beginning of July for about \$10. For a limited time, CycleAware will be offering a Special "Buy One, Get One Free" Introductory Offer. To find a SPY retailer in your area, call CycleAware at 408-685-1115 or Email cycleaware@aol.com.



LINEAR TO OFFER NEW SEAT UPGRADE

Guttenberg, IA—Linear, Mfg. Inc has redesigned their seat for 1996. The new seat has a lumbar bend and a new seat mesh material. The big news is that Linear will take your old seat in trade for a new one. For more information, contact Linear at ph#319-252-1637.

LATE NOTES

Practical Innovations, Rick Horwitz reports that his high-end Zephyr trikes are no longer available. Production on the new Thunderbolt to coming along and it should be road-ready soon.

John Schlitter of **Rans** reports that the 1996 Response models are sold out and will not be produced in 1997.

Karl Ryan called to report that a very positive review of their DuPlex review has just come out in the latest issue of Tandem Magazine.

Jaroslav Belik wrote to say that he will no longer be fabricating any recumbent bicycles for sale. His company, including the patents and machinery is for sale, as are recumbent parts listed in the Belik catalog. For more information, fax to: 713/232-9007 or <http://www.ihpva.org/com/Belik>

HOT RUMOR!

We had a report several weeks ago by a former contract fabricator that the Counterpoint Presto and Triad jigs were picked up from the Seattle area location and rumored to be sold.

After doing some in depth detective work, RCN and Ace Reporter, Ron Schmid heard from several sources at CycleFest U.K. that the Counterpoint tooling and rights to the Presto and possibly the Presto Triad design were purchased by a well known bicycle manufacturer in England. At this time, nothing official has been announced. We will bring readers more information on this breaking story as it becomes available. □

Rotator Bicycles

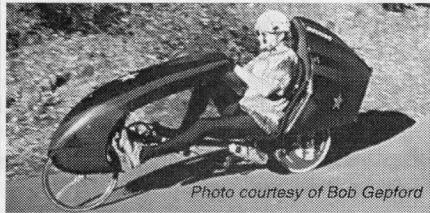


Photo courtesy of Bob Gepford

"WINNER" Production class
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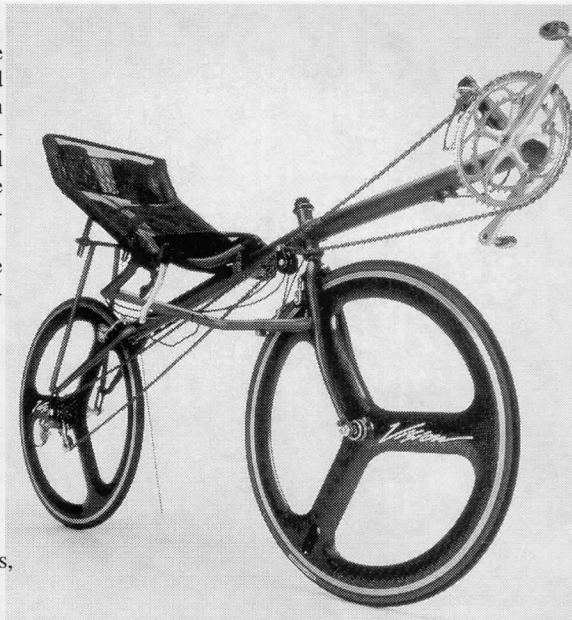
THE ATP SABRE

The ATP Sabre is a concept bike developed by ATP for research and design purposes. The idea was for an all-out speed machine with the geometry of a traditional road-racing bike and dual full size 26" wheels. The head tube angle, rake, trail and gearing are identical to that of a road bike.

ATP will show this concept bike in order to see if there is enough interest to put the bike into production.

The current specs are as follows:

- Wheelbase: 40"
- Seat height: 27"
- BB Height: 30.5"
- Weight: 24 lbs. w/ composite wheels, 22 lbs. with Titanium spokes wheels
- Wheelsize: 650C front and rear
- Brakes: Royal Gran Compe Sidepulls, front mounted on back of fork
- Drivetrain: Ultegra STI
- Price: Not Available
- All specifications subject to change.



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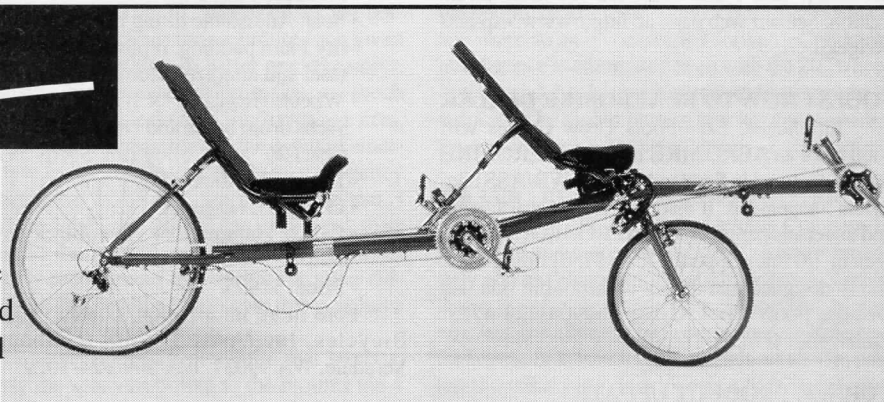
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Letters.....continued from page 5

the upright. I was able to ride pretty much everything else, with the exception of dropoffs (actually, I was too chicken to try them) and obstructions such as logs. Bunny hopping was a real problem too. Offroad recumbents work pretty well for cruising the woods, but don't expect to do any serious gonzo riding.

Bruce Boysen

CLIPLESS IN DATASPACE

Okay Dr. Bent:

You have convinced me I need clipless pedals for my Tour Easy. I have been using power grips, which require the same (I guess) twisting in and out; although I don't suspect one has to wiggle to get one's foot inserted properly. So to my question. On my last tour there were people with clipless pedals. It really sounded great with 6-7 people clicking in—like popcorn. One thing I noticed, they all looked like Dutch boys walking around with wooden shoes. Are there any shoes that allow one to walk like a human? It's not too great to walk into a church or hall on tour and go click-clacking down the aisle. Also, the people didn't look too comfortable walking around. So, what's your advice, oh great guru on the Zenbent?

Francis Celino

Francis, I recommend Shimano SPD (Shimano Pedaling Dynamics or something like that) and Look Moabs which are also recessed (not to be confused with Look road pedals). Other RCN reader fav's are the Speedplay's which have more knee float. You can also get an SPD that has a clipless on one side, and a platform on the other, though you get what you pay for and the SPD side is not as good as the higher-end stuff. SPD's have the cleats on both sides, so you are always close to clicking in (not all models). The '96 Bicycling buyers guide has a great component section. Just be sure to look for "Walkable" systems—Bob.

CARS STINK COMMENTS

Robert,

I read your editorial in RCN #34 with interest. You covered a lot of territory that I'd like to comment. In Europe, and the cities of the Eastern US, the traffic pattern made mass transit more possible. Trolley lines and subways could be built with direct lines from where people lived to where

people worked. The newer Western US cities are spread out into a mixture of neighborhoods and businesses. Mass transit has a more difficult time making routes that people can use.

As for the bicycle, I think an unexpected result of the mountain bike craze has happened. Yes, the mountain bike has opened up a whole new realm for the cyclist. But I think it has renewed the feeling of our motorist friends that bicycles should not exist on the public roads. After all, if one has a bicycle that can do it in the dirt, why in the heck do they want to ride on the road?!

Bike paths do the same thing. I've had many of my coworkers (non-bicyclist) mumble about how bicycles should stay on bike paths "where they belong." This gives us bike commuters a harder time, because the motorists mindset against bike commuters has been strengthened.... inadvertently by us.

We as recumbent riders need to make our presence known, as the better alternative to the upright bike. All two-wheeled HPV owners need to be aggressive in their staking a claim to a piece of the road. We don't need bike paths, we need clean smooth shoulders to ride on. The moment we separate ourselves from the motorist, that is when their mind clicks over to "look at that adult riding the toy." I believe that all bicyclists should try to commute to work at least once a week in order to train the motorist to accept and expect us on the roadway. It will help us all in the long run.

Keith Baker

STEALTH RESPONSE

Dear Robert,

Wow! Remind me never to tick off Robert Bryant! The description of the Lightning Stealth must be the first negative review I've read in RCN! I think even Milt Turner's designs come off better in your magazine! RCN would be pretty bland without opinions, but that piece sounded almost like a personal vendetta, other than that, RCN is fantastic.

Charles Brown
Clearwater, FL

Charles, RCN reviews will be tougher than in the past as sugar-coated reviews don't make bikes better or easier to purchase. The Stealth review was negative based on the quality of our test-bike and in comparing the Stealth to like models in one of the most hotly contested recumbent market seg-

ments. RCN test bike standards are well known by manufacturers, so the only surprises will be to those who send less than adequate examples. There is no vendetta here, we're just looking for some cooperation as getting test bikes and current information (product updates and especially buyers guide info) from Lightning is beyond difficult. A perfect example is the Stealth update in this issue which is not from Lightning, but a Lightning dealer—RJB.

V-BRAKE RESPONSE

Dear RCN,

I was intrigued by Mr. Scott's letter listing the potential defect in Shimano's V-Brake. Indeed, there is slight movement in the pads due to the parallelogram mechanism which ensures that the shoes will remain parallel to the rim. However, despite this movement, the brakes are easily modulated and very controllable, provided that the proper levers are used. Other things which concern me more than a millimeter of slop at the rim are items like adjustability and replaceability of parts. The V-brake has replaceable rubber which is held in with screws. If we're really concerned with safety, perhaps we should concentrate on actual performance rather than nit-picky theoretical concerns. Automobile caliper brakes have significant float at the rim, but when they are placed under load, this makes no difference whatsoever.

I dislike Shimano's planned obsolescence, limited component life-span and market dominance as much as anyone else. However, to give devils their due, the V-brake performs better and more predictably than any other cable activated brake that I have ever used, including the plethora of boutique brakes (IRD, McMahon, etc.) after which it was patterned. The direct in-out movement (which causes the slop which concerns Mr. Scott) ensures that the pads wear evenly and that hard braking will not force them under the rim.

Finally, Mr. Scott's dig at Biopace oval chainrings was uncalled for. Mr. Scott, more than just about anyone else, should recognize that innovation is risky and that sometimes a theory doesn't pan out.

Steve Close
Second Nature Bicycles
Eugene, OR □

Q: What do these things have in common?



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RCN Rider Calendar/Rider Group Listings

LOW-DOWN and LAID BACK Cycling Club of Greater Skookum (No Host Recumbent Ride)
September 7, Oct. 5, and Nov. 2 (rain cancels)
Pedal 20 miles RT from Lake Meridian in Kent, WA to the Black Diamond Bakery.
Kent, WA (Lake Meridian Park 9:30 am)
Contact: SASE to PO Box 58755, Renton, WA 98058.

Northbrook 100
September 7, 1996
Northbrook, IL
Contact: Sean Costin @ 708-468-1312

Interbike Anaheim International Bike Expo
September 19-22, 1996
Anaheim, CA
Contact: Interbike @ 714-376-6161

People Movers Open House and Ride to the Beach
September 21, 1996: 8am-5pm
980 N. Main, Orange CA.
Contact: Jim Wronski Ph#714-633-3663.

BikeE Bash
October 6, 1996: 9am
Sacramento, CA
Contact: BJ Strass @ 916/331-6550
Open to all recumbents and riders.

A Discussion of Modern Bicycle Recumbent Design
presented by the Low Down and Laid Back Recumbent Club /RCN
October 19th, 1996: 1pm
Kent, WA
For an info flyer send SASE to: RCN Talk, POB 58755, Renton, WA 98058

If you would like your event or rider group listed, please send it to RCN, POB 58755, Renton, WA 98058. Riders, please send an S.A.S.E. with any correspondence.

• **CHICAGO AREA RECUMBENT RIDERS:**
Meet 9:00am Sunday mornings (weather permitting) at the parking lot at the South end of the Caldwell Woods bike path. Contact: Joe Dickman at , Ph#312-725-0331.

• **COLORADO RIDERS:** Recumbent rider group forming for touring, racing, fun rides, exchanging information, etc. Rides could be arranged anywhere in the state. If interested, Steve Ph#719-546-1287, Email to: scarmel@smtgate.ssmc.noaa.gov

• **EASY RACERS:** Quarterly rides, ph#408-722-9797.

• **LASERR:** Loose Assemblage of SouthEast Recumbent Riders: Covering FL, GA, & AL. Sample newsletter, send SASE to LASERR, 1964 Forest Avenue, Daytona Beach, FL 32119-1591 Subscription \$5.00, payable to Fred Ungewitter. Info: 904-767-5768, fredu@america.com

• **LOS ANGELES RECUMBENT RIDERS:** Meet monthly, third Sunday, 10 am at Burton W. Chace Park, Mindanao Way, Marina Del Rey, CA. Contact: Chris Broom Email: pwtccb@is.arcom.com

• **Michigan HPV Assoc:** Linda Jayne, 45223 Cass Ave. Utica, MI 48317.

• **OREGON HUMAN POWERED VEHICLES:** Meetings rides and a bimonthly newsletter. Newsletter available. Dues \$10. OHPV, PO Box 614, Beaverton, OR 97075

• **LOW-DOWN and LAID BACK Cycling Club of Greater Skookum** Seattle/King County area Recumbent Riders & friends meet the first Saturday of the month at Lake Meridian Park in Kent, WA SASE to: PO Box 58755, Renton, WA 98058.

• **PEOPLE MOVERS/ ORANGE CO:** Monthly rides, Ph#714-633-3663.

• **SAN DIEGO RECUMBENT RIDERS:** William Volk, 2348 Lagoon View Drive, Cardiff CA 92007. PH#619-930-2323, Email: bill_volk@lightspan.com, Ride on last Sat. of the month, Mission Bay Visitors Center off of I-5.

• **WASHINGTON DC AREA: W.H.I.R.L.** (Washington's Happily Independent Recumbent Lovers) The folks meet at the Viers Mill Recreation Center. MD, north end of Beach Drive, Saturday morning, weather permitting, at 8am (9am after the clocks go back in the fall.) For more info contact: Vic Sussman at 301-897-5959 or vic@clark.net. To subscribe to the WHIRL mailing list, send email to majordomo@cycling.org. In the body of your message type SUBSCRIBE WHIRL

• **WESTERN WHEELERS:** Monthly Recumbent & HPV rides, every 3rd Sat. AM (April-Nov.) at Gunn HS in Palo Alto CA. Call Alvin Chin ph#415-571-5147 or Email: AlvinTChin@aol.com

• **WISIL HPVers (WI/IL):** Meets the last Sat. of each month. Contact: Len Brunkala, 260 S. Channing, Apt.#1, Elgin, IL, 60120-6619.

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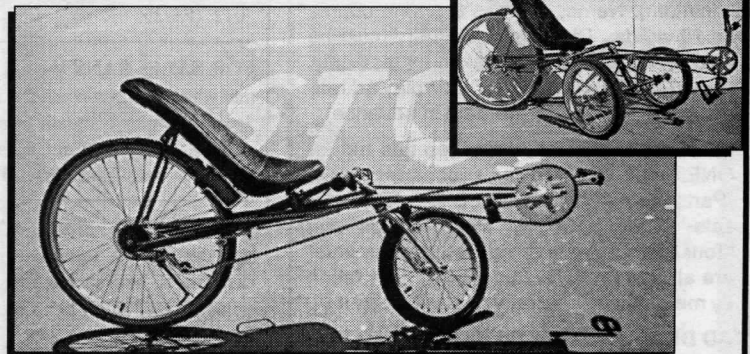
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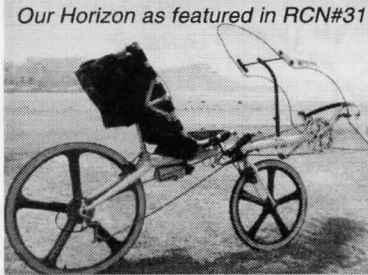
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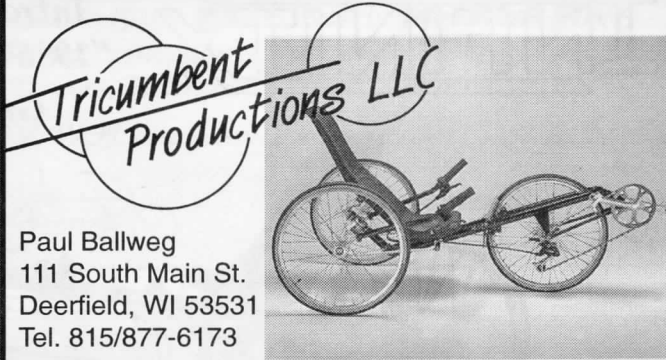
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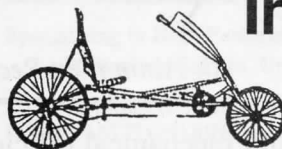


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THE RCN PRINTING SCHEDULE AND HOW IT WORKS

RCN is printed bimonthly on a six issue per year schedule. For the past three years, we've printed a double issue buyers guide that counts as two issues of your subscription. Here is the 1996 schedule:

RCN#31—Jan/Feb '96
 RCN#32—Mar/Apr/May '96*
 (double issue buyers guide)
 RCN#34—June/July '96
 RCN#35—Aug/Sept. '96
 RCN#36—Oct/Nov/Dec '96

*To date, RCN Buyers Guides have been double issues, they count as two issues of your RCN subscription and they have been mailed to subscribers who are active on the mailing date of the issue.

If you subscribed in January, this would be the extent of your six issue subscription. For 1997, we are considering a true six issue bimonthly schedule and making the buyers guide a separate product. This would take care of our Spring and Fall schedule lapses that are necessary with the double issue buyers guide being included in the schedule. If you have comments about this, please drop us an email at: DrRecumbnt@aol.com or leave us a voice mail at 206-630-7200.

RCN RENEWALS AND RENEWAL MAILINGS

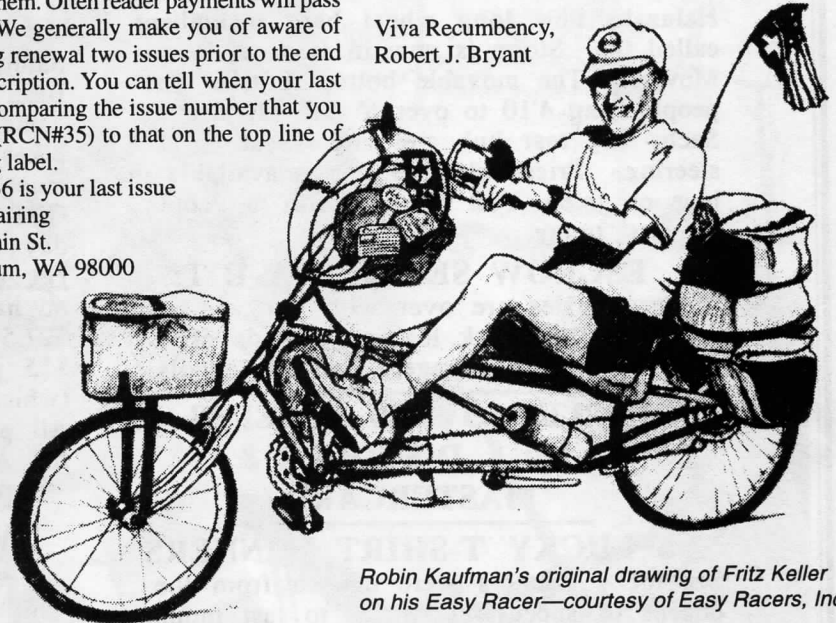
RCN Renewals are mailed 4-5 times per year via bulk/4th class mail. They are prepared a month in advance and can take five weeks to get to you, thus, they can be dated by ten weeks by the time you receive them. Often reader payments will pass in the mail. We generally make you of aware of your pending renewal two issues prior to the end of your subscription. You can tell when your last issue is by comparing the issue number that you are reading (RCN#35) to that on the top line of your mailing label.

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If you have any questions about your renewal or if you think we've made a mistake, drop us a note, email or voice mail at 206-630-7200. We'll send you a copy of your current label and explanation.

Your business and support of this publication is very much appreciated as we could not do survive without our valued readers.

Viva Recumbency,
 Robert J. Bryant



Robin Kaufman's original drawing of Fritz Keller on his Easy Racer—courtesy of Easy Racers, Inc.

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PEOPLE MOVERS NEWS

PepleMovrs@aol.com

HALUZAK LWB STORM ARRIVES

Haluzaks new long wheel base recumbent called the Storm is now in stock at People Movers. The movable bottom bracket fits people from 4'10 to over 6' tall. It has Sachs 3x7 rear hub and under seat steering. Priced at \$1395, it is available in blue or green. Test ride a Storm at People Movers today.

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Your worries are over with our win-win escrow. Don't risk losing hundreds of dollars to some stranger. Call for details.

PEOPLE MOVERS ACCEPTS VISA, DISCOVER & MASTERCARD

6 LUCKY T-SHIRT WINNERS

Six lucky winners were chosen from the dozens of successful entries to last months puzzle. They were: Greg Duvall, Larry Stegall, Josh Stegall, Steve Hanel, Roxie Wiley and Gerry Wiley. The correct answer to the puzzle was 6,060 feet!

AND MORE WINNERS.....

Successful entrants for the monthly contest featured in the '96 Buyers Guide are: George Watkins, Greg Raven, and Peter Mogk (twice). Keep the entries coming...we have a new winner every month.

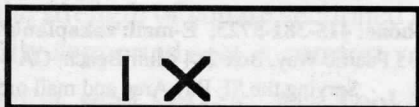
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 - NEW 21 SPEED BIKEE- \$769
 - NEW RANS STRATUS (SCRATCHED) \$1295
 - NEW STEALTH TANDEM (BUILD-UP) \$3195
- Sale ends Sept. 21, 1996

WIN A P.M. T-SHIRT

Solve the following puzzle and send your answer via U.S. Mail to People Movers. You may be one of 6 lucky winners! Entries must be received by Oct. 10th.

Directions: With a single line, in the diagram below, make a 6.



WIN A RECUMBENT! SIGN UP FOR BENT BASH '96

Saturday, Sept. 21st will be the date for Bent Bash '96. There will be a ride to the beach, games raffle, and live auction featuring bikes, trailers, fairings, cranksets and much more. All who register get a "SIT AND GET FIT" T-shirt, barbeque and drinks all day and are eligible to win a brand new recumbent. Manufacturers reps will be on hand to answer your questions. Cost is \$27.50 per person and \$50 per couple and \$15 per kid(under 18) for early registration (which has been extended thru 9-10-96). All profits from event go to The Foundation for Avancements in Breast Care.

PHIL WILNER HIGHLIGHTS VACATION WITH VISIT TO PEOPLE MOVERS!

Phil Wilner and his lovely wife Andrea made a 3000 mile visit to People Movers the focal point of their vacation this year. Phil said that he had been planning for this visit for six months and couldn't wait to get on a recumbent. He planned on riding all day long. Evidently, Phil hadn't waited quite long enough (or maybe he waited too long). Half way around the parking lot Phil took a spill and broke his ankle. Two days later he was out of the hospital and will hopefully get to ride in 8 to 10 weeks. We wish Phil a full and speedy recovery.

6 STOLEN BIKES STILL MISSING

A blue Lightning P-38 #733, blue BikeE #196272, red BikeE #19680, purple BikeE #19646, black BikeE #19601 and a red EZ1 #189 were the six bikes stolen from People Movers. A new Rans Rocket will be given for information leading to their return.

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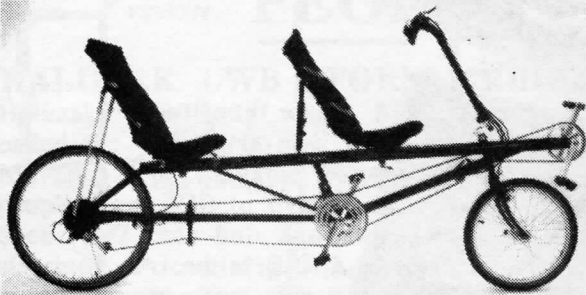


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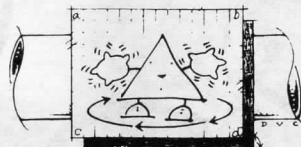
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Above: Gold Rush Replica with optional Aerospoke wheels.
Below: EZ-1

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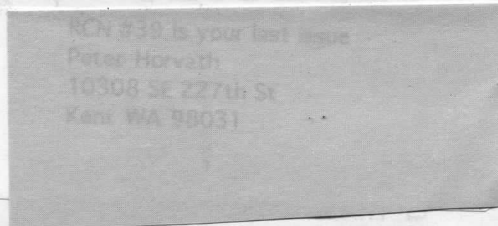
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