

RCN

RECUMBENT CYCLIST NEWS

RCN #31

The Planet's #1 Recumbent Source

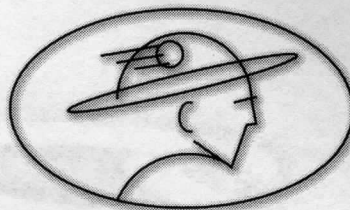
Jan/ Feb 1996



Editorial License

By Robert J. Bryant

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



Vision 20" Test Ride

On a brisk Saturday in late October, I crashed on my ATP Vision VR-40 20" test bike and fractured my tailbone.

I still have that pain in my hiney, although the I'm doing much better. Unfortunately, it's still painful when parked anywhere for more than 20 minutes. Thanks you to everyone who dropped me a line over the past few months.

ATP is the only recumbent manufacturer to use a standard road bike stem mounted in an almost inverted and nearly facing backward position. In a post accident inspection of our test bike by ATP, an expansion bolt problem was found. This allowed the stem to twist too easily and not hold tight. Whether this happened at the factory, or post-crash is now a moot point. ATP's bar/stem combo was designed to break away on impact (twist rather than break). For '96, ATP has added a redundant clamp system of a boom-style allen bolt to work in conjunction with the stem-expansion bolt on new Visions—a "double safe" measure.

I expect Vision 20" test bike #3 very soon and will continue efforts to bring a test to print.

RCN Pre-Ride Safety Check:

I feel that a few simple safety precautions are in order when preparing for a ride. I enlisted the help of Gardner Martin from Easy Racers and we've come up with a simple safety checklist that riders easily do in a few preride minutes:

RCN's PRERIDE SAFETY CHECK

- 1) Check all quick releases for tightness.
- 2) Check boom, stem bolt, seat mounts and stays for tightness.
- 3) Check fork and frame for stress/ fatigue cracks (fork: check back at weld joints); LWB: check head tube/ down tube; SWB: Head-tube, down tube, boom-tube and stays if unsupported; also check accessory mounts-as fenders can work as an unexpected emergency brake if they come loose.

4) Check headset for tightness (try to push fork back and forth).

5) Check wheels for broken/ loose spokes and parts that may infringe on the wheels.

6) Check bottom bracket for tightness (try to push crank arms in and out).

7) Check pedals for tightness (in crankset) and check clipless cleat bolts.

8) Check to make sure your brake pads are aligned and working properly.

9) Check tire pressure and inflate to correct/ and safe PSI.

10) Check drivetrain and brakes in the park ing lot before you start your ride.

BONUS: Wear a helmet, gloves and even crash-pads if your ride real fast.

NOTE: Bicycle frames do fatigue over time and miles. For riders who ride 10K per year (avg. road racer miles), forks should be replaced every two years. Chains, if kept clean, will last 2500 miles. Clean is a key word here. Also keep in mind that tried and true touring components are the most dependable, not the high-tech mountain-bike-racer-whizbang-technology.

Clipless Pedal Note

With ANY high bottom bracket recumbent you should consider clipless pedals as a safety option. If your feet are high, as they are on most SWB and some LWB recumbents, they can slip off the pedals and be pulled back under the bike. Once you get accustomed to being "clipped-in", clipless pedals will hold you in position and release when they need to and you will learn to naturally twist out of them. Riders will notice a performance benefit as well as it does take muscle to hold your feet out in front of you.

Safe Recumbents

I feel that all commercially available recumbents are safer than their upright "safety bike" counterparts. Going over on your head is not my idea of fun—which is something that frequently comes to mind when I am screaming down a hill on my wedgie at 30 mph.

Some recumbent designs are possibly more safe than others—and there are differing opinions and theories as to which is safer. Everybody will have their own thoughts and ideas on this subject. The final decision should be left up to the educated rider.

I recently asked David Gordon Wilson for some recumbent safety comments, he writes:

1. All recumbents go down suddenly. SWBs have some modes of going down that are additional to those for LWBs. I think that I've always gone down on a hip, which hurt like crazy, or forward on my hands for the SWB. Tailbone would be worse. I loved my very-SWB recumbent, then loved my Avatar 1000 more - SWB but slightly longer with pedal-wheel interference, so much so that I didn't want to switch to the LWB Avatar 2000. But now I'd hate to go back. I do think that the LWB is far safer. With a front-tire blowout, which is what I had in my last high-speed accident, one still goes down too fast to do anything sensible.

2. There is no doubt in my mind that my Avatar 1000 with its longer wheelbase was far safer than my ultrashort wheelbase Wilson-Wilkie II.

3. In regular wedgie races, a famous race official whose name I have forgotten used to go around to make sure that the steering bolt was tight. He said that it was the most crucial bolt on the bike. If you lose your handlebars you don't stand much of a chance on anything.—David Gordon Wilson.

Readers, be sure to complete our mini **READERS SURVEY** on page 25!

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RCN PUBLICATION INFORMATION

Publishers of Recumbent Cyclist News a sole-proprietorship in the state of Washington. Recumbent Cyclist News is 100% dedicated to promoting recumbent bicycles and providing and encouraging communications between HPV enthusiasts, home-builders, dealers and commercial manufacturers of recumbent bicycles. We are the only recumbent-specific news publication in the world today.

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RECUMBENT CYCLIST NEWS



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What's Coming Up!

Recumbent Cyclist News #32/33 is the 1996 Buyers' Guide. Things are changing fast as we get closer to the '96 riding season. Look for fewer recumbent manufacturers overall, with lots of new models and refinements. The 1996 RCN buyers' guide will be mailed during the first two weeks of April (standard subscribers allow 4 wks. to cross the USA). We will accept "Deluxe" upgrades (sale price \$35) as well as buyers' guide Priority Mail upgrades for \$3 (This will get your issue within 3 days of printing).

RCN#31 COVER: Lynn Miller's custom Haluzak Horizon in Honolulu, Hawaii—photo courtesy of Lynn Miller. Cover design and graphics by Mark Colliton, Kensington Heights Design.

The above photo courtesy of Gardner Martin, Easy Racers, Inc. Tandem riders: (Easy Racer-left) Jim Parissenti and Mia Begine-Parissenti, (Easy Racer-center) James Heth and friend Melanie, (Rotator-right) Steve Delaire and Chase Deacon. The Easy Racer tandems are experimental models and are not available for sale.



RECUMBENT MAIL



Send your cards, letters & photos to:
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Renton, WA, 98058-1755
Email DrRecumbnt@aol.com

Subj: Test Riding the Tricumbent Raven
From: CBRIDEOUT@aol.com

Dear Robert,

After reading the latest issue of RCN and the report on the stunning new 3 wheel recumbent cycle, called the Tricumbent. I noted that it was produced by Tricumbent Productions in Deerfield, Wisconsin, only 20 miles from Madison, and figured I could bip over and try it out while visiting my parents over the Christmas holidays. This is a very interesting machine—one wheel in front, with front wheel drive (Sachs 3x7 hub), 20" x 1/8" wheels all around, and steering which features both rear steering and banking toward the inside of the curve.

I called up Bill Mason, and also talked to his partner Paul Ballweg, and both said they would be on hand. My wife and I both tried out the machine on the snow (it worked well in up to 3" of snow) and on a plowed sidewalk and nearby parking lot.

The Tricumbent weighs in at 34 pounds, and is a great ride. When I started riding down the sidewalk I quickly got the idea, and sped up, easily keeping to the sidewalk. Both my wife and I found the three wheel stance very secure in the slippery conditions. Braking is with two cantilever brakes on the front wheel, which seemed to work well (I think I would opt for disk brakes on the two rear wheels in mountainous Colorado). The trike had an adjustable action on the steering, and kept on a straight line without any adjustments - you could even put your hands behind your head! I felt the steering should be set a little quicker, and was informed that it could be adjusted for a tighter steering circle. I wasn't using the Raven the way I normally would, since we were usually biking around in a relatively small parking lot. Bill had put on a knobby 20" x 1-3/8" front tire, which worked pretty well in the snow.

The trike is very clean in its design, and very adjustable (the seat can be moved to accommodate a shorter rider, although it is time consuming). A day pack can hang from the back of the seat, and I'm sure it would be great for pulling a trailer. It really moves, and has great acceleration. At \$2600 complete they also seem to be priced fairly.

Chet Rideout

See RCN#30 for Tricumbent contact information.

RECUMBENT POSTCARD MISSION

Greetings Mr. Bryant

Just thought I'd drop a few lines to you all. I just couldn't resist doing up a postcard from your recent magazine cover (In my business, I use a



Xerox 5775 color copier to make custom color postcards). I have also included my current postcard with pertinent information about recumbents and my particular one (a Vision). I hope you don't mind me passing info about you all around (actually, I just use the cards to hand out to bike and beach babes, I meet on the beach).

I have a recumbent PR suggestion as well as a 20" wheel Vision (recline bike) comment. As the holiday season arrives, why not get "Recline" bikes involved in local Holiday parades? I was in Pompano's (FL) unofficially last year waving to people until a motorcycle cop asked me what I was doing and chased me away from the parade!

On using the 20" wheel on my Vision R-40; I really like it a lot. Instead of the quick quirky steering effect, the 20" wheel smooths the steering out and really makes my bike feel like a LWB, with the option of SWB maneuverability! I highly recommend it!

Sincerely,

Kenneth Evans

Hi Ken, Thanks for the great RCN postcard! Your recumbent mission is becoming well known and is very much appreciated! For those readers who may be interested in having their own personal recumbent postcards made up, you can contact Ken at PO Box 699, Pompano Beach, FL 33061.

Subj: Linear is faster than my roadbike

From: DNKBENT@aol.com

Dear RCN,

It has been a year since I purchased a LWB, USS, Linear. During that time I have ridden it over 7,000 miles. This bike has been great! I have done normal maintenance, tires, chain and cables but I have had no breakdowns or problems. This bike has proven to be very rugged and trouble free. On the issue of speed the Linear is faster than my road bike, this is mostly because I ride my Linear four

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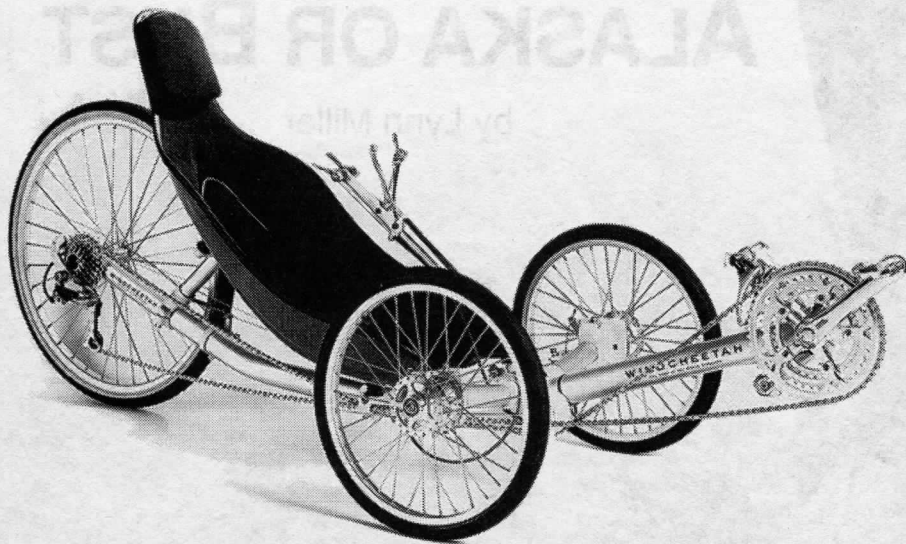
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The legendary Windcheetah

times further than I ever rode the upright bike. I did not buy the bike because of its folding ability but that ability has allowed me to take the bike on many trips. I have had great rides through parts of Colorado, along the Gulf of Mexico, around parts of the Lake of the Ozarks and through central Florida that I would not have taken if the bike hadn't easily fit in the back of the car with the rest of my luggage.

I have found that a 700c by 28 Continental tire on the rear with 120 psi and a IRC front tire at a 100 psi works great. I change tires every 2,500 miles or so and have yet to have a flat tire. I keep the pressure high and wipe them off after each ride. Velcro works great to hold the computer, dog spray, and heart monitor to the main beam. A 1/2 Camel Back attached behind the seat has worked better than a water bottle for me.

The Linear has been a great bike for me but more importantly recumbents are great, I ride far more now than ever before and enjoy it more. That is the point of any bike fun!

Dan Kellow

WANTED: SPEEDY KIT

Dear Dr. Recumbent,

I am trying to find out more information about the Windcheetah SL produced by Burroughs Engineering. I would love to get a set of plans for this Recumbent or even find out if anyone makes and sells them or if I could buy a used one (long shot!) Any info is appreciated. Even if you could point me in the right direction.

Thanks in advance,

John Poyser

John, the kit needed 40 hours of machining + components. They are no longer available. Windcheetah's go for about \$6000 and are listed in the RCN buyers guide with several other trikes. Unfortunately, it seems as though Windcheetah has lost it's North American distributor. You may want to check out the Greenspeed (RCN#30) and the Zephyr (RCN#29)—Robert.

Subj: Turner LaidBack 20"

From: millerr@huachuca-emh1.army.mil

Dear Robert,

I ride a Turner LaidBack. It has been modified to run a 20" front wheel and tire. I was having problems with high speed instability and decided to experiment. I mounted a 20" BMX fork, wheel and IRC Roadlite tire on the Bike. It didn't take me much time to decide that I really liked the new geometry and stability caused most likely by the new wheel and relaxed head tube angle. This bike flies with the new additions and it is very stable at speed. I have had the bike up to 47 mph with no shake, rattle, or roll.

The larger front wheel also caused the bottom bracket height to raise and the seat angle to decrease which gives me less wind resistance. I still have good hill climbing capability, and though I am not as quick up the hills as some of my roadie friends, I always have more fun getting up there, a fact which most of them have commented upon. Even when it hurts though I don't show it, preferring to whistle, sing, or just look around sight-seeing as if it all were a piece of cake. On the down-hills, the laid back geometry really allows me to fly and make up the speed that the uphill trek cost me. Every one who rides with me, envies me, but as yet I have not been able to convince anyone to shell out the duckyies for one like it. This as well as the fact that nobody in this area carries recumbent bicycles seems to be the main deterrent to getting people interested. Keep up the good work on the magazine.

Robert Miller
Cochise's lonely rider

FAIRING DEFROST

Dear RCN,

I am renewing my subscription in protest. Some time ago I sent a letter explaining my problem with my Zzip "windshield." In the process of buying the product, I told the manufacturer the main reason I wished to have it was to extend my

riding season into the late fall. When I used the Zzip in the cold weather, it spilled all of the cold air directly onto my face. The Zzip does add speed but in my case it certainly does not help with a cold Minnesota Fall.

Sincerely,
John Weber

John, I ride with a Zzipper fairing on my recumbent. It does makes rides in cold temperatures more comfortable and me warmer and drier. The air brushes the top of my helmet, cooling me just enough. I must say that how a Zzipper reacts will depend on: Zzipper model/ mount, bike type, bubble type (there can be more than one bubble for a fairing type), your height and possibly even the type of helmet used.

I asked Karl Abbe of Zzip Designs to respond to your comments:

In early 1993 I did the work for an Infinity rider developing two fairings attached to each other just to get him up to 13.1 mph—whew!

Enclosed is information from a response to a BikeE rider who asks the same question as Mr. Weber. I do want to emphasize the importance I place on customer response/feedback.

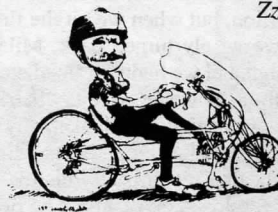
I manufacture the BikeE Super Zzipper to the specs set by them. BikeE R & D made some changes at the top of the fairing for the cut-out.

I could make the fairing with the rear 2" flange left on, this would give almost 3" vertical spacing that you request.

Some riders look through the fairing rather than over-the-top, which is incorrect. The rider's goggles and helmet should be a continuation of the aerodynamic surface. All of my fairings will adjust for height. The point being that in strong winds, the fairing should be lowered for maximum stability! Perhaps if you are tall a rider could benefit from extra material at the top of the fairing.

The most obvious and easiest after market solution would be to for us to supply an 'add on visor' for winter riding. I would make it so it attaches to pre-existing holes at the rear spreader bars. I will keep this in mind for future development.

Karl Abbe
Zzip Designs



Subject: 20" Vision front wheel

From: lepco@atw.fullfeed.com

Dear RCN,

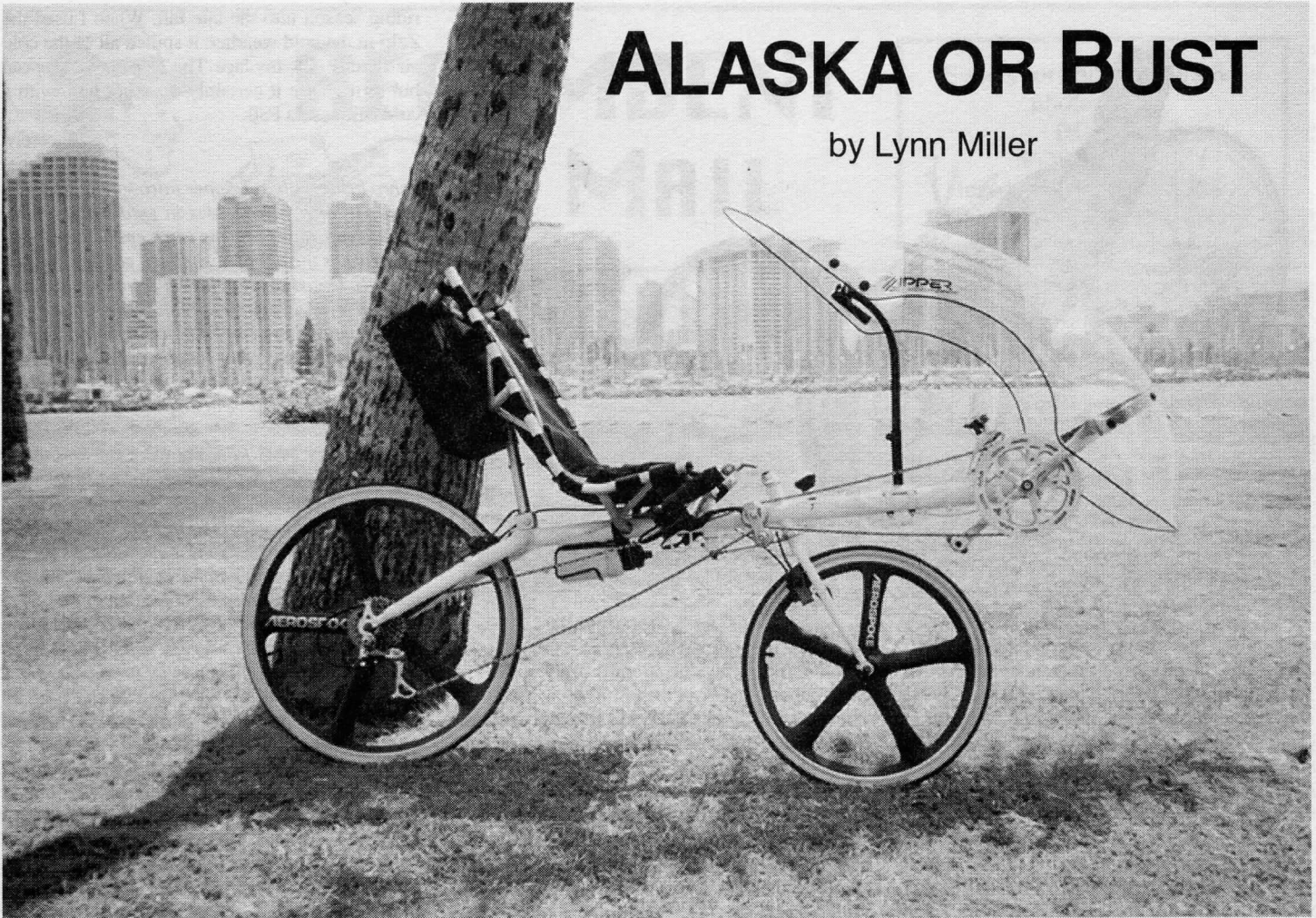
After talking with the Vision guys by phone, I was convinced to buy the 20" conversion for my R40 at a cost of \$210.00. Big mistake! I have re-installed the 16" wheel and now have the 20" conversion for sale—Any Offers???

I am 5'9" and the increased front wheel height it made it:

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ALASKA OR BUST

by Lynn Miller



Lynn Miller's custom Haluzak at home in Hawaii—photo by Lynn Miller

This trip to Alaska is the fulfillment of nearly two years of planning. My son Miles and I had done our first bicycle tour in Alaska two years earlier on a tandem, pulling a trailer. Miles was only thirteen at the time and we found out that we had bitten off more than we could chew. We completed a portion, but when we hit the first mountain pass, we wisely turned back. Miles wasn't strong enough and we hadn't trained enough.

This time, however, it was "Fairbanks Or Die". Miles was nearly as tall as me by now and this time we'd be riding recumbents. Miles would be riding my first recumbent which is a bright green Rans Stratus-A and I would be riding a canary yellow Haluzak Horizon, pulling that same two wheel Cycle-Tote trailer.

We flew from Honolulu into Seattle and assembled the bikes and trailer at the terminal. The stares we received as we were leaving were priceless. You would have thought that we had just flown in from Venus. During the course of the trip we got used to the attention.

We had a brief stop at Angle Lake Cyclery and then proceeded along the waterfront to catch a ferry to Bainbridge Island. The ride across Bainbridge and Whidbey island was beautiful and marred only by time pressure to reach Bellingham (and my road-rash). I learned during that 2.5 day

ride that I didn't want to be pulling that trailer all the way to Fairbanks. It caused too much drag and was a problem on narrow roads with car traffic. I sold it to a very helpful employee of a bike shop in Bellingham and purchased a rear rack and panniers. With everything from the trailer loaded on the back, the Horizon was unstable and dangerous. We cut our load to the bone and shipped home two boxes of extra stuff. With changes in the load position we were now ready.

We spent the next 2.5 days cruising up the inland passage—a highly recommended (and cheap) way to see it. Early on a Sunday morning, we arrived in Skagway, Alaska to begin our main ride. I didn't want to start off our ride by tackling White Pass, consequently, we took the scenic narrow gauge White Pass & Yukon Railroad to the top. After checking through the border station, we were off again. The ride down White Pass was what bicycle dreams are made of. It was cool, clear and down hill along the shores of beautiful Lake Bennet for mile after beautiful mile. We camped our first night in the Yukon Territory at Carcross (short for Caribou Crossing).

The next day dawned bright and clear. Here we were on our own at last. Just the two of us and an annoying shifting problem with the Rans. Our next stop was Whitehorse, the capital of the Yukon.

After doing the laundry and spending a relaxing night at a motel, we were off on the famed Klondike Highway. The vastness and distances between even roadhouses was daunting. With the nearly endless daylight, we could ride ten to twelve hours before reaching any civilization.

Everyone has heard stories of how rough the Alaska Highway is. We were apprehensive and took every opportunity to ask about the conditions ahead. Everything we heard was bad. The locals were saying that the road construction was the most extensive in recent memory—hundreds of miles of it. One couple on a motorcycle told us that of ten bikers in their group, seven had fallen. I talked to a long distance bicyclist who had been brought in by an ambulance from up Alaska Highway the way we were going. The next morning he was taking a bus into Whitehorse to a hospital. The rough road had shaken something loose inside, he said, and he was passing blood.

But, it was "Fairbanks or Die", so we set off the next morning onto the Alaska Highway. The scenery was spectacular with the Ruby range of snow capped mountains off to our left. We started the day with a 13 mile climb. By lunch time it was just "Die." We hit a long stretch of loose gravel and the Rans was all over the road. Since it is so lightly loaded on the front. It was nearly

had a lot of adventures besides the postcard-like beauty of the country. Such as the cow moose and her calf along side the road one evening, and the beaver ponds in other areas. We didn't see any bear and were just as glad we didn't. When we rolled into Alaska after another century ride, we hit smooth road for the first time in hundreds of miles. It was rolling blacktop with a few potholes, but it was pure heaven after what we had been through.

With a little over two hundred miles to Fairbanks, we were on a roll. I had been road hardened and felt like I could ride the rest of the way without even downshifting. Miles, however, due to being sick the week before we left, only got hardened up on the day before we reached Fairbanks. He had been laboring most of the way, and then started talking about going on to Anchorage. We camped that last night in Delta Junction. The next morning a wind had come up and there were dark clouds gathering in the distance. We broke camp quickly and took advantage of the strong tail-wind to really crank. We thought we'd beaten the rain until we got into the mountains and THE rain hit. We will forever remember THE RAIN—drops the size of marbles drowned us in minutes. I had on my rain suit jacket and riding shorts and was laughing like a fool—soaking wet. We pulled into a road house about fifty miles out of Fairbanks to eat and dry off. Miles was miserable. We ate heartily and spent a couple of hours waiting for the rain to let up. I went outside once to check on the sky when a bolt of lightning truck right behind the place. No way were we going out in that! After waiting longer and debating what to do, we took off again in a steady rain. All talk of extending the trip vanished. We just wanted to get the last fifty miles over with. We had envisioned

Continued on page 9

idea, however, easier said than done. We found that having a female along is a must if you need to hitch. They got out quickly. We couldn't beg, borrow or steal a ride. I even went so far as to try and charter a plane—nothing! After a day and a half of trying everything and feeling quite sorry for ourselves, we did the only thing we could do.

The owner of the Burwash Landing Lodge who looked like Grizzly Adams' grandfather assured us that the construction was intermittent and we could make it. Fortified by his assurances, we set off again and he was right. Fortunately, there were long stretches of decent roads in between the construction zones. There were huge road construction trucks throwing large rocks in a few places. Luckily, we were able to ride in the pilot vehicles through most of it. Needless to say, we



uncontrollable. We tried shifting the load, but nothing helped. With the prospect of worse road ahead, we stopped for lunch and a palaver. I wanted to get within viewing distance of Kluanne Lake, which is the newest of the Canadian National Parks. I unloaded my bike and rode about three miles alone. It was beautiful and downhill a good share of the way. The construction ended after a mile. I decided that we were "Big Dogs" and big dogs don't quit—we pushed on.

After only a mile, disaster struck. The gear cluster on the Rans fell apart. I had put on a Shimano XTR which is held together by a bunch of little screws. The screws had rattled loose on the rough roads and fallen out. There we were, 165 miles one way and 500 the other way from the nearest bike shop. The big dogs weren't barking quite so loud now. We were able to limp into Kluane Lake. The first place we came to was a combination garage and helicopter flightseeing tour operator. I got the cluster off and found that it was being held together by one screw, and since the parts are very specialized, finding replacements was out of the question. The nearest parts were probably in the lower-48. I had read "The Alaska Bicycle Touring Guide" by Pete Praetorius like it was a Bible, so I had brought some wire, zip ties, and tape. Shifting on the Rans was now even more problematical. We switched to friction mode which helped. I managed to wire the gears back in place and we were off again.

We enjoyed a beautiful ride around Kluane Lake, stopping at Sheep mountain to see the Dall Sheep. we had the best hamburger I had ever tasted at the Bayshore Motel. We rode off into the sunset to Destruction Bay. That's where seemingly insurmountable problems arose.

We simply were not prepared for the roughness of the road. It had been recently graded in preparation for re-surfacing and was like hard pack dirt with large stones all over the place. It was rough enough on the Haluzak but a nightmare for the Rans. A couple of upright bikes we met were going to hitch a ride into Tok and eliminate the worst of it. We thought that sounded like a good



The Ultimate High Speed Touring Machine

By Lynn Miller

The first time I saw a picture of the "Horizon" by Haluzak I knew that this would be my next bike. I already had a Rans Stratus-A long wheel base that I was very happy with. I had been looking at the short-wheelbase recumbents for a while, but none of them looked quite right. Like a lot of other recumbent riders I had a few very nice "old fashioned" diamond frame bikes just hanging on the back porch with the tires flat from lack of use. One mountain bike in particular was haunting me. During my gonzo mountain bike phase, I had invested a young fortune in a super light racing machine with more titanium and carbon fiber composites than a F-16. I knew that I could never get my investment back, so the next best thing was to build up a SWB recumbent to die for.

I ordered a stock Horizon frame set with a few modifications and a canary yellow paint job. I stripped all of the components off the mountain bike that I could use. These included a Ti bottom bracket, Nuke Proof Ti hubs with an eight-speed SRP Ti cassette, XTR derailleurs and crank set, Speedplay MTB pedals, and Magura hydraulic brakes. I added bar ends from Ryan recumbents and Shimano bar-end shifters. I love to go the extra step in making my bikes uncluttered and clean looking. That's where some yellow heat shrink tubing from a hardware store came in handy. I used it to cover the cables and a Cateye cordless computer so they wouldn't take away from the clean lines of the frame. With all the trick components installed, the last investment (I thought) was a fairing from Zzip Designs. I chose the thicker .08 mil Ryan bubble with the P-38 mounting. I had to make some modifications in the bracket that connected to the bottom bracket shell since the Horizon bottom bracket is too narrow for the standard hose clamps. The first time I used U-clamps modified to fit. This worked well except it was kind of crude looking. Since that would never do on a really fine machine, they were soon discarded. I took tin snips to the hose clamps to make them fit. With the addition of yellow heat shrink tubing, they work and look great. The brace needed a notch filed in the top so that the fairing could be raised up to a more aero-dynamic position. With the addition of aero-disc wheel covers to the back and a day bag from Haluzak, I declared the project finished. I was quite happy with the results and the performance. That was before I found out that I could get Aerospoke wheels for the front and rear. I had toyed with the idea of composite wheels in the past but discarded the thought because I wanted matching wheels. Now here they were. I ordered a set right away 26" and 20" x 1 1/8" and replaced my fat tires with one inch high pressure ones. I also needed a different fork since the wheel is a different diameter. I ordered a new hybrid race fork from

Haluzak. What a difference! My speed increased dramatically. I could now sustain a higher cruising speed and take full advantage of the fairing. The bike climbs like a mountain goat thanks to the high bottom bracket and the 12-32 gearing. On the down hills I can coast by all other bikes even other recumbents with fairings. It feels rock solid and safe at over 45 mph. The view from the cockpit is like a little fighter plane. All that is needed is a heads up display. Everyone that has been following the progress of this bike, even my wife, agrees that the Aerospokes and fairing really set the bike off and give it a finished look. Everywhere I go now I hear "Wow! Nice bike!"

I feel like I've built up the ultimate high-speed touring machine. Throw on a rack and panniers and I am ready to go. I bestowed the name of "Raptor" on her with the name hand painted in a Jurassic Park emblem on the day pack. The only problem now is what to do with the old titanium hubs? I wonder what they would look like with tie-dyed titanium spokes on the Rans? I guess that is the beginning of another project.

What's it like to ride in Hawaii? You ask me? It's just like you imagine. Year round blue skies and trade winds. We have mostly smooth roads with some very nice bike paths and lanes. The scenery is awesome. There are about ten recumbent riders on Oahu with a good cross section of bents including Easy Racers, Rans, Visions, Ryans, S&B, Haluzak, and a few older ones that are unidentifiable. If you want to include riding on your next vacation think about Hawaii. There are usually several bent riders that would be happy to give you a guided tour. BYOB "Bring your own Bent", if you can. If not, we may be able to scare up one or two extras. The best time of the year to visit is any time of the year except June. This coming June several of us are planning a tour of Alaska. We want to get away from the humidity and into the wide open spaces.

If you are thinking of visiting, drop me a letter. My address is 98-1382 Hoohonua St. Pearl City, Hawaii 96782 ☐



COMPONENT SPECIFICATIONS

(stock 1996 Haluzak Horizon)
WHEELBASE: 40.5"
SEAT HEIGHT: 23"
SEAT RECLINE ANGLE 68 degrees
WEIGHT: 29 pounds
WEIGHT DISTRIBUTION: 54% front/ 45% back
HEADTUBE: 69 degrees
BIKE FITS: riders 5'8"-6'1" (custom sizes available to fit any size rider)
FORK: CroMo
FRAME: CroMo 1.75" x .049
SEAT FRAME: Aluminum/ nylon mesh
DERAILLEURS: Shimano Dore LX
SHIFTERS: SRAM Gripshift
CRANKSET: Suntour XC Comp 24/36/46 or 28/40/50
FREEHUB: Deore LX 11-28
GEAR INCH RANGE: 22-109 or 26-118
BRAKES: Dia Compe Bulldog
WHEEL (ft): 26" x 1.5 Weinman Bontrager 36° SS spokes
WHEEL (rr): 20" x 1.5 Weinman Bontrager 36° SS spokes
BOTTOM BRACKET: Shimano UN51
HEADSET: Tange CD Levin
PAINT: Dupont Polyurethane (red, blue, green)
PRICE: \$1395

SIMILAR MODELS: Leprechaun (shorter riders, from \$995); Traverse (monoshock MTB recumbent, \$1995); Hybrid Race (high-performance, \$1795).

For more information, see RCN #22 for a complete road test. For current bike information, contact: Bill Haluzak, 2166 Burbank Ave., Santa Rosa, CA 95407. Tel. 707-544-6243.

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My Blue Horizon

© Alloy Mouse

A column for recreational recumbent riders and friends.

A Musical Bike. It was a wild, windy spring morning. Mary and I were riding to the marina at Lake Grapevine for our usual Sunday breakfast and coffee. This weekly ritual has gone on since 1975. The fifteen-mile round trip makes a perfect weekend ride. The wind was strong and wonderful, requiring most of our attention as we rode.

Mary was the first to hear the strange wail as we turned across the wind and rode along an open ridge by an abandoned tree farm. The sound was not very loud but came from all around and sounded like some insane, cyborg *Zamfir* playing his Pan pipe. I heard it and called to Mary that we must have ridden into a science-fiction movie soundtrack.

Soon it became apparent that the odd warble and wail were in sync with my pedaling, plus the left to right rhythm of the Horizon, as we fought against the cross-wind. If I swung across the road into the wind the wail stopped; back the other way and it began. It constantly changed pitch as I turned. Soon I was entertaining Mary and learning to make different sounds by coasting, leaning the bike, and interrupting the air flow with my feet as I turned the cranks.

When we arrived at the marina, I found a two-inch long, open slot under the front boom at the adjuster clamp. The boom (or frame) is a long tube of oversized two-inch diameter CroMo steel, and makes a perfect, giant whistling Pan pipe. From above, the slot does not show. I could close the slot with a piece of tape, but I will not. I have too much fun playing with this giant wind whistle. On normal days, or running with or against the wind, it makes no noise.

What can Bill Haluzak be thinking now? Bill Haluzak designs and builds the Horizon recumbent. He is the owner of *Bicycles by Haluzak*.

Bill is aware that I am writing about his bike. Reading this, he must be thinking: 'What is this idiot doing writing all that about his musical bike? I thought he was going to review and evaluate the Horizon.' Bill's bikes have already been very favorably reviewed, cataloged, and pictured in earlier issues. See *RCN #22, Summer 1994* and *1995 Buyers Guide*.

Most cycling writers review the bikes and components. Others write about races or touring. When I write, I try to keep in mind the daily rides in our neighborhood and countryside. If the Horizon whistles in the wind, that is what I want to describe. I can tell you how my Horizon handles, but it may not ride the same for you. For example, it is impossible for me to control another well-known recumbent that other reviewers call the best-handling neutral-steering SWB. I cannot ride it because its wheel-base is too short for my long legs and the frame is too flexible for my weight.

Talking about the Horizon. Nineteen-ninety-four is the memorable year Mary and I discovered recumbent Trikes. I doubt I will ever again spend much time on a two-wheel bike. I am keeping only one two-wheeler, my custom, oversized blue **Haluzak Horizon**. It is my perfect bike. The first ride, I just climbed on and rode off, even though I had never before ridden a SWB (short wheel base) or USS (under seat steering) recumbent. Bill Haluzak built the bike to fit my size exactly.

If I am going to continue to write about recumbents, I will need a two-wheeled machine to maintain identity with the cycling experiences of the majority of recumbent riders. The Horizon is my bike of choice.

Even after so much time on Trikes, I find the Horizon remains easy to ride. An upright bike, or other brand of SWB recumbent, feels almost impossible to ride. There are good reasons why the Horizon is my perfect two-wheeled machine. I will tell you why. The reasons are appropriate for anyone choosing a recumbent.

Buying a Dream. When I look at recumbents in RCN or other publications, I see wonderful, exciting machines of all types. I want them and I want to do what they are doing. In the past, I have bought bikes based on a magazine or bicycle-store fantasy. Rarely has this worked. Fortunately, after decades of riding and working on bikes, I can now size-up and evaluate a design

fairly well before I ride it. I bought the Horizon without ever having seen or ridden it.

Selecting and ordering my Horizon took months of careful planning. Good advice from our Editor, Robert J. Bryant, the skill and sizing expertise of Bill Haluzak, and considerable luck made it my perfect recumbent.

I recommend that anyone wanting a recumbent, concentrate on correct size and intended use. Ride a model before you buy it. I took a silly chance in buying the Horizon without first riding one. If you need a custom size, have the builder make a bike just for you, after you have tested a stock model.

Matters of Size, Fit and Purpose. The stock Horizon is a versatile bike. It will fit a variety of people and adapt to many conditions. Bill Haluzak can custom build when the stock bike will not do.

He can build oversized (large diameter) frames for heavy riders. He can provide extended booms for tall riders. He has a small wheel bike for short riders. He can include dual suspension for off-road riders. He also builds custom brake setups, if needed. He even had an electric assist option in a recent add. Bill has built and is working on a revised ASS (above seat steering) adapter. Bill can do just about anything you want if you are willing to pay for it for and wait. Customization is enticing, but it is hard to do anything better than the Horizon's stock design.

In my opinion, the best options are the small wheel bikes for short riders and the oversized or extended bikes (mine) for large riders. Bill has the steering so well dialed in on my extended, oversized bike, that I can just about ride no-hands and the bike always goes exactly where I point it. Never a surprise, front-wheel twitch, or dive that characterize many SWB recumbents.

One last comment, the Horizon has a unique "mono-stay" rear end. This provides exceptional comfort while riding. If I had to pick the one, best feature I enjoy most, it would be the comfort provided by the combination of mono-stays and a mesh-web seat.

At Last. If you have questions about this column or need some help, send Email to my new Online address, alloymouse@aol.com on the Internet. If you are not wired, reach me through RCN. If I cannot answer your question, I can find someone who can. Remember there are many great recumbents in this year's RCN Buyer's Guide. □

Continued from page 7

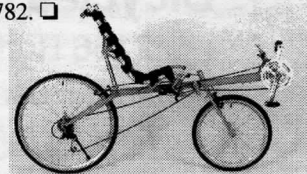
rolling into Fairbanks in style. Instead, we labored through fifty miles of intermittent rain and wet ALASKA OR BUST road that felt as if we were pedalling through glue. We arrived about 11 pm under darkening skies. Our reception in Fairbanks was not what the Chamber of Commerce would want their fair city to be remembered by. I won't go into it, suffice to say, we couldn't get out of there fast enough. We flew out the next day to Anchorage. Now there's a nice city!

A short comparison of the bikes: The Haluzak performed flawlessly over some of the worst roads imaginable. The Rans? I wouldn't

recommend it on these kinds of roads. In addition to the skittishness on very rough roads, the frame had a lot of flex that is more pronounced with even a light touring load. Would I do it again? In a heartbeat! I am already planning a trip for next year. My son doesn't want to go, but I have at least one other recumbent rider that wants to. I learned much from this last trip and I know the next one will be a pure pleasure. If any other recumbent riders would like to go along, we are planning a mid-June trip—plan on at least three weeks. We plan to fly directly into Anchorage and use that as our base. Riding up through Denali National Park,

Fairbanks, down to Tok, and back. With a possible side-trip into the Kenai peninsula. I would also like to fly into Portland, Oregon, and ride up along the Columbia River to Astoria, then down the coast.

If this trip sound good to you, drop me a line: Lynn Miller, 98-1382 Hoohouua St., Pearl City Hawaii, 96782. □



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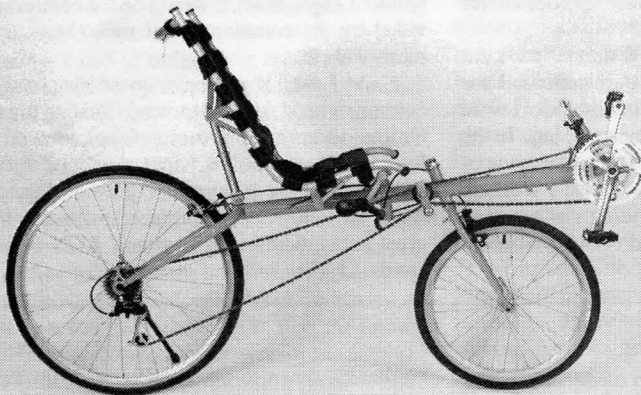
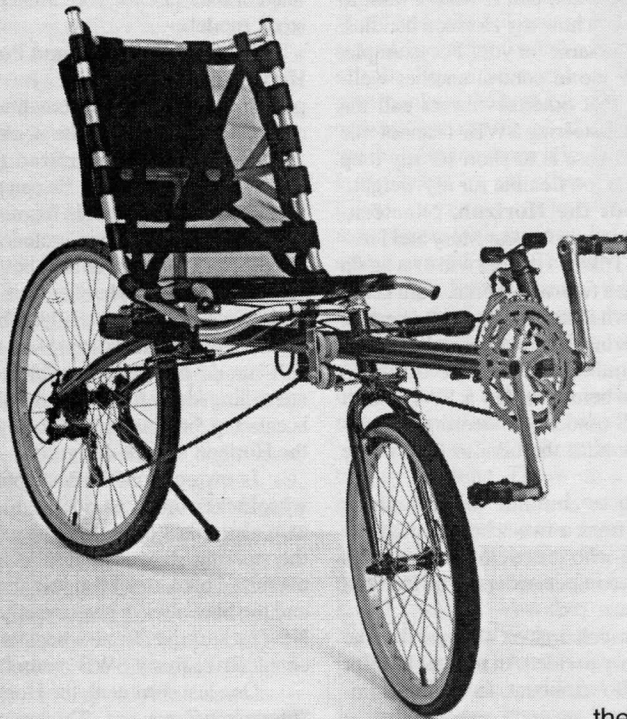
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The 1996 Horizon Horizon

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I'm Looking for a Title

one man's recumbent quest

Story and photo's by Rich J. Belcastro

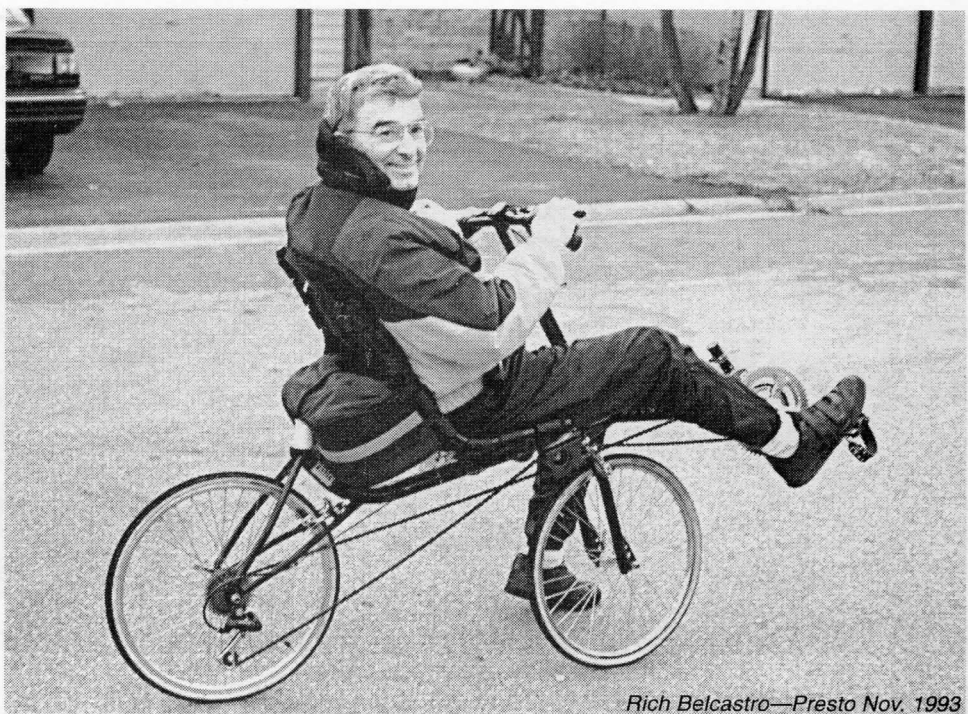
I'm not sure what to title this article but the story is an interesting one. It has to do with having purchased five recumbents in a three-year period in the search for the ideal. It all started in the early spring of 1993 when I took a test ride on a bent for the first time. As I was riding around the area of the bike shop in the heart of Chicago's inner city, I was thinking "Wow! Now I can get rid of all these different handlebars, stems and seats that have made their way to my garage wall over the years in search of a truly comfortable ride."

The bike I test rode was the BikeE, but I didn't buy it at that point because I wanted to do some further analysis. About a month later, I purchased a RANS Nimbus from a shop in Colorado. It was a great bike. Good shock absorption and fast. The steering was a bit fidgety and the flex in the frame, while good for road shock, I believe made it difficult to climb hills.

I had so much fun with the RANS Nimbus that I thought if I got a second bent, perhaps Christine would convert; so I bought the BikeE that I originally test rode. Christine found both bikes to be a bit "wobbly" in the steering and she felt more stable on her upright bike. I found the BikeE to be a lot of fun. I used to refer to it as my little "run about" because it was so easy to mount and launch. However, since I do a lot of riding on Chicago city streets; I also found it to be too fidgety in the steering, and the bumps went directly to my brain—perhaps due to the very straight back and upright seating configuration.

Here I was with two 'bents, each having a different set of advantages and disadvantages. At

Rich Belcastro—Rans Nimbus, July 1993



Rich Belcastro—Presto Nov. 1993

this point, I thought I had better define my requirements, the most important phase of any project. Here is what I came up with.

Requirements

- First of all, I require some degree of shock absorption since I do a lot of city riding.
- I want a good climbing position since I go on long-distance touring during the summer mostly through hilly sections of Wisconsin and Illinois.
- I also need a bike with steering that is rock stable. This means when you start out from a stop or when you twist the shifters, the front-end remains straight to the point where it is pointed. This may be a negative for those who prefer "sports car" steering. I don't know what my requirement means in terms

of rake, drag or whatever. All I do know is when I feel it, I know it.

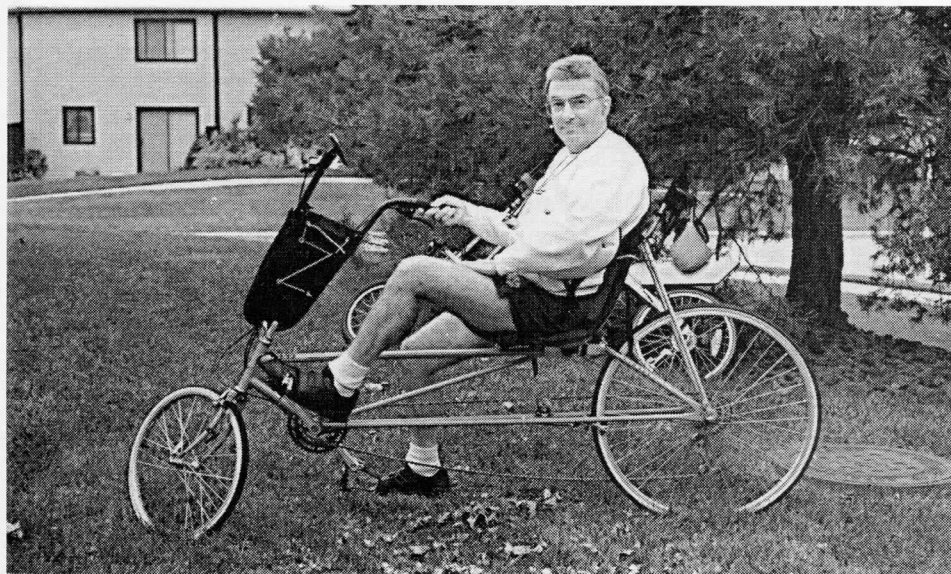
- Finally, I want a bent with seat height about that of an automobile (in order to be seen on busy streets) and upright steering convenient for meters, mirrors, and something to hold on to while stopped.

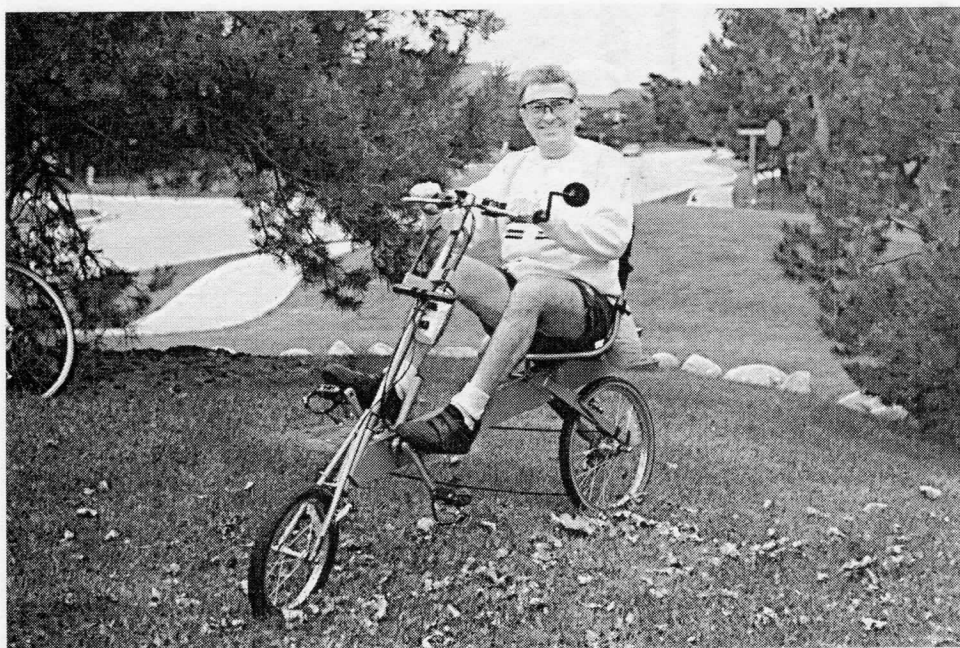
Just about the time I finished defining my requirements, I read RCN#11, the Presto road test (still available from RCN). Wow! The words were perfect, but what about the actual bike. Well, believe it or not, there was a member of the WISIL HPV (Wisconsin Illinois HPV) club (Elgin, Illinois) who owned a Presto and he was more than happy to offer me a test ride. One Saturday I drove an hour to Rockford, Illinois, and tried Jim's Presto. I couldn't believe it! All that was written about the Presto was true! It was truly a dream-like experience.

So, I sold the RANS Nimbus and ordered a Presto. Around Thanksgiving of 1993, the "Dream Machine" arrived. The feeling of quality while I was assembling the bike was as if touching and playing with my Leica camera equipment. The first test ride was a dream come true.

Christine tried it and found the Presto to be a bit high for stand-stills and a bit too reclined for her preference (neither of which I found to be an issue). So during the summer of 1994, we found a bike shop in Chicago that stocked the Vision and they encouraged test rides. We both test rode the VR40AU (SWB with USS-under-the-seat steering). It was fun, so I sold the BikeE and purchased a Vision with above-seat steering (ASS).

The Vision was pretty nice. It was light, fast, and easy to handle at a stand-still. I found it to be too wobbly, especially when shifting or riding with one hand. Then I became aware of other Vision owners making custom modifications such as seat position, switching to 20 inch front wheels, etc. I tried everything and I concluded the Vision was





Rich Belcastro—BikeE, Oct. 1995

better designed for under-the-seat steering.

So guess what—I sold it. And after a test ride of the RANS Rocket at the CABDA show in March of 1995, I ordered a new RANS Rocket. It seemed to meet my requirements at the show.

After riding the Rocket during the summer of 1995, however, we found it reasonably stable in the steering in terms of going where it is aimed, but riding the bumpy streets of Chicago rattled my brain and spine in spite of the very comfortable seat. I also noticed that slight seat angle variations caused big changes in front-end handling, causing that “wobbly” effect again.

Finally, one day it hit me right in the head. The solution was right in front of my eyes. It isn't Christine for whom I desire a second recumbent; it's me. The Presto is still my “Dream Machine”, so why not get another Presto. Wahah! I sold the Rocket and ordered a used Presto from

AngleTech in Colorado. Now I am in Nirvana. Some people collect Corvettes; I might collect Prestos. There are differences between the two Prestos since they are from different time periods, but:

- They both absorb road shock even with the high pressure 1-1/8 inch tires;
- Front-end is rock stable even when pedaling and steering with one hand while drinking or removing a glove;
- The seat has no pressure points even after long rides; and
- It has the right amount of power transfer for long rides and hill climbing.

At this time, Presto owners are experimenting with seat design, especially the angle. But I would be careful. When a design is optimized, apparent improvements in one area take away from another.

Anyway, I might stay put for a while. I'm



Rich Belcastro—Presto, Oct. 1995

looking forward to experimenting with seat angle as described in RCN #29 by Harris Reavin. With two Prestos, I'll always have a control bike as a base of comparison.

I sure appreciate the design skills and efforts of Jim Weaver (Counterpoint) and Kelvin Clark (AngleTech). I also think it is important to mention that when people test ride the Presto, they all love it!

EDITORS NOTE: *The Presto should be remembered as a Milestone recumbent. To this day, I have yet to ride a SWB recumbent that handles as good. The Presto was never the lightest or the fastest, but it remains an exquisite machine that will be sorely missed.* □



ATP Vision, September 1994



Rans Rocket, May 1995

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COMFORT ☺

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

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"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.

FUN ☺

"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.

GREENSPEED RECUMBENTS

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Kingcycle: A Screaming Yellow Speedster From England

By Zach Kaplan

History

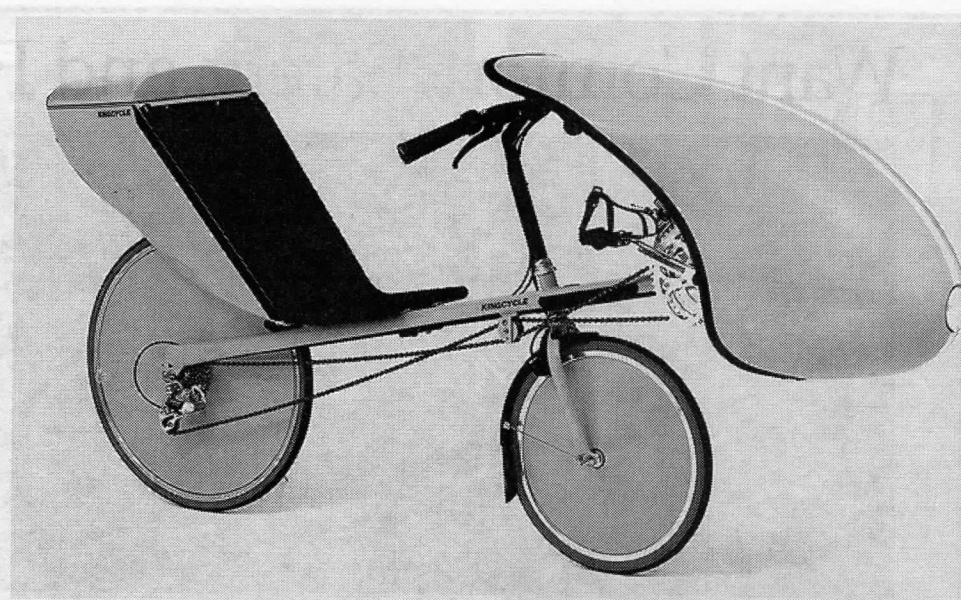
Father and son team John and Miles Kingsbury design and build the Kingcycles. They are well known in the European HPV racing scene. Their bikes have done well in races and speed championships. Their first HPVs were pedal cars.

The Bean, a very radical HPV they built, gave them a reputation for performance in Europe. The Bean is an ultra aerodynamic streamliner with front wheel drive and a monocoque fairing with no separate bike frame. Ridden by Pat Kinch, on 8 September 1990 the Bean set a standing start one hour record of 75.57 kilometres (46.96 miles). This record stood until October 1, 1994, when Bram Moens broke it riding a faired M5 Carbon low racer. The Kingsburys are confident about taking the record back. A newer version, the Bean II, was raced at the 18th IHPSC in Yreka, CA. RCN readers in attendance may remember seeing this. All around, it was slightly slower than the Gold Rush, though some argue it's a faster design. The Bean II holds the British 200m, 500m, and 1000m records. It is arguably the fastest European HPV and certainly in the same league with North American high speed designs such as the Cheetah, Goldrush, X-2, and Varna.

1990 was also the year the Kingsburys entered the production recumbent market with the model tested here. It was originally intended for unfaired track racing but had obvious market potential as a performance road bike. The design was strikingly advanced for the time, bringing a whole new standard of aesthetic integration to the recumbent market. The Kingcycle was one of the first recumbents to have a level of fit and integration on par with a high quality diamond frame road bike. Over the past five years, the overall bike has remained much the same with the main advances being a neatly integrated set of fairings and subtle refinements. This year an adjustable suspension fork was introduced. It has up to two inches (50 mm) of travel. This fork was not available to test.

The Build

The Kingcycle frame is unlike anything else I have seen on a recumbent. It consists of twin hand ovalized tubes running from the bottom bracket straight to the rear drop outs, each tube turning into a single unsupported chain stay. The tubes straddle the head tube, and a gusset is located in this area as well. Mounted to the gusset is a small brass name plate like something off of a fine British sports car. Viewed from above the frame is shaped like an elongated A. It is a study in simplicity. The Kingcycle frame comes in extra small, small, medium, large, and extra large sizes. The wheelbase and bottom bracket to front wheel distance varies with the various frame sizes.



A CroMo stem rises above the Stronglight headset ending in a forward facing extension. Two handlebar choices are available, touring which are slightly curved bars and racing bars which the test bike came equipped with. The racing bars are "C" shaped with the ends parallel to the frame tubes and swept back toward the rider. Although the racing bars easily touch the knees during low speed maneuvering, one can learn to work around this and it's no problem at cruising speeds. The racing bars have multiple hand positions and I found them quite comfortable. They definitely get the rider into an aerodynamic position. My only complaints about the steering system are that the stem arrangement could be made considerably lighter and simpler. It is too much like a long off the shelf mountain bike stem. Of course this aspect does give it a large range of adjustment in terms of heights and handlebar angles. My other complaint is the standard headset which requires a headset wrench. Archaic headsets are one of my pet peeves. Non-suspended SWB recumbents with short head tubes are notoriously hard on headsets and this one lived up to the reputation. The headset came loose several times during the course of testing.

The seat is a very simple CrMo frame with a webbing cover. It is mounted onto the bike frame at the bottom only, it lacks seat stays adding to the bike's clean appearance. For adjustment, a nut on a threaded piece beneath the seat is loosened and the seat slides back and forth. The bottom bracket remains stationary, so chain links do not have to be added or removed when adjusting the seat unlike most other SWB designs. The seat back is fairly reclined and its angle is not adjustable.

I consider the seat the heart of a recumbent design and in this area the Kingcycle falls short. The bottom of the seat is very narrow and I found myself sitting right on the seat rails, with the road shock being transmitted directly through them to my body. I put a piece of foam under the seat bottom which helped somewhat. The seat back gradually tapers to a greater width as it rises up from the bottom. I didn't find the narrowness of the seatback to be a problem, however I found the lack of lumbar support in the backrest uncomfort-



able. I am used to seats with good lumbar support and it really felt like something important was missing. When pedaling hard I noticed a large amount of seat back flex. Although it looks nice without seat stays, high performance recumbents tend to have them for a reason, the lack of stays on the Kingcycle clearly illustrated this reason—seat flex. I found the webbing which is stretched over the seat frame quite difficult to tension up. It is basically a long roll of webbing material wound round the seat frame. Velcro or string arrangements as used on other recumbents would be easier to adjust. Lastly, I found the seat difficult to adjust. Sliding seat recumbents are potentially the easiest type to adjust to fit different riders. Loosening the nut was tedious and the seat didn't slide easily. I realize seat adjustment is a one time operation, with the exception of bikes used for demo riding.

I discussed the problems I had with the seat with Graham Bell at Neatwork, the UK distributor. He told me very few customers have complained about the seat. He said for those wanting lumbar support they could fasten pads to the seat back. In this way one can achieve a custom fit to their particular back anatomy. He said he finds some seats with integral lumbar support comfortable but others are designed to fit a different shaped back and are uncomfortable. This makes sense to me. American bicycle buyers in general want

convenience and don't want to do home-made modifications, especially when they are spending lots of money.

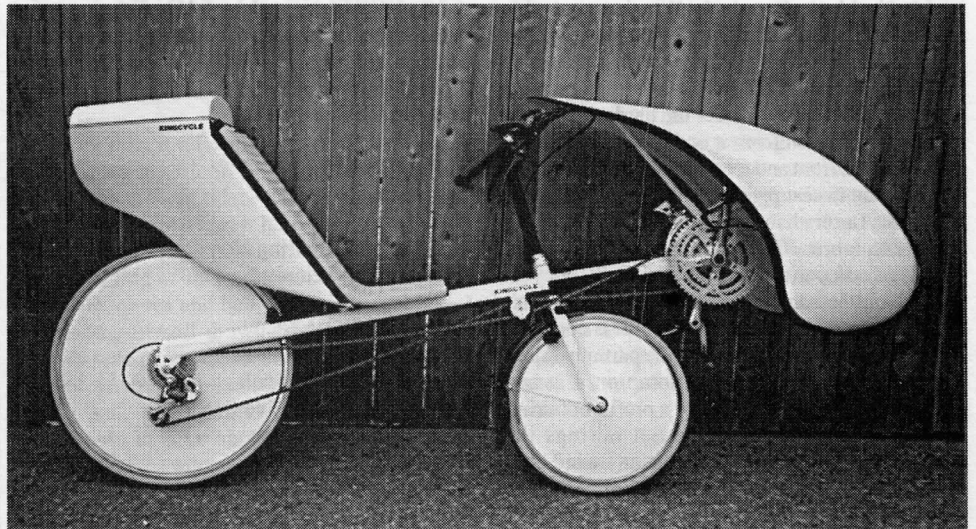
I spoke with Steve Hansel at Linear, the U.S. distributor. Regarding comfort he said the Kingcycle was a pure bred sports bike, a very high performance bike. Thus speed was a higher priority than comfort in the design. He said for comfortable all around riding he prefers the Linears. He likened the Kingcycle to cars used in stock car racing which look very slick on the outside but are very minimal on the inside with the emphasis on performance, not comfort. He likened the Linear to a Cadillac, very comfortable but certainly not for performance. In any event, while the Kingcycle seat may not be as comfortable as some recumbent seats, it is certainly more comfortable than any upright bike. I just don't like to have to make this sort of compromise. I want it all. I want speed and comfort, the BMW wagon of recumbents if you will. I must point out there are recumbents which are simultaneously faster and more comfortable than the Kingcycle. Sure they cost more, but in the U.S. they don't cost that much more. The seat on the Kingcycle is really holding it back from greatness and a redesign would enormously improve the bike.

The Components

The Kingcycle I tested was a used demo bike, so not all the components were stock. Normally the Kingcycle comes equipped with primarily Sachs components with a Stronglight chainset and headset. The demo bike had Suntour derailleurs and shifters in place of the Sachs units. Shifting of course was not up to Hyperglide standards but probably would have been better if the bike had been set up with the standard Sachs parts throughout. The 42-32 (30") bottom gear was too high for hilly San Francisco, but fine for areas with rolling hills. I had to walk it up certain hills in San Francisco to save my knees. A 30 tooth inner ring is standard, the test bike had a higher geared 42/52/60 combination.

The Kingcycle is well endowed in the braking department. The test bike was equipped with Sturmey Archer Elite VT drum brakes in both hubs. These were strong stoppers and unaffected by rain. The brake levers, however, had a typically mushy feel. One disadvantage of the drum brakes is their excessive mass. They also have solid, nutted axles making wheel removal slow. A lighter, more popular alternative is the optional Magura Hydrostop system. These hydraulic brakes are also quite strong and have excellent modulation. They do have a slight delay in the rain though like any other caliper brake.

The front wheel is an unusual French 450A size. Although tyres and tubes are available in the U.S., they are not that commonly available and generally would need to be special ordered from Linear or a supplier who specializes in such obscure tyre sizes such as Cyclo-Pedia. The size isn't all that common in many European countries either. The optional Moulton 17" size is actually more common and easier to obtain in the U.S. The rear wheel is a 600A size. Some would call this a 24" wheel but for gearing purposes it has an actual diameter of 23". This size isn't extremely



The RCN test Kingcycle (this is not Zach's test model)— staff photo

popular in the states either, but should be easier to obtain than the 450A. The wheels are solidly built with and remained true throughout testing.

Fairings

The test bike was equipped with an attractively sloping nose fairing made of fiberglass. It has an integrated headlight at the front. The flat lens of the headlight projects slightly forward of the fairing and is thus easily damaged. Also there are no provisions for mounting a more powerful dual beam headlight system. The front of the fairing would need to be heavily modified to do so. The incandescent headlamp is too dim for the speeds this bike is capable of. The fairing has a reflective stripe running vertically up its center, a nice addition. I found the fairing mounted rather too far forward to provide much protection from the cold air and rain. The top of the fairing is also rather low. My knees came well above the top of the fairing at the high points of the pedal stroke. The front of the fairing projected needlessly ahead of the farthest forward position of the pedals. This made low speed maneuvering in confined quarters tedious due to the excessive distance between the front of the fairing and the front axle.

The tail fairing is neatly integrated with the rear of the seat and also made of fiberglass. As well as making the bike more aerodynamic, it serves as a lockable, weatherproof luggage compartment. It also doubles as a rear mudguard. Two standard tail lights and a reflector are integrated into the rear. The top of the fairing is a hinged door for loading. It could swallow two bags worth of groceries but is too small for self sufficient touring. For touring a rack adaptor is available which allows use of a standard rear carrier in place of the tail fairing. I found the hard fiberglass would amplify the bumps and noises of my cargo rattling inside it. While nicely finished, both the nose and tail fairings are made of a rather inexpensive and heavy type of fiberglass.

I have seen some Kingcycles with fabric socks connecting the nose and tail fairings. Graham Bell told me these are not available from Kingcycle citing safety reasons relating to controllability in the wind. He said the fabric mid

section is something people have to make themselves, and they are used only for racing.

Front and rear wheel covers are optional. Each side fastens to the other with elastic bands, so the outsides of the covers remain smooth and fit the rim neatly. The test bike didn't have wheel covers but based on my experience with wheel covers I would guess the aerodynamic benefits would be worth the additional weight in flat and rolling terrain but not if one was planning on doing lots of riding in steep mountainous terrain.

The Ride

Some have called the Kingcycle a British Lightning. The configurations and steering geometry of the two bikes are quite similar, however, the largest Kingcycle has a shorter wheelbase than the smallest Lightning. The seat height of the two bikes is approximately the same however the Kingcycle has a more reclined seat and higher bottom bracket typical of European designs. The basic position is quite comfortable and easy to ride. It isn't as extreme as the Dutch and German models which have more relaxed seat backs and higher bottom brackets.

Smooth road handling was quite similar to the Lightning. The Kingcycle felt a bit more steady (less sensitive steering). This may be due to the fact the stem on the Kingcycle projects forward like that of an upright bike while the Lightning stem projects backwards. The front end geometry of the two bikes is virtually identical. Like a Lightning, the Kingcycle is great at cornering. When the road became bumpy, the bike screamed for front suspension. I am a strong proponent of suspension on SWB recumbents. On the rough roads which are all too prevalent in my area the Kingcycle skittered around with my body feeling all the bumps. The new front suspension fork is retrofittable.

While the twin-tube frame is stiff compared with most monotube recumbents, I still saw a good deal of bottom bracket flex when climbing and sprinting. That combined with the seat back flex gave the bike a rubbery feel when sprinting. I don't consider myself that strong a rider and never have problems with frame flex on upright bikes, but it

was noticeable the Kingcycle. Whether or not this results in a loss of efficiency is the scope of another article.

The chain idler is fairly small in diameter and noisy. The noise grew louder the harder I pedaled and some vibration from it could be felt as well.

With the front and rear fairings, the Kingcycle is one of the fastest production bikes I've ridden. It is a bit faster than a Lightning F-40 running without its fabric. Once the fabric is on an F-40, there is no comparison. I would say the Kingcycle is clearly faster than the recumbents with high seating positions and fairings which are so common in the U.S. One nice thing about the partially faired Kingcycle is that anyone can jump on it at any time and go riding. No need for a preflight fairing entry procedure. With its partial fairings the Kingcycle can be ridden in almost any wind condition. The skill level required is slightly higher than that of the unfaired bike, yet there is a significant speed increase.

The Looks

Ever since seeing a Kingcycle for the first time I was attracted to its looks. It must be the most finished looking, stylish recumbent around. All Kingcycles have yellow frames and red seat fabric. The optional fairings and wheel covers are the same bright, high visibility shade of yellow as the frame. The Kingcycle has a certain sort of European stylish yet functional look to it that few other recumbents available in North America have. Wherever I rode it, I received compliments about the looks. I heard a steady chorus of "cool bike" from the pedestrians and other cyclists I passed. If any recumbent could be considered sexy, this is

the one. At other times, I felt I was in a sports car with the reclined seat back and arms forward riding position. If looks were everything and I had more money, I'd buy a Kingcycle with all the fairings to put in the living room.

THUMBS UP!

Fairly fast
High quality
Well integrated fairings
Aesthetically beautiful

THUMBS DOWN!

Seat has poor support
Seat adjustment difficult
Seat back has excessive flex
Needs front suspension
Harsh ride
Heavy with fairings and drum brakes
Expensive, especially compared with similar bikes

SPECIFICATIONS

Base Price: Est. \$3000
Frame: brazed elliptical Reynolds 531 tubes, CrMo seat frame
Fairing: fiberglass nose and tail fairing with lockable trunk.
Weight as tested (drum brakes, front and rear fairings, front mudguard, headlight, tail light, no battery, no wheelcovers): 17.3 kg (38 lbs.)
Factory Weight: 29 pounds
Size tested: large
Wheelbase: 40" (1015 mm)
Head angle: 72.5 degrees
Bottom bracket height: 24.25" (616mm)

Seat height: 18.5" (470mm)
Overall length: 83" (2108 mm)
Total width: 19" (483 mm)
Total height: 39.5" (990mm)
Gear inch range: 30-115
Brakes: Sturmey Archer Elite VT drum
Wheels: Front- Alesa 450A rim, 36 spokes, Sturmey Archer Elite VT hub.
Rear- Rigida 600A rim, 36 spokes, Sturmey Archer, VT hub, Sachs 12-32 freewheel.
Tyres: Front- Michelin 450A (28x390). Rear- Hutchinson HP25 600A (25-541-540).
Derailleurs: Suntour XC LTD (Sachs New Success standard)
Shifters: Suntour Barcons (Sachs New Success standard)
Chainset: Stronglight 42/52/60
Headset: Stronglight A9

Manufacturer: EDS Portaprompt Ltd., Lane End Road, Sands, High Wycombe, Bucks. U. K. HP12 4JQ

Distributor: Neatwork, P.O. Box 2, Coldstream, Berwickshire, Scotland TD12 4NW

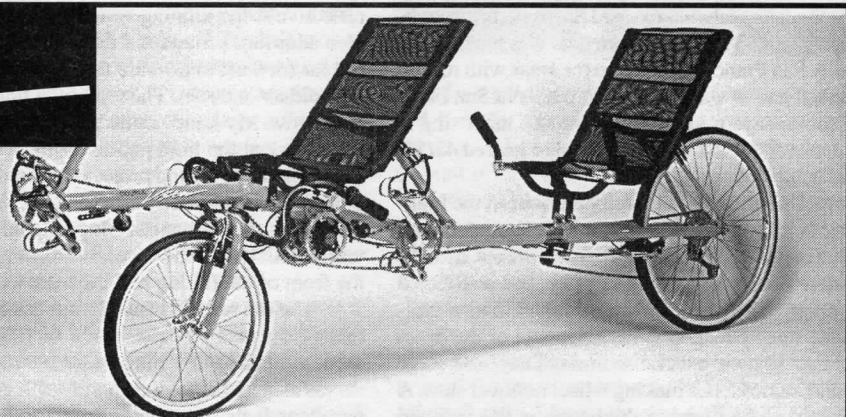
U.S. Distributor:
Linear Bicycles, RR1 Guttenberg, IA, USA 52052
Telephone: 319-252-1637, Fax: 319-252-3305

EDITORS NOTE: The Kingcycle test bike was graciously supplied by Hal Shafer of Hal's Recumbent Cycles, Ph#310-376-5882 (thanks Hal!). This is not the same bike or configuration shown in the article photos. □



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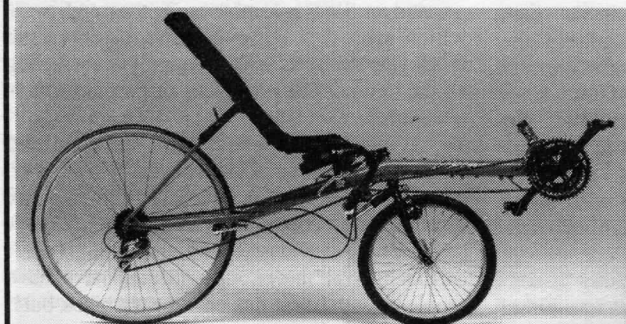
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Kingcycle News & Rumors

by Zach Kaplan

While in the U.K. this past summer, I rode a Kingcycle with their new suspension fork. As I expected, it totally changes the feel of the bike for the better. The new fork really smooths out the ride. It's similar in concept to the Lightning fork but with a beefier pivot mechanism.

Kingcycle's latest design is the Wasp, a front-wheel-drive (FWD) low racer. This bike seems to be just what I am looking for. It has practical cargo capacity for touring gear, rear suspension, and an available nose/nylon mid fairing.

With FWD, the tail box has a high capacity and can be totally sealed. The rear wheel has a moulding covering it and you can just dump all your cargo in. The seat is more laid back and has a wider base than on the Kingcycle, yet is more upright than the lying down style low racers. I think it is the perfect compromise between visibility, control, power output, and aerodynamics. I could see the road well without having to bend my neck, had good support, and good control in that I was still sitting upright enough to be able to lean my upper body a bit, important if running the full fairing in windy conditions. The elastomer rear suspension has 1" travel. I think rear suspension is more important than front on the laid back low-racers. There is no front suspension due to the complication of the twist-chain FWD mechanism. The main tube is in a U shape over the front wheel and it seems to have a lot of vertical compliance.

K-Drive

Another neat feature of the Wasp is the K-drive. It has two smaller crank arms on the ends of the main crank arms with chains and cogs connecting them and uses a special ultra narrow bottom bracket to compensate for the added crank width. K-drive allows a normal pedal stroke through the power phase as if using 175mm arms yet is equivalent to much shorter arms at the top and bottom of the stroke so the knees don't bend as much. This means the nose fairing can be made lower decreasing frontal area and increasing visibility. It felt a little odd at first but I found it to be smooth operating.

The Wasp fairings are neatly integrated. The front comes off quickly and uses a simpler mounting system. With just the tail fairing the bike is 2 metres long (they had the USCF rule in mind). With the full fairing it should be faster than the F-86 and should be less affected by cross winds. The Wasp will probably cost nearly \$5000 by the time it's shipped to the USA.

The other new Kingcycle is a practical, fully faired tricycle called the K3. This trike has full suspension, interchangeable wheels, an integral lighting system, ventilation, and cargo space. It was originally built for the Fiets 365 day competition in the Netherlands and has the K-Drive. The linear foot motion allows for a lower more compact fairing. Another feature of this drive system is the absence of chains within the cockpit, insuring cleanliness. The system is apparently still in prototype stage but they hope to have it in production soon. □

OBSESSIVE RECUMBENT BEHAVIOR

by Bob Secrest

Well doc, it all started out an innocent discussion with my friend Bob Reinisch, a dyed in the wool recumbent rider—all the standard questions: How fast is it? How hard is it to ride? How can you pedal in that position? After twenty minutes and sitting in his machine, I was truly inoculated with spores and had the disease real bad. I was finding myself drawing recumbents on the backs of note paper, cutting out articles on the aspects of recumbent bike riding, etc. This in itself wasn't bad, but I found myself looking for recumbents in bike shops, taking pictures of recumbent bikes whenever I saw them and generally obsessed with the different styles and types of recumbents on the market. I was now well into the next stage. I kept looking at my lawn furniture and even pencil marking potential cut-lines on the backs of fiberglass supports. My conventional 10-speed bikes began to look like spare-parts donors for recumbents. I was beginning to eat, sleep and breathe recumbent bikes. I remember the day I took a hacksaw to my first spare-parts frame. I was working a lot of therapy now. If I could only build one of these contraptions, the disease would subside and all would be well again—WRONG. "That first bike went together so quickly and with such amazement, I put together another and another and....."

A funny thing happened on the way to the bike path. People stop to ask: How fast? How easy? How to pedal? Instead of the disease going away, I am now the infector of the people I meet. There's just something intoxicating or infectious about this obsession. It's spreading, it's fun, it's healthy, and it's a long time in coming! As a respected recumbent manufacturer/builder/designer once stated:

"I relish in the recumbent revolution that is happening secretly in the backyard garages all over this country."

It's now obvious that the present "mountain bike" craze is waning and the general public is really interested in comfort and efficiency instead of perceived pseudo-comfort and less efficiency. Progressive bike shops and those able to recognize this trend will be looking toward recumbents for an edge over the competition.

A bike is a bike—unless it's a recumbent. If it's a recumbent, it's sort of new ground. A

descriptive comparison between recumbent bike riding and learning to ride a bike for the very first time is fairly accurate. A joy to be experienced for the first time—only once more. How many remember that first twenty yards ridden without the help or the aid of training wheels? It's a new sense of ability, a new way to use balance and experience the sense of ability and independence.

Since I have completed that first recumbent, it's let at least forty different riders experience this new found freedom. Reaction levels range from, "that's nice" to "I've got to get one of these!" Most reactions fall into the latter category. Just one bike has inspired the completion of at least a dozen more. It's an infectious hobby. One must be very careful.....

Ad in local newspaper:

"For sale cheap: Used lawn chair set. No centers. Otherwise perfect condition. Got in the way of mad recumbent builder. Owner has no further use for lawn furniture. Call....."

Whenever I ride, I make it a point to talk to everyone that is interested or approaches me. Usually one ride equals at least one more informed and infected person. Recumbent bikes have an indescribable something about them. As one old bike shop friend stated:

"I sell bikes to make a living, I build recumbents because I like to."

Once infected, one becomes obsessed with the idea of improvement or new designs. The obsession does not subside. If anything, one becomes crazier and more obsessive with each completed bike. The zealous attitude shows through to the people you meet and the recumbent bike crowd that you attract. There are several more adjectives used to describe recumbent riders out there—helpful, patient, informative, and friendly are just some of the ones that could be used. A sharing of past types of vehicles, solutions to design problems encountered, pitfalls and warnings are free, all just for the asking. One manufacturer has even supplied me with pictures and assembly instructions even if I didn't buy his machine. He seemed more interested in promoting recumbents in general than selling his machine, and when I showed him my completed masterpiece, he even showed me how to improve it for better performance! I sincerely believe that this is what it is all about and it shows something about the crowd that I have chosen to associate with!

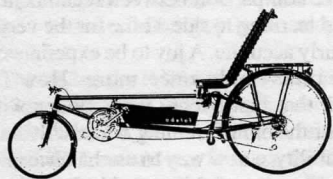
Kingcycle—the perfect high-performance SWB?

The Kingcycle is exquisite in its build and is beautiful to look at, however, our test bike was an absolute fiasco from the start. We planned the test months in advance, the bike was to be shipped from the U.K. directly to RCN. The bike was lost in customs for a month and when we finally rescued it from the deepest darkest reaches of a customs warehouse, it was wrong size—a medium and it had the wrong handlebars (U-shaped racing bars). The fairing rubbed on the

handlebars with each turn as your shoe tips lightly brushed the nose fairing (wrong size?). The bike was shipped across the world with poorly adjusted Magura brakes that squealed like a banshee and the cool Kingcycle wheel discs were missing half the clips. This test was doomed from the get-go. An actual test ride was out of the question. This was quite unfortunate, as this gorgeous recumbent looks lightning-fast just standing still. We don't have any idea how much this bike cost, but I'm sure it was in excess of \$4000. Was it worth it? You can be the judge of that—RJB.

SHORT-WHEELBASE SHORTCOMINGS

by Eugene Villaret



This article is an outgrowth of my increasing concern over what appears to be a disproportionate inclination on the part of our cherished recumbent community toward recognition of one design concept over the others. In the relatively short period of time that I have been an RCN subscriber, the focus of interest has narrowed dangerously from the healthy view of all design types as offering unique advantages to a most disquieting and counter-productive focus on one single sub-species: the generic SWB two wheeler.

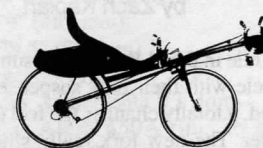
I was first struck by this trend while pouring through your marvelous 1995 annual Buyer's Guide, where, despite your superb opening essay on the unique qualities of each of the various types, the content along with subsequent issues of RCN has revealed that a disturbing majority of recumbent manufacturers are rushing ahead with SWB production. And all because of the apparent speed superiority of this type.

Of the twenty-five or so recumbent owners that I've met, no more than two were unabashedly race-driven. The great majority, certainly more than happy with the extraordinary performance characteristics of their recumbent machines (which include virtually all types), expressed even greater satisfaction with their rider-friendly comfort and efficiency. These owners are mostly weekend riders whose dominant bicycling goals feature the joys of "smelling the roses" while nurturing their bodies with needed exercise. I see much the same lopsided percentages in the larger world of upright bicycling, whose periodicals unflinchingly focus almost exclusively on race-orientation.

If we in recumbency wish to continue to carp smugly at the short-sighted and backward-looking "upright" community, then we cannot permit ourselves to fall into the trap of narrow-mindedness. It may or may not be that SWB's are faster than the others, thought some present day records are held by LWB. Today's "conventional" wisdom casually awards all the laurels to SWBs, and both the industry and many of our movers and shakers have fallen blindly into line. What all of them ignore is that bicycles respond to criteria beyond that of speed at all costs. For the sake of our recumbent future, these other factors should be recognized and at all costs served: the wide spectrum of recumbent applications, safety concerns, difficulty of mastering and handling, durability of machine, load carrying capacity, cost and more. Such considerations loom at least as important to the majority of buyers, though inevitably some fall victim of the unending hype for ever-lighter, "take no prisoners," all-out-racers, which can be all wrong for some, perhaps even the majority of the buyers, and in the long run can only hurt our cause. Voices like yours calling for balance and the long view will become lonesome cries in a darkness of lockstep insularity—E. Villaret.

Deficiencies of the generic Short WheelBase (SWB) two-wheel Recumbent bicycle design as compared with its Long WheelBase (LWB) counterpart. The following observations, derived from both empirical and print research, are intended for the great majority of recumbent owners, who are not primarily motivated by racing considerations.

1. In contrast with the Long Wheelbase design, rider's center of body weight is situated relatively close to the transverse vertical plane of the front axle of any Short Wheelbase recumbent bicycle. Thus it is easier for the SWB to topple forward in case of front wheel malfunction as caused by over-braking, a front tire blowout, steering loss, gross road imperfections, pedaling shoe contact, spoke breakage etc., thus pitching rider forward onto the street.
2. There is an attendant danger of under-utilization of the SWB's front brake in an attempt to counteract risk of pitching over, thus reducing stopping efficiency.
3. With part of rider's total weight actually ahead of the front axle plane, unique inertial and torque stresses are imposed on machine and rider, thus affecting balance and stability.
4. For the same reason, and in contrast with the LWB, steering on an SWB tends to feel oversensitive, spastic.
5. For the same reasons, the SWB is more difficult to control in sand and snow, and on wet pavement, dirt and gravel roads; and it is less stable at speed on any surface.
6. Because of the large percentage of body weight being supported by the front wheel of the SWB, its tire must be more robust and thus heavier and harder to propel than that of the LWB. (16" tires are not known for durability.)
7. In consequence largely of the disparity in wheelbase lengths of the two designs, the ride of the SWB is reputed to be harsh as compared to that of the LWB.
8. Idlers are a must on all SWBs. These load added resistance into the drivetrain with rotational inertia and friction together with pronounced lateral pressures acting on the teeth of both chainrings and cogs, thus reducing power delivery and potentially threatening shift reliability.
9. High-bias gear pairings, (the largest chainring linked to the largest cog and the smallest of each paired together), strongly discouraged because of excessive chain-bias angles due to the presence



of idlers on conventionally geared SWBs, are quite safely usable on idler-free LWBs.

10. In most cases there is a demonstrable potential for foot interference with the SWB front wheel, risky at best, increasingly dangerous during attempts to pedal through turns.

11. The pedals on a Short Wheelbase machine are conspicuously farther above the ground than they are on the generic LWB. Therefore, when starting up, an added measure of time is required to bring the ground foot up to its pedal, thus making starts relatively precarious. Similarly, in times of emergency stops the chance of accident is magnified in proportion to the distance a foot has to go to reach the ground.

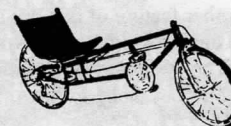
12. If, as is too often the case, the unstayed boom of the generic SWB is (for the apparent sake of weight-saving) insufficiently reinforced with additional diameter and/or wall thickness, the possibility of flexing under heavy pedaling load is present to a greater extent than in the crank support system of the LWB, thus reducing the potential of power being delivered from leg to drive wheel, and even posing the possibility of SWB frame distortion or failure.

13. One's knees spinning at or near eye level, a condition which occurs on most SWBs, can both disconcert and interfere with visibility ahead.

14. Thanks to the fortuitous fact that the center of gravity of the typical LWB is situated just ahead of the seat, these machines can be lifted easily with one hand for painless and remarkably efficient short distance transport. The balance point of the typical SWB is by contrast generally situated within the plane of the seat, thus denying the rider an efficient single-hand lift.

15. The same happily situated LWB balance point greatly facilitates direction reversal in tight quarters. From a seated standstill the rider simply grasps the top tube with one hand at the balance point, rises to his feet while lifting the machine up between his legs, turns himself in place to the desired direction and sits back down.

EDITORS NOTE: See RCN News & Rumors, Editors Note under "RECUMBENT EXERCISERS RATED BY CONSUMER REPORTS" for more info on high bottom bracket vs. low bottom bracket models. □





Homebuilders Corner

Meet our homegrown bent, Imus

Story & photo by J. Gaerlan

We decided to build a user friendly LWB recumbent from some scrap tubings and component samples. Inspiration came from the friendly looks of the BikeE, EZ-1 and the Rans Tailwind. Since we are strong advocates of small wheel technology as shown by the road bikes we produce, it was important that this 'bent sport the 20" wheel size.

Our intent is to provide readers with a good foundation of a working design. We urge you to improve on this design and pass it on to others. Treat it as a recumbent-plan chain letter.

The original design was to make the wheelbase length to less than 60". The plan was to use an off the shelf BMX fork with a rake of 1.5" on a 67 degree head angle. The initial ride proved quirky with such a small rake. We then had to build our own fork increasing rake to 3.25" and maintain head angle. We used a triple clamp suspension fork crown. We were able to play with the rake by loosening bolts the fork crown and pulling fork blades in or out. The resulting fork had a stable, touring type ride. One minor drawback however was that it increased wheelbase length to over 60".

Getting the correct front geometry is critical to building a fun and stable bike. For somebody planning a similar project, I would suggest first building a fork. With fork dimensions in



hand, you can incorporate it to your full size frame drawing. Try combining theoretical formulas on rake and rake available on similarly designed bents (such as Tour Easy) to arrive at your rake. Bicycling Science from MIT Press is an excellent book.

The final product turned out better as expected. The frame material is 4130 cromoly mostly 1" in diameter (chainstays - 7/8", seatstays - 5/8"). Our above-seat-steering (ASS) resembles an Easy Racer. The steering bar is actually a hi-rise bar used by low rider bicycles. The wheels are made up of Sun alloy rims (BMX size), stainless steel spokes (radial front), imported 36 hole hubs and Avocet Fasgrips HP 20 x 1.75". Shifting is through a 7-speed index thumbshifter we had lying around. Crankset gearing is a 24 x 38 x 48 with a 12-26 freewheel. A higher top gear would be desirable but the existing set up is enough for hilly San Francisco terrain. Stopping power is provided by Tektro cantilevers.

The seat used is a prototype of a fiberglass shell designed by some avid 'bent home-builder. Because of insurance concerns by the designer, the product was yanked off the market. One ingenious feature on the seat design is the flaring lip incorporated at the edges. With the use of rubber edge grippers, you can have a professional looking seat covered in Lycra without much effort.

A homemade chain idler keeps the lower

chain from slapping. Wheels from moving casters are bolted on to a rack clamp. The idler is then bolted on using water bottle bolts to the chainstay cross bridge. A piece of 2" plastic strip cut off a plastic jug keeps the chain from flying off the idler.

On future versions of this bike, we see a few improvements that should be made. First thing would be to shorten wheelbase to about 58". On this prototype the head tube can be moved at least 6" towards the back without any pedal overlap. Or if it is to be built for a tall rider, the bottom bracket can be moved towards the fork to accommodate a longer leg.

Using narrower wheels (451 ETRTRO) would be a plus for speed riding. On future versions, I foresee brake bridges mounted both on the fork and seat stays to accommodate narrower higher pressure tires and short reach road bike brake calipers. With such a setup, you can switch from the 451 and BMX size without much trouble.

We have christened it IMUS, the name of the town we grew up in. The name reminds us of an easy going, fun and adventuresome childhood. We hope that IMUS inspires you to build the same. Hopefully, it will bring you the same fun as IMUS does to us. □

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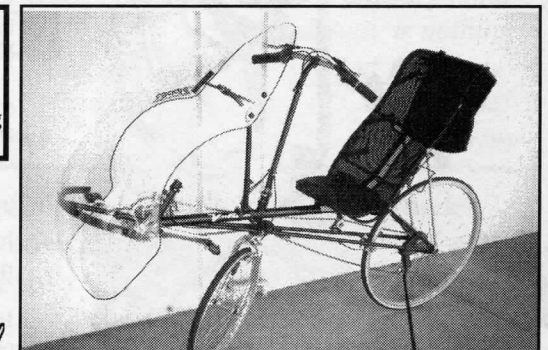
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The New Rans V-Rex
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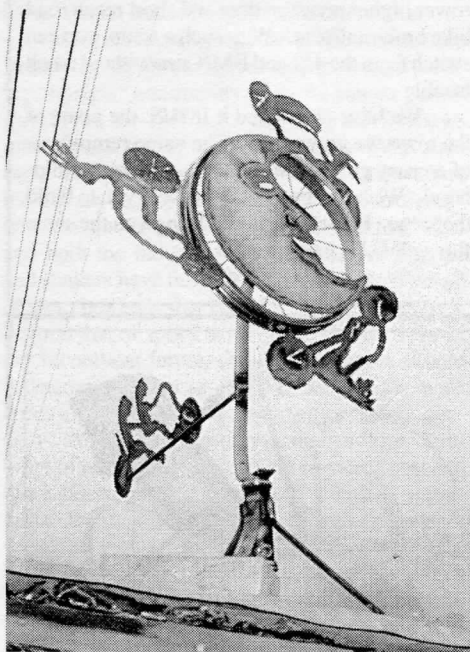
By Stephen Delaire

During the past twenty years, much has been written about recumbent bicycles and there has been ongoing debate over their status in the cycling world. Despite the controversy, recumbent racing bikes have proven themselves by shattering all other bicycle speed records. When you combine the recumbent design with a light weight aerodynamic fairing, you clearly have an efficient bike. Perhaps, we will soon begin seeing a new generation of street worthy, partially faired recumbents, efficiently transporting their riders.

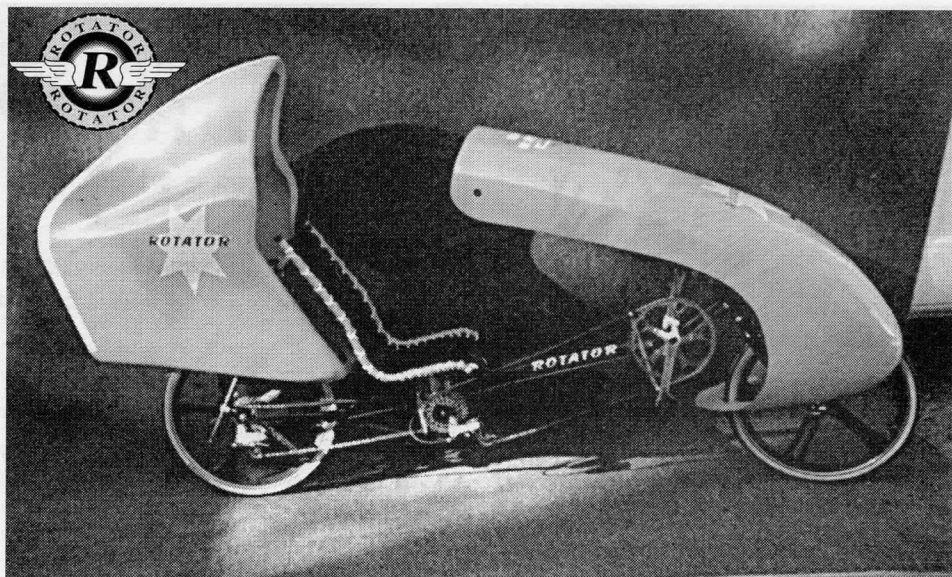
After nearly one hundred years of refinements, the fastest recorded speed for a standard style bicycle is 44+ miles per hour (200 meter flying start). Meanwhile, in a span of twenty years, the fully enclosed streamlined bicycle has been able to push the top speed to just a fraction under 69 miles per hour, an increase of approximately 60%.

The largest portion of a rider's energy is spent pushing his own body through the air. The frontal profile of the bicycle alone isn't very large so it requires very little energy to push through the wind. The human profile is the biggest energy consumer and this is why the modern racing cyclist hunches over and pulls in his elbows to create a smaller profile into the wind. This is an energy saving or speed producing posture but not necessarily a comfortable one.

Recumbents, long known for their comfortable heads up seating, can also be used as a tool to create a smaller human profile thereby improving



Steve Delaire's "Wind Whimsy."
— photo courtesy of Gardner Martin



energy consumption and speed. Many recumbents however, actually have a larger profile than a racing cyclist! Aerodynamic losses can vary greatly from design to design. Even the best recumbent will never have the speed increase that added fairings can create.

Well then, why not add fairings to my regular bike? Good idea; bad idea. Yes, the speed will increase as the size of the fairing grows larger which is good; but with a full fairing, the aerodynamic center of pressure and the center of mass are both located high in the aero shape which makes it hard to control. On the other hand, the low seat of a streamlined recumbent stabilizes the ill effects of cross winds while improving the cornering abilities.

For twelve years now I've been enjoying the benefits of streamlined bikes and have raced them, ridden cross country, commuted and took them off road. In addition to the lure of increased speed, I've found other benefits to include:

- **Weather Protection:** on a hot day, the fairing acts as a sun shield to stop sun burns. In cold weather, it lowers the wind chill factor considerably.
- **Rider Protection:** when designed properly, the fairing can work like a body helmet to protect the rider.
- **Improved Comfort:** all in all, the recumbent seating, combined with a streamlined body shell allow for greater rider comfort.
- **Storage:** fairings make great baskets for that quick trip to the store or for the daily commute.
- **Improved Visibility:** the larger surface area makes the bike and rider more visible to motorists.

People often comment that recumbents are not good hill climbers. Part of this is a myth. Part of this is true. Recumbent riders can't stand out of the saddle. With a regular bike, the gravity of

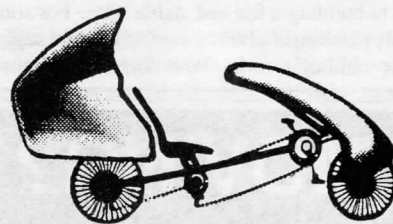
the rider's body weight can be used to make more foot pounds torque at the rear wheel. That regular bike rider who sits in the saddle and shifts to a lower gear, will adapt to a recumbent quickly. Most recumbents are equipped with lower gears, specifically to enable the rider to scale a hill with ease.

Do streamlined recumbents climb more quickly? By the time the bike is moving at 7 miles per hour, the fairings are beginning to have a positive effect and many hills are ridden at speeds faster than 7 miles per hour. By 10 miles per hour, no matter how adverse the terrain, I've found that good aerodynamics can improve your speed.

Doesn't the added weight of the fairing slow you down? With bicycles, every ounce counts, but most high tech streamliners weigh under 30 pounds and even a 50 pound partially streamlined bike is hard to catch.

Of course the fully streamlined bicycle is a specialized machine that requires a team of three to operate, but what I see as the new addition to our cycling arsenal is a blending of smaller, half

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sized fairings to create an everyday useable bike that is 20 or 30 percent more efficient than what most people ride now.

Think of it this way...if on your best bike, your fastest one hour speed is 25 miles per hour, a 30 % increase would boost your speed to around 31 miles per hour!

While improving your top speeds, a recumbent ride also can be truly a pleasure to ride and at times, exhilarating. The lower center of gravity makes for better and safer cornering. Are streamlined bikes the next generation? What other bicycle or component can truly improve performance this much?

Profile of the Author

Stephen Delaire has manufactured, raced, and ridden recumbent bicycles for over twelve years. In addition to his own "Rotator" designs, Mr. Delaire has built frames and components for Easy Racers, Lightning, and has built numerous custom bicycles for individual clients. He currently builds the Stealth SWB recumbent for Lightning. His prior experience as a race-car fabricator has given him invaluable insights into the engineering, mechanics and aerodynamics of bicycle design.

Editors Note: Steve Delaire delivered a prototype Rotator Interceptor 35 speed to us this past November. The bike has an intermediate gearing system, integral front and rear fairings and offers excellent performance. And better yet—it won't set you back \$8,000 like a faired Windcheetah, \$7,000 like a Leitra, or even \$4,500 like an F-40. You can be the owner of a faired Rotator Interceptor for about \$2,600.

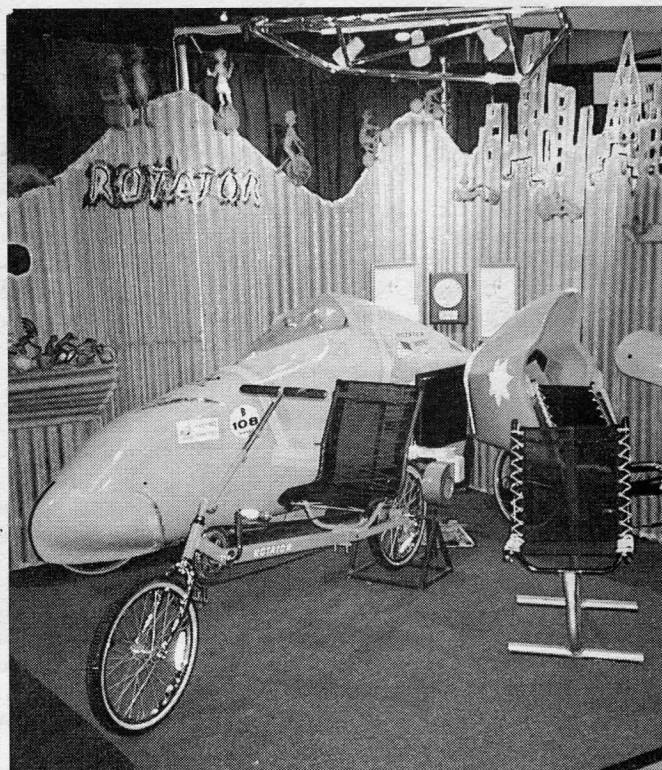
The Interceptor fiberglass front and rear fairings offer great cargo-carrying capabilities as well as some weather protection. The 35 speed drivetrain offers a super-wide gear range with a 160 gear inch high gear!

This is a modular speedster kit. You can start with a \$600 frameset or \$1005, 35 speed bike and over time make it into a streamliner that is

ONE HOUR COMPARISONS

Standard Frame	Streamlined 30% More Efficient	Fully Streamlined 60% More Efficient
25 mph	31 mph	40 mph
30 mph	39 mph	48 mph
35 mph	45 mph	56 mph

RIGHT: Rotator's BIO Trade-show booth including original Rotator artwork, a first look at the new Rotator Coaster—\$398 recumbent, custom Rotator streamliner and the production Rotator Interceptor at Las Vegas, NV, September 1995 —photo by Ron Schmid.



fast, low and very stable bike that begs to be tricked out by riders.

The Interceptor offers the benefits of a SWB with a higher bottom bracket, the benefits of a CLWB with its shorter LWB and 20" wheels and the super-high speed-stability that only a LWB can offer. Check this HPV-racers, the seat height is only 14" off the ground! Delaire also uses bungy shock cord to lace his redesigned for '96 mesh seat.

Look for a complete review on the Rotator Interceptor in RCN#34.

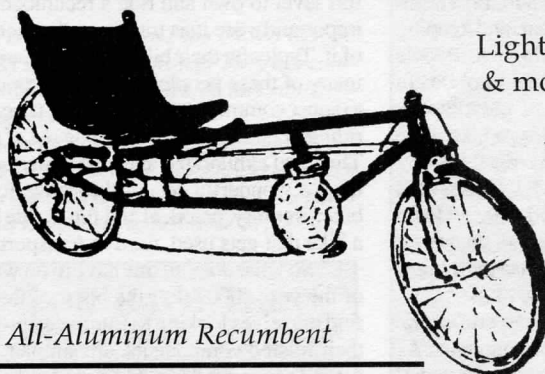
For more info contact Rotator, 915 Middle Rincon Rd., Santa Rosa, CA. 95409. Ph#707-539-4203. □



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View From The Big Chair

My Resolution..... A Quiet Revolution

By BJ Strass

Well we all made it. It is now the last half of the last decade for this century. For better or for worse we now all find ourselves staring down the loaded barrel of the the year 2000—the Next Millennia. No running or hiding—it's nearly here.

So now that excuses are wearing thin and there is no avoiding the inevitable what is going to be the "Bike For The Next Century"? I would love to tell you these future bikes are going to be recumbents, however, if 1995 was an indication.....most likely the general population will still be riding wedgies (upright bikes) and view the recumbent as having about as much appeal as a pocket pen protector and taped together eyeglasses. Why is this?

Let us compare views of two bike riding populations, in very general terms. I am told that in Northern Europe (Germany, Denmark and the Netherlands) recumbents are much more accepted. They have a view that if you want to go fast (sans U.C.I. rules) or travel great distances, a recumbent is a good choice. Also recumbents do not carry the "Nerd" factor as here in the U.S. There, cost and practicality, are their determining factors for recumbent ownership and use. To me this is believable. Their cost for a bike is much higher and recumbents usually cost twice the price as in the USA.

A lot of the population of Northern Europe's everyday transportation is via bicycle. This is generally over short distances linked with the use of public transportation. Many of their public roads are designed for heavy bike use, not bike trails but routes designed for bike commuters. Also the cost of fuel, a car, and keeping a car on the road can be much higher. People have learned to live without the automobile. In most of these cases a relatively inexpensive single speed Danish euro-cruiser type bike is the bike of choice. I am sure many would prefer something like a BikeE or EZ-1 if they had knowledge of these but the added comfort level wouldn't be needed on these short distances. Thus in Northern Europe people use their bikes more out of need and practicality.

Now let us look at the domestic scene where cycling is more of a social statement. As a dealer I often hear the same reasons as stated prior for the lack of recumbent ownership, cost and practicality. But I know that this is quite often not the case. Lets be honest with ourselves. We are a "Pop Culture". Everything is a social statement. In one way or another we all follow trends to a much greater degree than our more practical minded European counterparts. If it

were suddenly cool to wear our underwear on our heads, over time, many of us would. If eating bugs became a gourmet treat, eventually, we would. The really strange thing is that we know this about our culture and spend useless energy vehemently denying it.

I have dealt with a number of customers that have not bought recumbents, though they personally loved them, because they stated they were too expensive/not practical. These same people have gone out and bought mega-buck full suspension mountain bikes, or ultra light titanium road bikes afterward. Why, because these bikes carry a social statement of "I Am Cool". They imply a social statement about the riders fitness level and credit limit. This would not be so bad if these bikes were to get used but more often than not these bikes get ridden to the park or down the bike trail a short distance on a Sunday just to make sure everyone sees them on their cool bike. Sometimes these individuals do ride often and become a "cyclist" but do they ride to work....rarely. Do they ride to the market.....hardly. They strap this cool bike/social statement on top of their \$28,000 four-wheel drive sport/utility vehicle (which by the way never sees the off-road) to drive five miles to start their ride. Why is this? Too often the new bikes are uncomfortable and impractical and they often end up for sale in the Sunday paper next season or sitting behind the indoor exercise equipment that has been in the garage for three years.

Now as for the other half of my customers, the people we like to hope we are, the ones for which it is within their personal self esteem/comfort level to own and ride a recumbent, but most importantly use it as transportation and are proud of it. Typically their bikes get lots more use. I see many of these people going from couch potatoes to super commuters within a years time. Suddenly riding a century is not something out of their grasp. They feel exhilarated and a bit superior, as if they have a wonderful secret, they have found a real bike, a comfy, practical and fun to ride bike. Thus a bike that gets used, used as transportation.

So what does all this have to do with the bike of the year 2000? For the bikes of the future we find ourselves looking to Europe where bikes, and their related components, are simpler, more useful and practical. There is a new trend in this country. People are starting to demand a simple quality bike they can use and doesn't need to spend half its life in the shop. Will these bikes be recumbents? Indirectly, maybe, but all indications point to new versions of the classic Danish Euro-cruiser.

One of the big moves is going to be toward

internal-shifting hubs. Indexing is great but the average John and Jane Q. Public is tired of going to the shop every 3 weeks to have the shifting adjusted. People are starting to figure out that 21 speeds are overkill for a town bike. Shimano has bet on this with the introduction of their Nexus 4 and 7 speed hubs. Sachs already has a good start with its popular Super Seven. This hub is tough, has a very wide range and has been popular in Europe since its introduction. Specialized came out with the Globe which is a town bike. It sits more upright and is very reminiscent of the Danish cruisers. Other big companies are coming out with similar bikes with the internal shifting hubs. I also see a move to hydraulics in both brakes and shifting. The Magura hydraulic brakes have gained a following with high-end mountain bikers due to their strength and reliability. Also their are companies working on hydraulic shifting. Drum brakes have always been popular in Europe but thought to be clunky here. The Nexus hub uses a roller brake which is sort of a lever-operated cross between a drum and coaster brake. They should soon have a matching brake setup for the front wheel. The Sachs internal transmission hubs are also available with drum brakes front and rear. More and more disc brakes are coming onto the market and the price is dropping. AMP sells a nice compact model which adapts to existing hubs. Cushiony, sprung bike seats are making a comeback also. Though much more comfortable than an ultralight race model, they are still a far cry from a recumbent.

Now back to recumbents. How are these changes in the domestic market going to indirectly affect the popularity of the recumbent? As more people buy and use their bikes for practical rather than social cycling, usefulness becomes more of a mind set. As usefulness is more common, comfort becomes more of a need for many of these people. As comfort becomes more of a need (and the "nerd" image has lessened hopefully) people buy and ride more recumbents, or am I just dreaming.

Whether the above scenario actually comes to pass or not, time will tell. It seems that the explosion of recumbent buying that has been compared to the mountain bikes popularity, is not going to happen. That is OK. As I climb on my recumbent and with my chin proudly in the air, ride to the market for chips, beer and salsa, I realize that a quiet revolution will suit me just fine.

Relax and Ride.....BJ ☐

RCN's Cool Bike of The Month

The 1996 Rans Tailwind

by Robert J. Bryant

The Rans Tailwind is one of the simplest, most straight forward recumbent designs available today—a monobeam compact long wheelbase (CLWB). It has the shortest chainline of any Rans model and the bike is light feeling, agile and quick.

The Tailwind sports the newest incarnation lower-back Rans seat. This seat back has been shortened and is straighter at the top. It seems to fit all but the tallest riders better. The seat came up to my shoulder-blades—which seemed optimum. It is a hybrid design, having a taught mesh back with a foam-covered composite bucket-base that is reminiscent of something from a high-tech John Deere. This very comfortable seat comes standard on all Rans models. The Tailwind far out-ranks the CLWB competition in all-around seat comfort.

The handling is advanced for a CLWB—it's quick feeling! Take-off and low speed handling take some getting used to, but once your feet are on the pedals, the ergonomics are excellent. The higher bottom-bracket makes for good acceleration and I was surprised at the monobeam's frame stiffness. The Tailwind appears to have most of the advantages of a SWB matched with the stability usually found only in LWB recumbents.

The Tailwind is a design departure from the CLWB BikeE and EZ-1, as the Tailwind was designed to be more enthusiast oriented. It has a higher bottom bracket position than other CLWB models (but lower than SWB models). The higher bottom bracket makes the riding position a bit less user-friendly than the CLWB competition.

The idler-free drivetrain and Shimano changers makes for an excellent light-shifting feel that is absent on many recumbents. The new relaxed head tube angle (62 degrees) improves the handling and steering over the previous more tiller-like model.

The Tailwind doesn't need a chain idler, however, a standard equipment Bullet Brothers Chain tensioner hangs off the rear wheel quick release and adds spring to the chain. This accessory is a great addition to any recumbent without a stock chain idler (or aid to a rear derailleur weak spring).

The Tailwind is probably not suited for riders of all heights. At 6' 32" inseam, the seat was about 80% of the way back on the seat track. I estimate weight distribution at approx. 75% (rear) 25% (front) and John Schlitter (Rans) concurred.

The perfect size rider for the Tailwind is in the neighborhood of 5' 6"-5' 10", however, it will depend on your style of riding.

For touring or cargo carrying, a trailer is



necessary as the Tailwind does not have a provision for a rear rack. An AngleTech/Rans seat bag would be great for day rides.

For many riders, this high-value CLWB cruiser could be the ticket—it's a smooth riding performance CLWB—and a good buy at \$985.

For more information on the 1996 Tailwind and the complete line of Rans recumbent bicycles, contact: Rans, 4600 Hwy 183 Alt., Hays, KS 67601. Ph#913-625-6346, Fax#913-625-2795.

EDITORS NOTES: *We love the CLWB design. This is really the design to watch! They are compact, fun and built for riders of any ability—ultra-deluxe recumbent cruisers!*

For those interested in more of a "handling" bike, take a good look at the Rans Rocket—which is the Tailwind's SWB kin and another excellent value-added recumbent at just over \$1000. □

DO YOU HAVE THE NEXT RCN COOL BIKE OF THE MONTH?

Please send a picture and short article for "RCN's Cool Bike of the Month" feature to: RCN's Cool Bike, POB 58755, Renton, WA 98058. It can be a homebuilt, commercially built, personalized bike, commercial prototype or you can be a new manufacturer or an old one which something new!

SPECS AT A GLANCE

FRAME: CrMo 1.5" square (main beam)
FORK: CroMo
SEAT: Rans
WHEELBASE: 56"
WEIGHT: 30 pounds
HEAD TUBE ANGLE: 62°
SEAT HEIGHT: 23"
BOTTOM BRACKET HEIGHT: 20"
BRAKE (ft): Shimano Deore LX
BRAKE (rr): Dia Compe Bulldog
BRAKE LEVERS: Tektro
WHEELS: 20" X 1.5"
HUBS: Shimano Alivio
HEADSET: YST
CHAIN: KMC
DERAILLEUR (ft): Shimano TY25
DERAILLEUR (rr): Shimano STX
SHIFTERS: Grip Shift SRT400 7 spd.
CASSETTE: 11-28 Shimano
CRANKSET: Suntour XC Comp 36/46/58
GEAR INCH RANGE: 26-105
COLORS: Cool Blue and Hot Red

PRICE: \$985

FAIRINGS: The Rans fairings will work, but for riders less than 5'10" (or so), you will be looking down into the fairing. A wide Super Zipper may be more in order with the new Rans "D" bars.

BOOK REVIEW: HUMAN-POWERED VEHICLES

Edited and written by
Allan Abbott, MD
and David Gordon Wilson, PhD

"This is the first comprehensive book ever written about human-powered-vehicles (HPVs). Filled with 180 impressive photographs, detailed drawings, and tables, *Human-Powered Vehicles* explains the history of HPVs, offers practical insights into their design, and considers future possibilities of human-powered travel.

Allan V. Abbott and David Gordon Wilson, HPV designers and former presidents of the International Human Powered Vehicle Association, have assembled a list of contributors representing a who's who of leaders in human-powered vehicles. They review the development of human-powered water, land and air vehicles, focusing on the innovations that have significantly improved performance in recent years.

In this book, you'll find

- applications of human power in history;
- a discussion of all major factors that enhance or limit the performance of the "human engine";
- design issues for rowing shells, hydrofoils, bicycles, human-powered aircraft, and other HPVs;
- descriptions of famous human-powered vehicles, such as the Gossamer Condor;
- an explanation of the economic and environmental advantages of human-powered travel; and much more.

A fascinating read for bicyclists, inventors, hobbyists, and sports enthusiasts, this book is also an excellent human factors reference for sports medicine and exercise science professionals." —
From Human Powered Vehicles.

If you enjoyed David Gordon Wilson's article, "The Development of Modern Recumbent Bicycles" from RCN#29, you will love this new book, *Human-Powered Vehicles*. This is a concise and factual 280 page course on HPV design, history and future possibilities. It should be required reading for every recumbent home-builder, designer and certainly commercial builder on the planet—everyone can learn from *Human-Powered Vehicles!*

Of particular interest to recumbent riders are the chapters on HPV history, human-engine performance with discussions on arm power! Chester Kyle writes a chapter on the history of Human Powered Land Vehicles and Competitions as well as a discussion on bicycle aerodynamics. David Wilson offers an expanded view of "The Development of Modern Recumbent Bicycles." There are chapters on HPV drive-train, steering and suspension design as well as a discussion on composite use in HPVs. One chapter of particular interest to recumbent designers would be Rob

Price' discussion on HPV steering design.

Articles and opinions on bicycle steering geometry are in just about every bicycle book, but finding a discussion of HPV steering geometry, head tube, rake and trail is a different story.

"Lightning Progress: An HPV Development Case History" is a chapter written by Lightning (P-38, F-40, R-84 and F-86) designer, Tim Brummer. This is a comprehensive study and analysis of Tim's recumbent design that discusses his beginnings with HPV race bikes and how this experience led to his successful commercial recumbent bicycle design. Gardner Martin's Gold Rush HPV racing dominance as well as commentary on the record-breaking "Cheetah" HPV (current 200 meter record holder 68.4 mph) is also included in *Human-Powered Vehicles*.

If you had ever wished that HPV Design was taught as a college course, don't delay any longer. Order this book. *Human-Powered Vehicles* is a wealth of knowledge for the HPV student and we recommend it. *Human-Powered Vehicles* is available from Human Kinetics for \$45 US + shipping—Robert J. Bryant.

Human Kinetics
1607 N. Market St.
Box 5076, Champaign, IL 61825-5076
Ph#217-351-5076 Fax#217-351-1549

To order *Human-Powered Vehicles* by mail, call: 1-800-747-4457 (inside US). The book is \$45 plus \$3.75 shipping.

David Gordon Wilson's *Bicycling Science* is available by mail by calling 1-617-625-8569. The paperback second edition is \$15.50. Shipping for one book (UPS) is \$3.00 for one book, and 50 cents additional shipping for each additional book.

BOOK REVIEW: PEDALLING UNKNOWN PATHS

by Michelle Velthuisen-deVries

Nop and Michelle Velthuisen-de Vries always had an ambition to travel. Overcoming Michelle's initial reluctance to travel by bicycle, they set themselves the target of departing once Michelle had finished her MA, and worked and saved hard for two years. After a trial trip to Switzerland, a mere 1250 miles, they were ready to go and, offered a passage on a merchant ship at three days notice, set off from Hambury.

A month later the boat docked at Point Comfort, Texas. Michelle and Nop unloaded their bicycles, bought a map at the first gas station they found, and headed north. So began an epic journey that was to last fourteen months, take them through 31 states and cover over 16,000 miles.

Causing a stir wherever they went with their unusual "recumbent" bicycles, designed and built by Nop, they travelled on interstate highways and deserted paths, pitching their homemade tent everywhere from cemeteries to well equipped campsites. Surviving sub-zero temperatures and torna-



dos, they experienced the stunning beauty of the American countryside, and the generous hospitality and kindness of its inhabitants.

Michelle's vivid account of the journey will inspire anyone who has ever thought of travelling long distance by bicycle to take her advice: Stop considering it and just go for it!

I read this book over the course of a week and really enjoyed it. This romp through the USA by two European 'bent riders was an interesting education for me on the Euro-state-of-mind, how they view Americans and especially what travelling cheap is all about. Many of us drop more at 7-11 for snacks than Michelle and Nop spent for a daily budget. The first 2/3's of the book is very good and details people and travel throughout the Texas, the SW, California and eventually into the midwest. The trip started to lose its luster for me as the trip narrative pace sped up and the pair made their way to the East Coast—and then back to the SW to see the beautiful SW American desert. This is one of a few recumbent trip narratives and is really worth the read—Robert J. Bryant.

ISBN 0 86332 958 6, PRICE: £10 Airmail direct
PAGES: 286, ILLUSTRATIONS: 10 maps, 8 color pages.

Pedalling Unknown Paths is available from Temple House Books and is distributed through Vine House Distribution, Waldenbury, North Common, Chailey, East Sussex BN8 4DR England. Ph# +44 0825 723398 Fax# +44 0825 724188. Vine House can accept Mastercard and Visa, bank drafts and Eurocheques.

EDITORS NOTE: Another great recumbent travel book is Steven K. Roberts, "Computing Across America" which outlines Steve's very personal high-tech recumbent quest. The US post-paid price is \$15 US. The address is: Nomadic Research Labs, PO Box 900201, San Diego, CA 92190. Subj: Email at: wordy@qualcomm.com

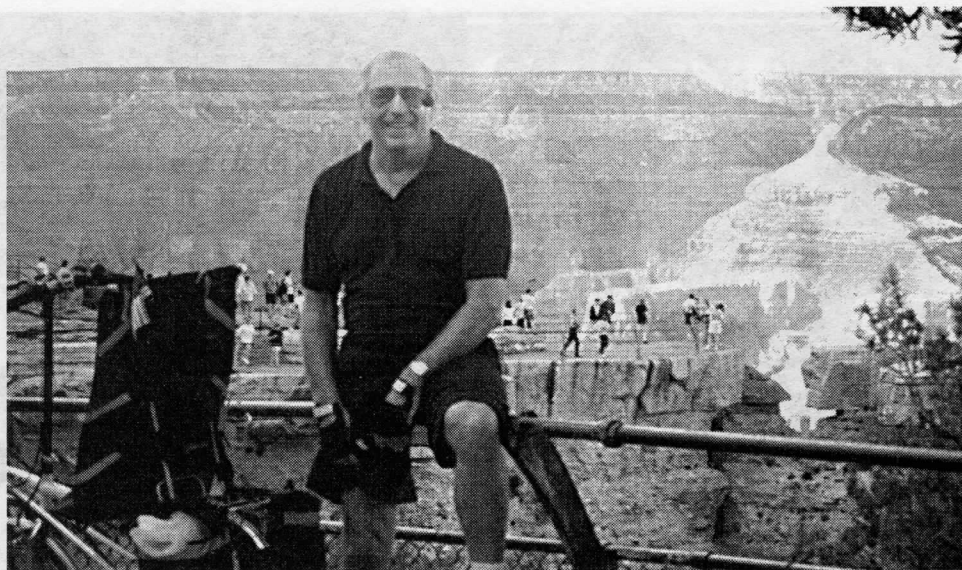
Recumbent Tour of Arizona Highways

By Clyde James

I consider myself an experienced tourist after years of riding on a traditional bicycle. My trusty Cannondale has carried me to Yosemite, the Grand Canyon, San Francisco to Los Angeles, etc. A bad back, abused shoulders, neck and elbows, caused me to seriously look at recumbent bicycles. My first recumbent was an Infinity LWB, in partnership with my buddy, Tom. We chose it because of its low price and seemingly comfortable ride. We decided very quickly that a long wheel base recumbent was too hard to transport and unwieldy in city traffic. My friend Jim, at People Movers, had a full stock of all brands and I decided that the Rans V-Rex would be my recumbent of choice. I felt the above seat steering gave more stability and sense of control.

I am a man about to have his 55th birthday and I am finding my confidence waning when it comes to long, steep hills and 100 mile days. Much of this loss of confidence has resulted from a gradual slide into being out of shape, tipping the scales at 214 lbs. and not having developed my recumbent riding muscles yet. I was finding some numbness in my elevated feet and soreness in my butt muscles from the one position I was forced to remain in. While the seat is very comfortable, the limited number of positions was causing a disconcerting thought that perhaps I couldn't finish a demanding tour. Another problem I was having was finding a suitable riding shorts. Even loose fitting spandex type shorts seemed to bunch up on me and give me a strangled feeling. Well, I went to our local Target store and purchased a baggy cotton short that makes me look like a teenager. They come down to my knees and have plenty of room. They were \$7.99 full price, so I may have made a great discovery. I'll let you know what kind of reaction I get from the general public.

All of these difficulties were causing me to ask some serious questions. Was I just getting too old, would my muscles adjust to the new riding



Clyde & V-Rex at the Grand Canyon—photo courtesy of Clyde James

style, is this recumbent thing all I had hoped it would be? I won't know the answer until after my tour, but the last couple of weeks have helped my mental outlook. My scale is now reading 202 (still a ways to go), my legs are stronger, and at the end of a long ride, they feel tired, but my butt and the rest of my body feel fine. Well, I leave tomorrow for Prescott, Arizona, so the end of my story will need to wait.

Our loop will go from Prescott through Sedona, up the Oak Creek Canyon to Flagstaff, to the canyon rim, back down to Williams and Ash Fork, and finally back to Prescott. It's a total of 300 miles, which is less than many of my previous Cannondale tours. Let's hope for the best.

The Results are in—You CAN tour on a recumbent, even if you are a little out of shape and reaching upper middle age! Many people thought we were crazy to go to Arizona in August on bicycles, but it was great. We experienced a thunderstorm in the mountains above Jerome. My friends Phil and Tom were on regular bikes and their shoes were soaked and dirty. I was clean and surprisingly dry, because my feet were ahead of

my front wheel and up and out of the spray. We all rode our brakes hard because we were unsure of how slick the road would be when wet, and we needed to stay in control on the steep, sharp turns.

We didn't care for the narrow roads between Cottonwood and Sedona with no shoulder and heavy traffic from commuters. I must say everyone treated us in a courteous manner and seemed concerned for our safety. We were all tired when we arrived in Flagstaff, but I had made it up Oak Creek Canyon on my V-Rex! Yes, I did go slower than my friends on their regular bikes, but I did arrive without all the aches and pains I was used to having. Our longest day was from Flagstaff to the canyon rim (83 miles) and we had a great time. Each day had me climbing faster and my partners commented on my improvement.

Finally, on our last day, riding from Ash Fork to Prescott, I was flying! The road had a great shoulder; it is mostly level or downhill and I was able to cruise at 23 mph much of the time. My friend Phil, had been watching me closely the whole trip because he was trying to decide if a recumbent was in store for him as well. He has been my consistent cycling partner in tours for the last ten years and he agreed that I seemed to enjoy this tour much more. I believe the whole thing centers on your expectations. You can't expect to get on a recumbent and immediately have your body perform at the same level that you are used to on a regular bike. It will probably take one season, but you can be very close after a few months. I found myself smelling the roses more, because I went a little slower, was in a better position to look around at things, and I didn't have the typical sore spots to contend with. I am sold on my recumbent bicycle, even though I still enjoy my mountain bike. With my great Cannondale sitting their next to my V-Rex, I will be getting on my V-Rex.

After my trip, I am still at an even 200 lbs., but it has shifted to different positions and I know I can soon get into the 190's. By the way, I didn't get a single derogatory comment about my baggy pants and it looks like Phil may be on a recumbent soon! □

Continued from page 2

RCN MINI SURVEY

We would like to experiment with a mini Readers Survey. We'll try and post the results in the next issue.

Please answer the questions thoughtfully and carefully and name only bikes that are currently commercially available in North America.

- 1) Would you like to have RCN A. 5/6 issues per year with a buyers guide included; B. 6 issues with a separate buyers' guide; C. 10 smaller monthly issues with a separate buyers' guide.
- 2) Would you rather have: A. 40 page/ electrobright (RCN#25); B. 36 page/ electrobright inside pages and a glossy white cover; C. 32 pages/ white paper (RCN#30).
- 3) Publication costs have risen dramatically in the past year, while RCN continues to increase both the size and quality. We would like to know

how good a value your RCN subscription dollar is: A. Very good; B. Good; C. Fair; D. Poor

- 4) READER'S CHOICE: BEST SWB/MWB?
- 5) READER'S CHOICE: BEST CLWB?
- 6) READER'S CHOICE: BEST LWB?
- 7) RECUMBENT TO WATCH IN 1996?
- 8) BEST RECUMBENT MANUFACTURER?
- 9) BEST RECUMBENT CRAFTSMANSHIP?
- 10) READER'S CHOICE: BEST OVERALL RECUMBENT DESIGN?

Please send your response via email to DrRecumbnt@aol.com, in letter form, or you can call them into our voice mail at Ph#206-630-7200, press "#" to skip the long greeting.

Watch for RCN#32/33, our double issue buyers' guide to be mailed in early April.

Viva Recumbency!
Robert J. Bryant



Continued from page 5

1. Difficult to get on and off.
2. Difficult to put both feet down while sitting on the bike.
3. Difficult to safely start and stop in traffic.

Maybe for someone really tall but for a person under 6 feet definitely a no-no. It did seem smoother and faster once under way, however.

By the by - this is my first posting to this list. Although I've been lurking here for some time. Just felt that whatever I had to say was being said a lot more eloquently by someone else.

Larry Page
Appleton, WI

BLURRED VISION

Dear RCN,

In response to your ATP 20" wheel conversion information request: I recently took delivery of an R-42 Vision with USS and a 20" front wheel. Though I am crazy about the bike, and will deal with any foolishness it offers, I have to say that it is a twitchy steering bike. I have no idea whether the 20" option has anything to do with this or not. Riding with no hands is a good way to check out the alignment of your rear wheel....on a diamond frame. Just try this on my R-42; you can't go two yards in a straight line. I still love this bike.

What I don't love was the response I got from ATP after describing the problem in a carefully written letter. My guess is that the guys in Seattle are swamped as I had to wait eight weeks for delivery.

Sincerely,
Wells Goodhue

EZ-1 UPDATE

Dear Robert,

With one exception, which I'll get to, I found your comments about the Easy Racer EZ-1 (RCN#28) on the money.

As of August 1995, I have ridden my EZ-1 more than 200 miles with most of those on 20+ mile tours of the countryside. There hasn't been a hill yet that I wasn't able to pedal up. The high gear is just "adequate." If I was more inclined, I'd install a 54 or 56 tooth chainring to get a higher top gear so I could pedal down those big hills, which I find more stable than high speed coast-



ing, but doubt that I will.

I was concerned that the ride wouldn't be comfortable because of the small wheels, but I haven't found it objectionable.

When I got my EZ-1 in May, the handlebar bag wasn't an option yet. To carry a bag, I made a mount out of sheet aluminum and a piece of 1-inch diameter tubing. It bolts to the seat back using the two holes already drilled for the reflector (which I removed). Not perfect, but it works.

I plan to lash some type of crossbar to the front of the handlebars, from which to hang a second carrier bag.

One indicator of the EZ-1's quality is the provision for a kick-stand. Instead of merely drilling a hole through the bottom tube, a sleeve is brazed in, so that the kickstand bolt (running through the hole and sleeve) doesn't crush the tube. There's also a plate brazed on the bottom side of the tube so that the kickstand mounting plate doesn't rotate. A nice addition would be mounts to hold a conventional length tire pump.

My one complaint is the seat. Well before my 20+ mile rides are over, my posterior goes numb. I drilled 1-5/8 inch holes on the underside to provide some pressure relief. When seated, I can feel the foam rubber bulging through the holes. I also bought some stretch-fabric shorts without padding as I felt that sitting on the seams of the padding on conventional cycling shorts contributed to my discomfort. The shorts and holes help, but the seat is still uncomfortable after I've been on it for awhile.

Of course, my seat problem may be unique to my "seat." I had the same numbness problem with my 1991 Ford Escort. Obviously on short rides, the seat isn't a problem.

And speaking of my Escort Hatchback (which I no longer own), the EZ-1 would fit in the back by removing the seat and lowering the handlebars. I didn't have to remove the wheels.

The compact-long-wheelbase design is ideal for people like me. I'm 5 feet six inches tall and don't like short wheelbase recumbents because I feel like I'm sitting on top of the front wheel. A conventional long-wheelbase recumbent would

take up too much space in my small apartment and be difficult to maneuver in and out of the apartment building elevator (I live on the third floor).

Michael Eliasohn
St. Joseph, MI

Micheal, thanks for the report and pics on your EZ-1. Did you see that Easy Racers now had a Super Zzipper for the EZ-1? We are building up a "Super Commuter EZ-1 with a Sachs 7 internal 7-speed and drum brakes. Also, we hope to test a '96 BikeE CLWB!

Subj: HPV A Special Thank You

From: PWTCCB@is.Arco.COM

Dear Robert,

I would like to say a special thank you to the riders on Jim Wronski's informal monthly ride from PeopleMovers last Saturday, December 9th.

My wife Alyce and I were riding a borrowed (homebuilt) recumbent tandem. We left PeopleMovers a few minutes ahead of the group and headed south down the Santa Ana River bikepath. Unfortunately, 6 miles down the path, I hit a bump or something and dumped the bike at about 18 mph. Alyce and the bike came out unscathed, but I suffered a broken ankle.

I want to thank the riders, who were just behind us, for their help in extricating me from the bike, calling the paramedics and helping us until their arrival. An extra thank you goes to the gentleman who took the tandem in his truck back to PeopleMovers, where my wife and son could collect it later that day. I'm sorry I don't know your names, but you are definitely very considerate and helpful friends. I'd also like to thank Jim and Linda Wronski for their kind assistance.

The net result to me was multiple fractures and dislocations, which are now held together by screws and a plate. I won't be recumbent riding for a couple of months at least. My crutches and wheelchair could be called 'Human Powered Transportation', but it's just not the same.

Chris C. Broome
Los Angeles Recumbent Rider

Chris—we all hope that you get well soon! □

RECUMBENT CYCLIST CALENDAR

National HPV Race Series

April 27, 1996 (tentative)
Whiteland Raceway, Whiteland, IN
This is the first race of the '96 season for the series formerly known as the Great Lakes HPV Race Series. For more information, contact Don Barry at Ph#317-831-8798.

National HPV Race Series

April 28, 1996 (tentative)
Pioneer Park, Mooresville, IN
For more information, contact Don Barry at Ph#317-831-8798.

Exhibition of HPV's

Late July, 1996
Art Center College of Design, Pasadena, CA
This exhibit of HPV's set in the 5,000 square-foot Williamson Gallery will include upright bikes, recumbents, wheelchairs, skateboards, submarines, canoes, kayaks, flying machines and who knows what else. For more information, contact Stephen Nowlin Ph# 818-396-2397 or Email: nowlin@artcenter.edu

European HPV Championships (BHPC)

July 26-28, 1996
Leicester, England.

Cyclefest U.K.

August 1-4, 1996
Lancaster, England
For more information, contact:
John Bradshaw: tel. 01524-63446
ext 474

Interbike Anaheim International Bike Expo

September 19-22, 1996
For more information contact:
Interbike Ph#714-376-6161.

RIGHT: "Gentleman ride Recumbents"—courtesy of Kelvin at AngleTech.



1996 BUYERS GUIDE ANNOUNCEMENT

Due to popular demand RCN will produce a 1996 Recumbent Buyers' Guide Double Issue. Expect to see more specs, comparisons, opinions and new bikes for '96!

This issue will go out to regular subscribers as—RCN#32/33 and will be mailed in early

April, 1996. Standard subscribers can get the buyers guide up to a month faster by upgrading to a deluxe subscription (\$35) or sending \$3 for 2nd Day Priority S/H.

Recumbent Manufacturers: We need complete updated specs, new photos and your complete information ASAP (the deadline has past) So if you've forgotten, please call us ASAP! Ph#206-630-7200.

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COUNTERPOINT



COUNTERPOINT LAWSUIT II

Kent, WA—In case you haven't heard it already, Counterpoint and Angle Lake Cyclery were sued over a Counterpoint Presto crash and frame failure. This failure was one-of-a-kind and not at the boom weld. In our coverage of this story, we have had no official comment from Counterpoint, however, we understand that there are Presto and Opus models available through AngleTech in Colorado—*RJB*.

CYCLING MAY TAKE PERSONAL TOLL

Milwaukee, WI—Trauma from hours of biking ranges from penile numbness to impotence! RCN reader, Jim Limbach sent us a copy of his hometown paper, the Milwaukee Journal Sentinel, in which the article of the above title discussed the horrors cycling for those of the male sex. As *Bicycling Magazine* warned two summers ago, "the reproductive system is the first thing on the saddle, but the last thing on the mind. And it shows. We wear helmets, shades and gloves to protect our head, eyes and hands. ...But what do we do for our poor (penis) and its supporting cast? Stuff them all into a pair of hot, tight, stinky shorts where they're all scrunched and jiggled for hours." Research at the Boston University has concluded that 600,000 men are impotent from crotch injuries, 250,000 of them from cycling.

The Sentinel article continued with a list of, "Tips for the Road." Among these "tips" was advice on how to get your new bike "Fit Kit'ed" to your body, get a soft gel-filled seat so you're 'hanging free' in the middle, adjust your seat tilt, wear padded shorts, ride in a more upright position and use clipless pedals. Finally, the article stated, "if your penis gets numb on long rides, consider shorter rides, more breaks and days off. Remember: A numb penis means you're putting pressure on your perineum—a warning sign for impotence. Also, shift position while you ride. The article ended recommending that riders consider women's step-through or mixte type frames or special seats that take the pressure off the soft tissue. What "Tips," huh?

Nowhere in this article was there a reference to a recumbent bicycle, but there was enough information to scare a few roadies on ti-railed wedgie seats into looking into recumbents.

EZ-1 SUPER ZZIPPER ANNOUNCED

Freedom, CA—Gardner Martin announced today the availability of the Zzip Designs/ Easy Racer EZ-1 Super Zipper. Zipper Fairings have long since been an institution on Easy Racer Recumbents. The new EZ-1 model of the Super Zipper is available for \$249 from Easy Racers, Ph#408-722-9797.

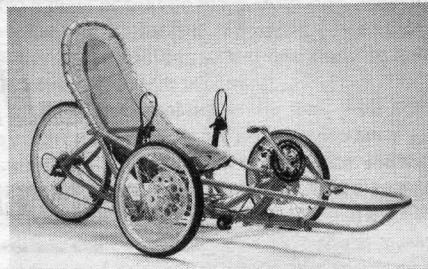
FOLD FORWARD ASS & SUSPENSION!

Woodland Park, CO—AngleTech now offers fold-forward adjustable handlebar/riser for Rans, Lightning, and other recumbents. Features: Tilts away for easy entrance and exit with a quick release lever, an adjustable stop for wide range of reach adjustments, vertically adjustable for fine tune, a full compliment of cable stops, excellent design and finish. Available in black or custom colors. Priced from \$199.

Also available for 1996—suspension forks for 20" front wheel recumbents. Features: Aluminum construction, 2.8 pounds, tunable and rebuildable, cantilever or caliper format built in to every fork, Nice looking finish and detailing, one standard color (custom colors available). Contact: AngleTech, Ph/Fax# 719-687-7475, Email: Anglezoom@aol.com

NEW FULL SUSPENSION/ ULTRA SWB

Kent, WA—We've heard a rumor about a two new SWB/MWB models, one full suspension with articulated rear end and the other a very similar light-weight performance model. Both bikes will have 20" front and rear wheels and are high-end bikes. We will be lurking for more info and photos for the next RCN—*RJB*.



PRACTICAL INNOVATIONS—1996!

Kent, WA—Rick Horwitz of Practical Innovations wrote to tell us about his '96 offerings. Rick now offers the Zephyr MkIII GT (\$4295 on sale for \$3925) and GTX (\$4650 on sale for \$4295). These trikes are on sale through January so call ASAP! Both are high-end trikes, the latter being the "ultimate" with stock Zipper fairing, SPD pedals and Deore XT components.

Rick is also working on a new design code-named, "Thunderbolt" which will be in the \$2500 price range and will be available later this Spring. For more information, contact Practical Innovations, PO Box 2536, Morgan Hill, CA 95038. The new phone number is (408)226-3991 or Email: rhorwitz@hooked.net

RECUMBENT SEA RIDES

Moline, MI—**What:** Free Sunday bike rides starting at the Recumbent Sea **When:** Every Sunday 9 am starting when the snow is melted. **How:** Use your 'bent (or any bike) or borrow a floor model test ride bike free! but you must reserve if you plan to use a shop 'bent. **How long:** Return to shop by 5pm or later if the weather is really fine. Pack a lunch or purchase lunch at one of our rest stops. Bring a bathing suit, as there are lots of lakes along the way. We all go on the ride so the shop will be closed if you arrive late. We will usually have some snack foods available at the start but don't plan on us providing meals.

We will ride the rolling farmlands of the county, along the shore of lake Michigan and/or through the many state recreation land forests nearby. Numerous small communities line our route so you will be able to buy food & drinks. Contact: Shel, Recumbent Sea, Moline Michigan, Ph#616-454-3260 or 616-877-2050 Email: sheldonhe@aol.com

RECUMBENT EXERCISERS RATED BY CONSUMER REPORTS

Renton, WA—The January 1996 issue of Consumer Reports (CU) is the "Shape Up" issue. A variety of indoor exercise equipment was tested and rated. If you are interested in getting fit for the new year—grab a copy of CU.

CU disliked dual-action upright bikes like the Schwinn Air Dyne saying that they, "most jerk your arms and don't allow you to set an exercise intensity independent of your pedaling speed....make them the worst of the of the three types of exercise bikes.

They even tested some of the new Fitness Rider that you see on late night TV. Of these, only the Weslo Cardioglide (\$199) was acknowledged as a *Best Buy*.

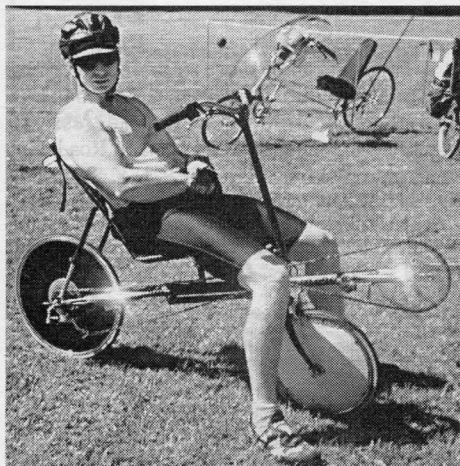
CU seemed favorably impressed with recumbent exercisers, "worth considering, especially if you find upright bikes uncomfortable. Just be sure you have plenty of room; recumbents generally require more floor space than the other types." CU liked the: #1 Tunturi Motivational Recumbent F570 (\$650); #2 Tunturi F51 *Best Buy* (\$400); #3 Precor 855e (\$900); #4 was the Schwinn Professional 230 (\$965); #5 Ross Aercumbent Pro 977 (\$945); #6 Schwinn Personal Trainer 205 (\$350) and finally #7, the Precor 817e (\$400). All seven recumbent models rated in the "VG" (very good) column. None were above "excellent" and none below "good, fair or poor."

EDITORS NOTE: Recumbent exercisers are fast becoming mainstream—while their road-counterparts loom on the fringes. Maybe a progressive recumbent bicycle company should offer a training stand as an option (see RCN#30, page 28). Recumbent exerciser manufacturers have come up with their own terminology for these stationary bikes. They call low bottom bracket designs, "semi-recumbent" (our terms: CLWB, LWB) and

high bottom bracket models, "recumbent" (the equivalent of a SWB). What I found most interesting was in the sidebar/ comment key. Here is what they had to say about the higher bottom bracket "recumbent" models, "Seat position may aggravate a knee injury, or strain knee during heavy exercise." This was noted for all Tunturi models, the Ross and Schwinn 205. The only two models to rate "VG" in the ergonomics rating were semi-recumbent models which equate to LWB/ CLWB road recumbents.

RYAN/ WATERFORD DEAL IS OFF

Nashua, NH—Dick Ryan announced in late December that the proposed production arrangement with the Waterford Precision factory has fallen through and he will be moving production back to New Hampshire. For 1996, Vanguard's and DuPlex tandems will be upgraded to the ultra-deluxe range with high-end components and quite possibly a price increase to match. Also for 1996, Ryan Recumbents will be sold factory direct only. Ryan Recumbents Ph#603-598-1711.



The SOHO Renegade—staff photo

SOHO MAKES AP WIRE

Kent, WA—Shane Harris of Soho Design in Klamath Falls, OR was interviewed by his hometown *Herald and News*. Associated Press picked up the article and it was zapped nationwide on the wire. The title is, "Bike builder works hard to find niche for recumbent bicycles." Shane is an HPV racer and former bike shop owner who unveiled his SWB high performance "Renegade" approx. one year ago. The primary design is that of a SWB with USS or ASS and variable front and rear wheel sizes. Harris moved to Klamath Falls last August with his wife, Holly, and has built and rebuilt 20 recumbent bicycles from his garage shop known as Soho Design. The Renegade is a 26-30 pound CroMo steel SWB and prices start at \$1450. Harris told the *Herald and News* that the new venture has been a financial drain so far.

This past month, Shane called to tell us about a new super deluxe dual suspension high-end CLWB prototype that he is working on. Readers can contact Soho at Ph#503-882-1001.



Joseph Huberman's Treklite SWB Fairing—Photo courtesy of Joseph Huberman

TREKLITE TO OFFER SWB FAIRING

Raleigh, NC—It starts with a Super Zipper from Zzip Designs that is custom made to my specifications. It's deeper and the sides are fuller.

To this, I add a mounting system of my own design that secures to the frame with worm gear clamps. The mounting system has telescoping tubes for adjustment. The tubes are locked in place with Velcro. Between all the attachment points there is either Velcro or reinforced vinyl. This forms a resilient mounting system that damps much of the vibration providing a relatively quiet ride. The fairing removes in two minutes.

The sides and back are made of fabric. The first 18" is a very porous stretch material and the middle section is nylon pack cloth, and the last 18" is stretch cloth again.

The fairing is open at the bottom so that you can put your feet down and the top is also open. Getting in and out involves pulling the Velcro side down to an adjustable/ movable stop. Then I put one foot outside the fabric before standing up and stepping out with my other foot.

I am getting a 10% speed improvement from the bubble and another 10% from the sides.

Prices are \$150—bubble (Super Zipper), \$150—Treklite Aluminum/ Velcro mounting system and \$150—Treklite Body Sock.

Treklite also makes a seat bags that fit Rans and Lightning models and seat side bags that fit Vision and Lightning models. For more information contact Joseph Huberman at Treklite Inc., 904 Dorothea Dr., Raleigh, NC Ph#919-828-6068.

ZAKOLDAEV HPV, AEROLOPET

St. Joseph, MI—The first HPV design effort of Boris Zakoldaev of Russia seen in the United States was the "Severvideo" which he and other team members raced at the Wisconsin HPV Classic in Milwaukee in April of 1990.

The Severvideo (sponsor's name) was strictly for racing and by any HPV'er's standards was very sophisticated—front-wheel-drive inside a monocoque shell, that is, the body was load bearing; there was no separate frame.

Zoldaev, who worked as an engineer in his native country, moved to the United States in May 1995 and is now living in Tucson, Arizona.

He's working at a fiberglass company where he designed and built the streamlined recumbent bicycle shown on the next page. This streamliner was designed for street use. It's been dubbed the "Aerolopet," for aerodynamic envelope.

In addition to improved aerodynamics, Zakoldaev said the body protects the rider from the wind, bright sun, or rain. He said the large openings in the sides "don't influence air resistance. The air moves (over them) like a solid body." He rode a similar cycle in Moscow during winter and "it was not cold inside."

Some air does circulate inside the fairing. He said he didn't feel it was too hot inside when riding the Aerolopet on an 80 degree F. (27 degree C. day in Tucson).

The large side openings make starting and stopping easy. Since the rider, after a little practice, can quickly stick his or her feet on the ground when stopped.

Zakoldaev said he rode the Aerolopet 25 miles (40.2 km) in only 47 minutes, an average speed of 31.9 mph (51.3 kph) during an organized bicycle ride in Tucson.

The fairing is made of fiberglass. Future ones will use a combination of fiberglass and Kevlar or carbon fiber. As is, the fairing weighs less than 17 pounds (7.7 kg) and the complete bike is less than 50 pounds (22.7 kg)—Michael Eliasohn.

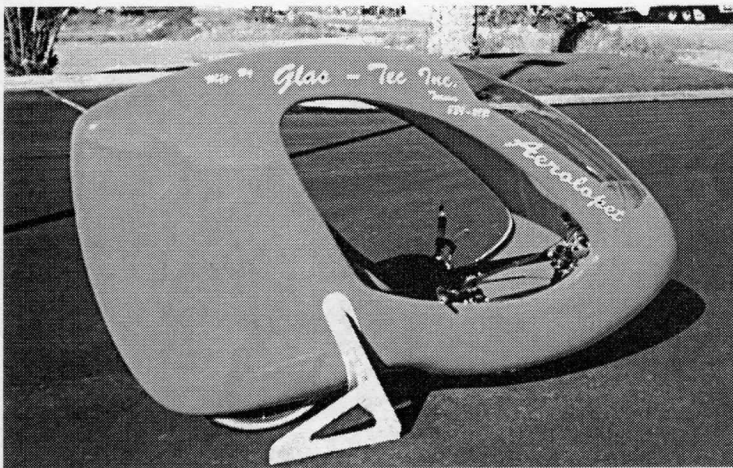
GLAS-TEC, Inc. has manufactured fiberglass articles for mining and industry for over 17 years, and we now introduce the Aerolopet aerodynamic envelope body for recumbent bicycles.

We estimate that it can increase speed by at least 15% (up to 50% in some cases)—our test rider rode 25 miles in 47 minutes on the Aerolopet's maiden voyage in the El Tour de Tucson, with an average speed of 31.9 mph.

The present Aerolopet was designed around a Turner Enterprises' SWB (38"/96.62 cm), under-seat steering, steel-frame recumbent, but it will fit other makes as well.

Fairings range in weight from 12 lbs. (carbon fiber) to 25 lbs. for a polyester version. Costs range from \$1500 for a "kit" on up to \$3500 for a ready to ride Aerolopet (Turner Chassis).

For more information contact: GLAS-TEC, Inc., Ph#520-889-0181. Fax#520-746-9440.



The Aerolopet with Turner chassis—photo courtesy of GLAS-TEC

ENCYCLOPEDIA '96 RELEASED

Los Angeles, CA—Encyclopedia '96, the International guide to unusual bicycle products published in Britain and distributed worldwide, has just been released and is available from select bike shops across North America or direct from the exclusive North American distributor, Open Road USA. At 150 pages, Encyclopedia '96 features over 100 different commercially available products from 10 different categories in full color. The products therein reflect the new imagination in the design and manufacture of cycles and accessories and provide alternatives to customers looking for new ways to enjoy human-power.

Encyclopedia '96 and the companion video are available through many RCN advertisers as well as directly from Open Road USA for \$18.00 plus \$4.00 postage.

To order, please send checks or money orders to:

Open Road USA, PO Box 291010, Los Angeles, CA 90029. Tel. 213-468-1080.

NEW EURO-DISTRIBUTOR FOR RCN

East Sussex, U.K.—Until recently, anyone living in Europe who wanted to subscribe to RCN had to do so by direct subscription to the US and in US dollars.

For 1996, RCN has appointed U.K. recumbent specialists, "FutureCycles" to be its RCN Euro-Agent. FutureCycles is one of the major recumbent retailers in the U.K. It was started about 5 years ago by Patrick Shaw, who put together an innovative short break holiday package of recumbent tuition, quality European recumbents (such as Peer Gynt, Windcheetah and Kingcycle), well panned routes along quiet lanes and low cost Bed

& Breakfast accommodation from his base on the edge of Ashdown Forest in SE England. Situated only 25 minutes from Gatwick International Airport, the Ashdown Forest is an area of outstanding natural beauty. (Originally one of the major private hunting grounds of the Kings of England, it also provides real life inspiration for all the Winnie-the-Pooh stories!)

FutureCycles is now the European distributor for Vision recumbents and also manufacturer of the SWB Streetglider—notable for its radical negative rake fork which they claim eliminates the rather "twitchy" handling often associated with fast SWB designs. Buyers of the latest Encyclopedia and its accompanying free video will have seen Patrick explaining the convertibility options on the Visions as well as demonstrating the Streetglider and several other Euro 'bents.

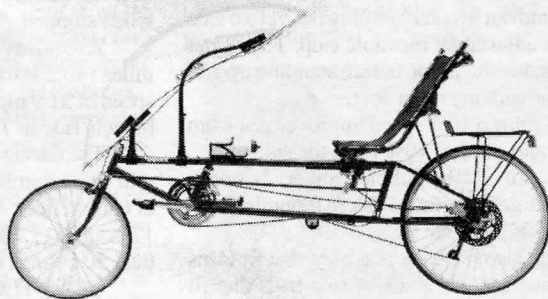
Future Cycles is also the UK's leading dealer in used recumbents—U.S. readers looking for a bargain should not that used Kingcycles are available from £799 (approx. \$1220) plus shipping.

RCN rates from Future Cycles for Euro-subscribers are as follows:

	U.K. Subscribers	Other Euro-subscribers
One year sub	£25.95	£28.95
Sample copies	£4.50	£5.00

Payment can be made by most credit cards, personal cheque drawn on a UK bank or Eurocheques. FutureCycles address is: FutureCycles, Friends Yard, London Road, Forest Row, East Sussex RH18 5EE, U.K. Tel. 01342 822 847; Fax: 01342 826 726; International +44.□

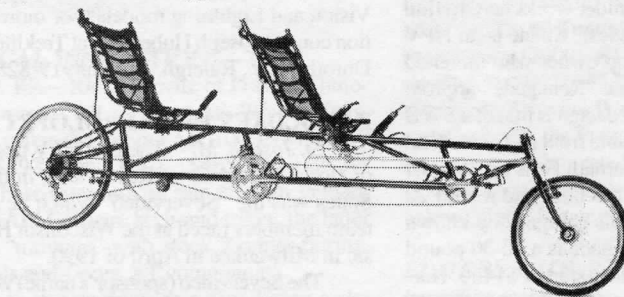
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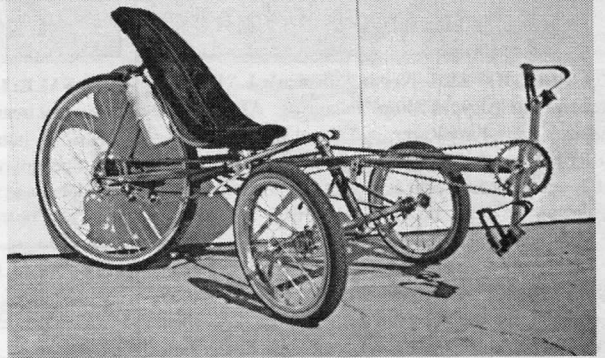
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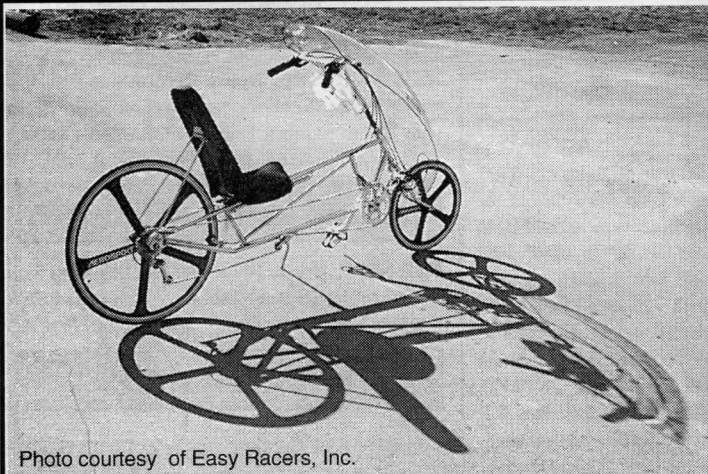


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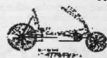
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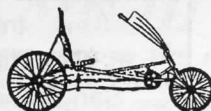
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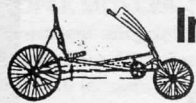
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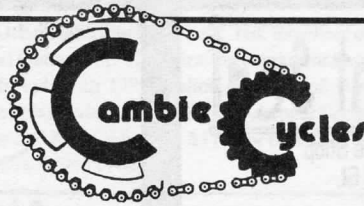
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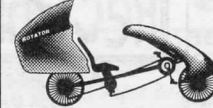
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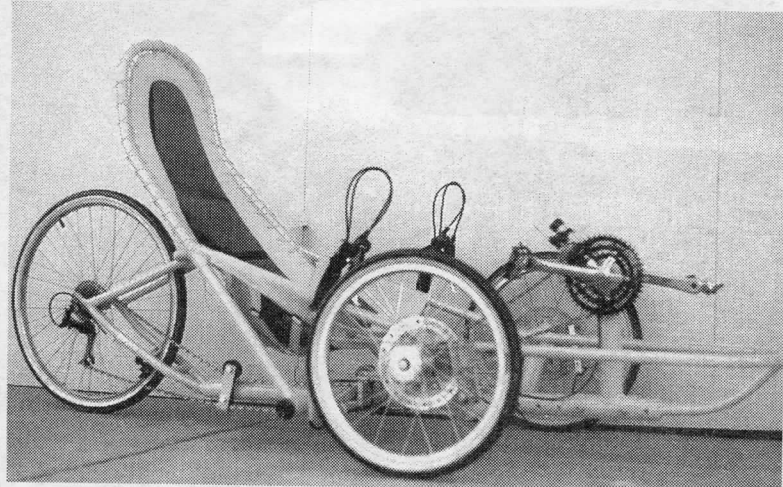
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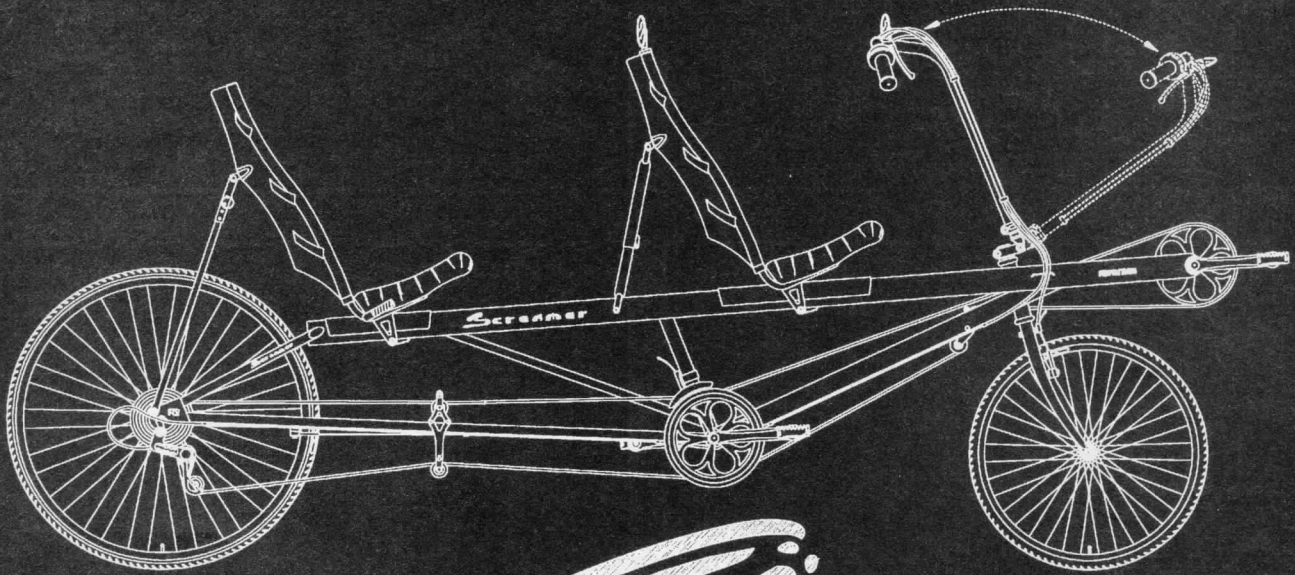
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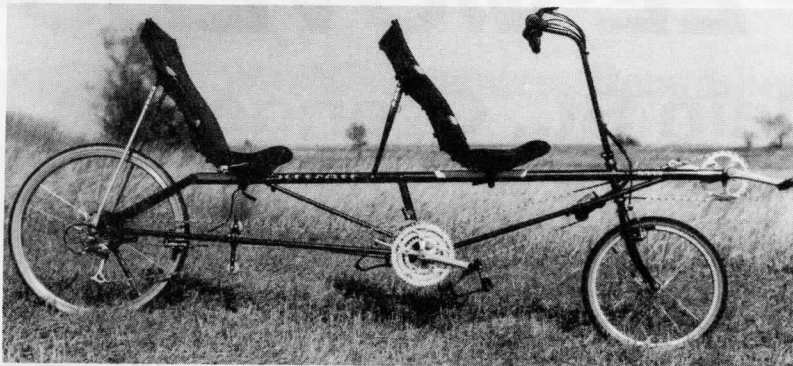
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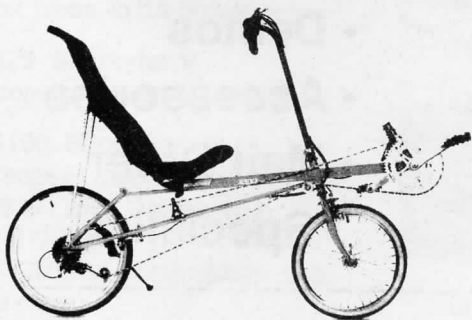
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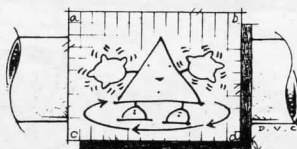
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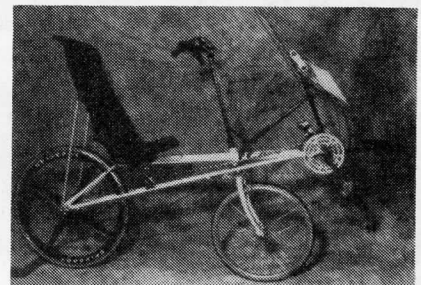


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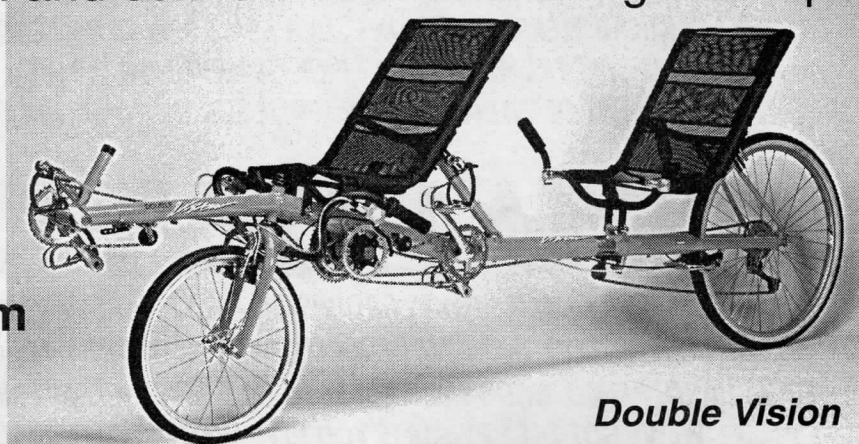
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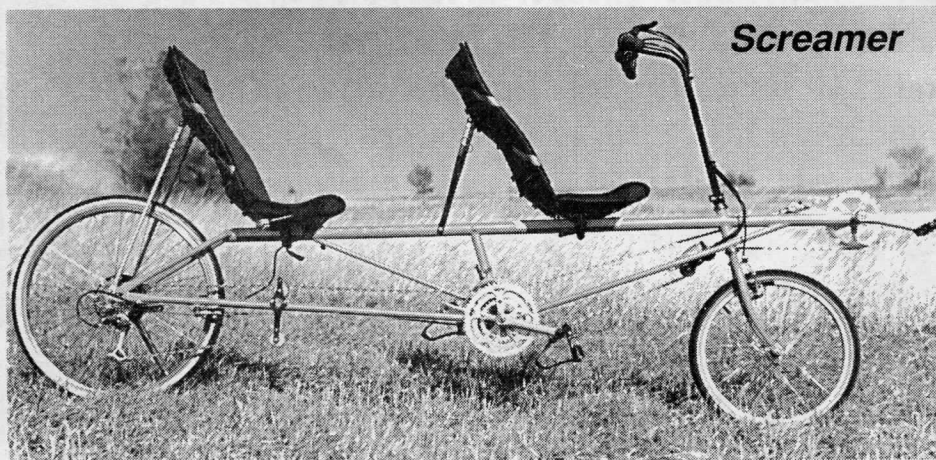
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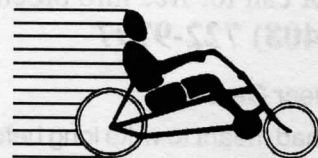
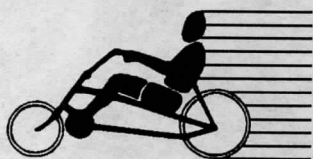
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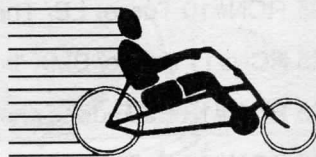
I had meant to write long before this, but I wanted to put some miles on the Gold Rush Replica before dropping you a line. In a word: I totally love this bike! However corny it may sound, the GRR really is the recumbent I've only dreamed about. The awesome speed, stability, and traffic-stopping good looks (the bike, not me) thrill me every time I hop on the machine.

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Best Regards,
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