

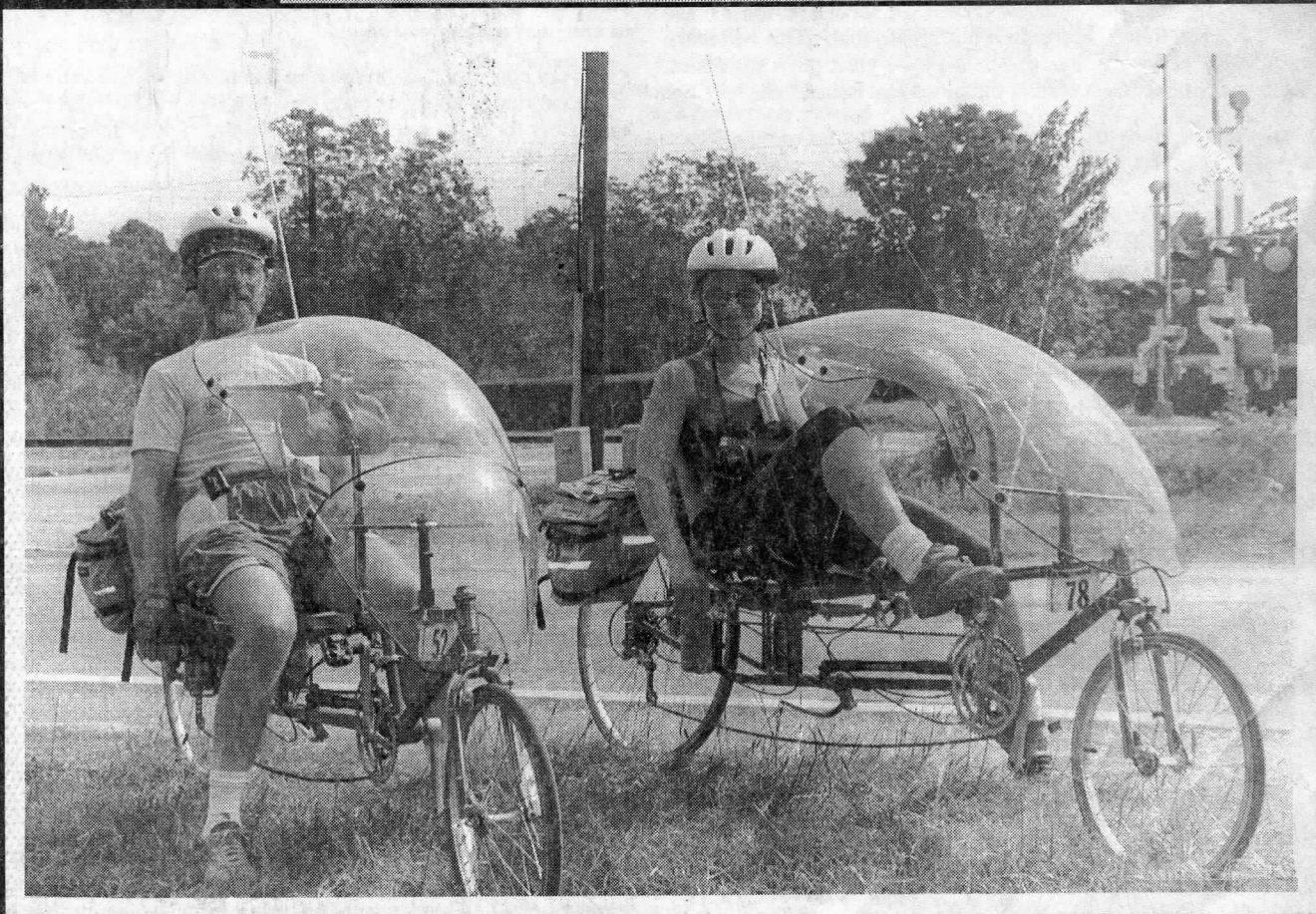
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Road Tests

Recumbent Cyclist

NEWS

RCN #22 Summer 1994



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EDITORIAL LICENSE:

by Robert J. Bryant, Publisher

Email: (America Online): DrRecumbnt@aol.com

Welcome Recumbent Enthusiasts, & RCN readers everywhere,
(This editorial was originally listed on the Internet and on America Online "Recumbent Forum.")

Millennium Cycles (RCN's former alter ego) ceased selling bikes during late summer '92 to concentrate on making RCN a better publication and to make it break-even financially. The bike sales has always been done for purely economic reasons and any profits have always been pumped back into RCN. It has allowed us to improve RCN and make it more interesting for our readers.

For the latter part of '94, we have decided to re-enter the bike sales business on an extremely limited basis. (So far in '94 we've only sold a few bikes--the majority of our bikes have been wholesaled to other dealers) The primary reason for this is to sell our test bikes and other recumbents we acquire from various sources. The second reason is make the move into a full time venture (quit our night jobs). This will make RCN even better, and we guarantee it! We have great plans for books, manuals, bigger & better and possibly more frequent issues.

RCN receives many bikes in barter deals, ad trades and for testing. These bikes always end up for sale. We occasionally sell new bikes as well. Our #1 rule is that the manufacturer must provide trouble free service, excellent quality control, excellent pre-assembly, warranted, high quality bikes and their customer-problem factor needs to be very low and customer service very high. There are a few bikes that we will not sell and there are bikes where the manufacturer will not let us sell them. We can only hope that readers will understand that this is done for economic reasons and the the RCN readers are #1 to us and if readers (or others) even mention the possibility for conflict of interest, it makes us even more honest.

Readers must understand that when we test bikes, we compare them to their recumbent peers. We have seen & ridden nearly every brand of recumbent

COVER STORY: Recumbents and Real Life...

by Jim Kellett

My daughter, Pam Woods, and I left Portland, ME on September 25 with 42 other cyclists on the 1993 "Pedal for Power" North->South tour. We were riding Ace Tool and Engineering Infinities, both equipped with slightly different Super Zippers from Zzip Design. So did several years' dreaming, a year's planning, and nine months of fund raising finally culminate in the beginning of a trek that was, at the risk of sounding trite, a "life-defining" experience. While it was a great physical challenge, the social and mental aspects of the tour really are more memorable. Kind of confirms what the coaches always tell you about excellence being "in the mind"...

This was Pedal for Power's fifth North->South tour. The ride originated with John Torosian (who passed away this summer), and is now ably led by his son, Doug. Doug runs a very professional tour that com-

available in North America, this makes us uniquely qualified to judge the differences and offer our opinions. We also solicit & enjoy printing reader written tests as we to get tired of reading Robert J. Bryant's opinions.

The power of the press (even the recumbent press) and a writers ink is very serious. In fact, I must admit that I am sometimes overwhelmed and occasionally uncomfortable with it. We have our critics, and admittedly, we do not handle harsh criticisms well, although we are always open to friendly constructive information that could improve RCN.

When we started RCN four years ago, I just wanted an outlet for recumbent enthusiasts to read about their favorite kind of bikes. RCN was meant to be a newsletter/ fanzine, somewhat counterculture, somewhat funky and we wanted to take a stand. In no way did we ever want to be competition for HPV News, Bicycling or any other commercial magazine. Our goal for RCN is to create a publication that we can be proud of and that readers will enjoy.

I am very concerned about the reputation of RCN and I would NEVER say good things about a bike--just to sell bikes. If you have been a subscriber for long, you may notice that our style is upbeat and positive, and you can probably also tell when I really like a certain bike. You may also want to note, that our reviews are becoming tougher and we have lost a few advertisers because of it.

RCN's goal is to provide readers with accurate truthful (albeit much of it is Robert J. Bryant's opinion—and it's OK with me if you want to disagree) information that helps them make a decision on a bike to buy or just provides recumbent enthusiasts with enjoyable reading.

We are always looking for ways to improve RCN, make it more readable & enjoyable for all subscribers.

Viva Recumbency! Robert Bryant, Publisher ☺

.....

bins the best of several worlds; good riding, support for cycling in general, and community involvement. Probably upwards of 200 people have done this ride, but to the best of my knowledge this was the first ever father-daughter recumbent team. Still, it was an eclectic group including one tandem, and riders ranging in age from 23 to 74!

Since we're all interested in the image of recumbents, let's deal with the curiosity factor first and get it out of the way... Remember, not only were we riding recumbents, one of us was a beautiful woman, and both bikes were fitted with fairings. So it would be hard NOT to expect that we attracted some attention!

Within the tour membership itself, the initial reaction was generally instant, animated curiosity (at the risk of stereotyping, mostly the more mature riders). That's curiosity, by the way, not so much interest...a subtle difference but very real. As the tour progressed, the quality of the curiosity slowly changed. The groups interrelationships (and interests)

Cover Story is continued on page 10

RECUMBENT MAIL-BOX



RCN PUBLICATION INFORMATION

Recumbent Cyclist International is 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. We are cycling's future.

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RCN#21 COVER: Jim Kellett and Pam Woods take a break in Benson, NC. Photo courtesy of the Kellett family. RCN logo graphics provided by Mark Colliton of Kensington Design.

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RCN Ruled Unfair! FWD Plans Rating Overturned.

Dear Robert,
I am writing this letter in response to the comments you made about my bike in RCN#19/20. You made a comment that you liked the plans, yet you have them only a two-star rating because the plans are out dated because I now build monocoque bikes. I am having a hard time following this line of thought.

It is true that I have built monocoque bikes, but for myself—not commercially. The monocoque bikes are not suitable for the homebuilders because they require a special building jig. The purpose of selling plans is to allow someone with mechanical skills to build a bike at a fraction of the cost of buying one, or in this case, a bike that cannot be obtained commercially at any price.

The Traylor FWD is one of the few bikes in your publication which is USCF legal and performance wise, it's as good as anything out there. It's the same design I have used in five IHPSC events (and I placed in all of them). I have won two silver medals for hill climbing races (non-IHPVA events) against standard bikes. The bike is light, 25 pounds. It's comfortable, even when I rode it 18 hours during a triple century. And, it is stable enough to ride hands off—not for a second, but for hours! This bike is also a model of simplicity: no long chains, no intermediate spindles (drives), no idlers, and no odd sized, hard to find and expensive wheels and tires. Aside from the 24" drive wheel, there is nothing on this bike you can't buy off the shelf.

I am also puzzled by your high ratings for Easy Racer plans compared to mine. What gives here? Don't get me wrong, the Easy Racer produces good plans, but so do I.

Tom Traylor,
Torrance, CA.

*Dear Mr Traylor,
I have always been impressed by your FWD machines. So much so, that I bought one of your frames from a homebuilder. I found the bike very difficult to ride. The bike was available for attendees of my '93 Open House last Spring. The bike was a test ride favorite and*

several FWD homebuilder projects were inspired, but the consensus was that the bike had a longer than normal learning curve. This experience slowed my personal FWD interest, I agree with much of what you have written, and in theory, the FWD could very well be the best recumbent design.

In defense of the Easy Racer plans high rating: These plans are the most successful recumbent building plans ever printed. Something like 8500 copies have been sold and they also offer parts to homebuilders. And, best of all, most anyone can ride an Easy Racer.

RCN did "recommend" your plans, however, in retrospect, the star rating was too low. To correct our mis-rating of you plans, let me say that they are excellent and an absolute "must read" for readers interested in FWD. New Rating: ★★★★★

We hope that you will consider writing more on the virtues of FWD recumbent bicycles.



Recumbent RAAM

Dear Robert,
Regrettably, I must announce my withdrawal from RAAM '94. A few days after the Bakersfield, Californian track event in April, I was hospitalized for internal bleeding. I have pretty much recovered from the initial crisis, and I'm even riding a little, however, the doctors have ordered no more racing for me.

We are still putting together the RAAM bike; it will be finished around the first of July—more on that later. This summer, I will be crewing for Seana Hogan on RAAM and riding for recovery as much as I can locally.

Thanks to the members of the recumbent community for their encouragement and the good wishes. And a generous and appreciative thank you to you, Robert, for the support and generous coverage in RCN.

Yours Truly,
Don Gray



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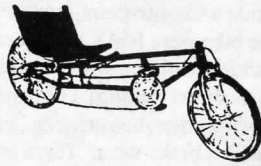
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EXPOSE ME RCN!

Dear RCN,
I think it's kinda silly that you will not give exposure to recumbents unavailable in North America! Expose Me RCN! Chances are I can't afford it anyway! (hah, hah, hah!) Let's see it all fellas.



Forever to subscribe,
Eric Ebner
Texas Recumbent Fellow

Dear Eric, while you are out riding your Infinity, I am slaving over the keyboard trying to think of a good answer for your question. Here goes. For the most part, only one or two Euro-bent manufacturers subscribe to RCN. We get some neat newsletters from Denmark, Holland, Austria and Germany where there are really neat bikes being built like the Harig Aero project, Flevo, M5 and many more. We have a real hard time getting info on these and an even harder time getting the manufacturers to send info. RCN will always give preference to publish info on bikes that ARE AVAILABLE in the USA over those that are not, but if we see any Ultra-Hip Euro Bikes, we'll let you know. After all, you never can tell when a bike will be available on our shores. Look at the Radius, Windcheetah and Kingcycle!

Vision Rider #001

Dear Robert,
I've been a cycling commuter since 1991 but was stuck on a mountain bike until I saw the ATP Vision at the 1993 Seattle Bike Expo. I had been reading up on recumbents and talking to owners I'd met while riding, but either the bike and/or price always put me off. So, when I saw the Vision, I knew right away it was the bike for me. I put in an order right away and actually managed to get Vision #001 last spring. I ride a standard Vision R-40 with a rack, a Vista light, Brite Lite headlamp system and an Avocet Altimeter cyclocomputer. I've purchased the Zipper fairing bubble in December and it really made riding in the winter much more enjoyable. I've put over 2000 trouble free miles on my Vision. The bike has held up perfectly and I enjoy riding it more all the time.

Last summer I was riding along the Mississippi river in Wisconsin. I was cruising down a hard packed trail at 18 mph when I hit a patch of soft sand. Needless to say, the bike started going every direction but straight! I managed to make it through the patch of soft sand and the bike and I were going sideways. When I finally got some traction, we ended up crashing on the hard pack. I had several flashbacks of previous nasty crashes on my mountain bike in similar situations. Much to my surprise and delight, when I crashed my Vision, it just tipped over sideways and we skidded to a stop. Outside of a little wear and tear to the seat of my shorts, I was unscathed. And all that I'd done to the Vision was twist the handlebars to one side and scrape a little anodizing off the seat frame and handlebars. I was back on the trail before the dust settled.

Moral of the story: I'd rather take a fall on a recumbent than an up-right any day.
Very truly yours,
Kevin Makela

Dear Robert,
I've nearly worn out the print in my 1994 buyers guide (3rd Annual Double Issue RCN#19/20). What a job! Congratulations. This is your finest effort to date. I do have one question: on page 14 there appears a graphic which says, "Relax Ride Recumbent." I haven't seen anything that comes close to communicating the essence of riding a recumbent. Who created it? Will it ever appear on an RCN T-Shirt?

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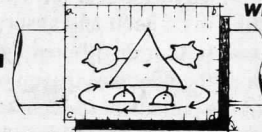


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I seriously believe this graphic should be exploited to the fullest. Congratulations again, Robert. You've become a primary force in the recumbent industry.
Sincerely,
David B. Seaver
Manhattan Beach, CA.

David, thanks for the kind comments on RCN#19. We keep pluggin' away, but we by no means are satisfied with the quality of the buyer's guide. We will continue to create and refine until perfection is achieved. The "Relax" graphic was submitted to us by a reader without credit. We engaged the services of our "Ace Recumbent Detectives" to track down the source. As we were going to press, word came in on the teletype that the graphic was created and is used by an English recumbent dealer. We will look into the possibility of a T-shirt.

Dear RCN,
Here is a photograph of my recumbent design utilizing a composite Aerospoke wheel. This is my second prototype. I am currently training on it for a fundraising race from Houston to Austin (Texas) which will take place this Spring.

I am happy with the composite wheel and I feel that it enhances the parameters I was able to achieve in this design, such as the total weight of 25 pounds. I thought that you may find it interesting to see some of the innovative aspects such as the back wheel suspension, steering, seat and frame design.

Best Regards,
Jaroslav Belik

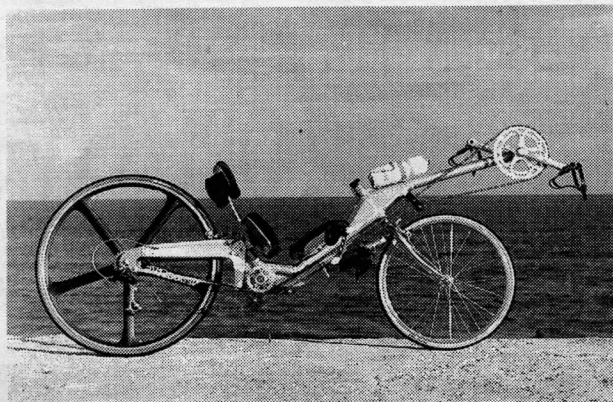


Photo courtesy of Jarosiav Belik

"I'm firmly convinced that my Tour Easy saved me from serious injury"

Dear Robert,

Two weeks ago I was leaving Austin, Texas to continue my Arizona to Michigan tour when a car struck me from behind. The driver didn't see me; she didn't see my orange bag covers of my yellow helmet or safety flag. In any case, I'm firmly convinced that my Tour Easy saved me from serious injury or worse.

The interlocking structure formed by the seat stays, the rack and the frame acted as a crush-zone, folding in on itself and absorbing energy from the collision. The high back seat further distributed the force of the impact over the length of my back as the bike was driven out from beneath me. By the time my rear end hit the pavement (a scant two foot drop) almost all of my forward momentum was gone and I ended up with only two patches of minor road rash. The most lasting injury was a tightly knotted muscle in my upper buttock where the edge of the seat caught me. Fortunately, it is high enough up that there is no pressure on it as I sit on my NEW Tour Easy.

After the insurance company settled with me a week later, I called Gardner Martin at Easy Racers. First Gardner wanted to know if I was alright. Then he wanted to know what I needed to get back on the road. I ordered

a new Tour Easy on Wednesday morning and his people assembled, tested and shipped the bike that very afternoon. I had it by Friday. Easy Racer's one day service has gone a long way towards salvaging my trip. Without their assistance, I'd probably be flying home with sad memories of a tour cut short; instead, I'm preparing to head out again this Sunday.

My forced stay here actually had a bright side, instead of hanging around in a motel, Eric Ebner, one of the few recumbent riders in the entire area was kind enough to let me stay at his apartment for as long as I needed to heal up. I really can't thank him enough for his hospitality. So, I ended up making a new friend and enjoying my stay in Austin. Eric, by the way, will be opening a new bike shop soon, "The Recumbent Ranch." If I had to get hit by a car, I'm thankful it happened while I was riding my Tour Easy. And I can't think of too many better places to spend my days recovering than in Austin.

Jerry Frezon

.....
Best Recumbent Brake Shoot-Out!

Dear Robert,

I have noticed in the latest issue (RCN#21) "Easy Racer Gold Rush" article and in past issues of RCN your apparent dislike for Magura Hydraulic brakes. I would like to offer RCN readers a different point of view regarding these excellent brakes, for I feel that they are the best brakes for recumbents based on six years riding with them.

I ride a Counterpoint Presto. The only brakes available when I purchased the bike were BMX style (unacceptable) or the Magura's. Other than one incident early on when a hydraulic line pulled out of the front brake (due to incorrect routing), I have had zero problems with them. They require no service other than an allen head screw adjustment at the piston to compensate for brake wear. There are four different kinds of brake pad compositions available to match styles of riding and rims and the pads have a long service life. Maguras offer excellent modulation and there is no need to deal with cable friction, stretch, or lubrication. They are not affected by long cable runs or unusual frame designs. They are easy to service with the repair kit that comes with each brake (I have used this once in six years). In my opinion these are the strongest brakes out there for bicycles--not counting drum brakes.

I felt the record needed to be set straight on this issue. This is not a criticism of your personal opinion, just a friendly rebuttal of ideas.

A few suggestions for the magazine, start a "Component Corner" column about components of interest to recumbent riders and builders. Also, I would love to see a road test of the Burroughs Windcheetah and Counterpoint Triad with hydraulic Sachs Drum brakes and Presto fairing with body stocking. Keep up the great work on RCN!

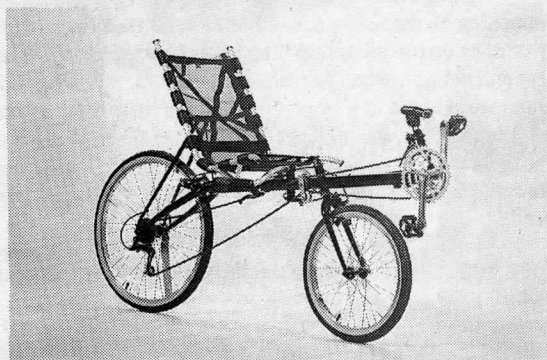
RCN Supporter & Friend,

Ron Schmid

Portland, Oregon

Dear Ron, thanks for setting us straight! There is absolutely nothing wrong with Magura brakes and I truly believe they are the finest, best quality hydraulic brakes available today (and I am very excited about the Magura/Sachs hydraulic drum brakes on the Presto Triad). It's just that I keep remembering trying to bleed the hydraulic brakes on my MG Midget. The thought of brake fluid (or oil) makes me reaffirm my belief that a strong, simple, well engineered brake like the Dia Compe FSE or Shimano 105SC, Ultegra or Dura Ace.

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Subject:: Gold Rush Records

Date: 94-05-26 03:23:02 EDT

From: bwilson@sonoma.edu

To: DrRecumbnt@aol.com

(message forwarded from the Internet HPV mailing list. Used with permission from the author.

There's a "Gold Rush Records" sidebar in RCN #21 with the Gold Rush Replica review which shows Fred Markham as the rider in the Double Gold Rush records set at Colorado last fall.

The Double Gold Rush is a tandem, and Freddie was not alone in there, so I think it's only fair to let people know that the second rider was Team Varna's Sam Wittingham. Sam took fastest time at the Colorado event for single rider; I think his 200 M time was just over 63 MPH.

The tandem records set (on one run) at Colorado are

200 M = 65.03 mph

500 M = 63.73 mph

1000 M = 63.73 mph

Incidentally, I thought the Varna bike (which looks an awful lot like a banana) was the most interesting and innovative bike at Colorado. Carbon and kevlar monocoque body, front wheel drive, very small and low slung. 20" wheels. Builder George Georgiev is working on a version that will have a closed circuit TV system to allow the prone rider to see past the chain rings.

Brian Wilson
Thanks Brian!



Zzip Design Talks Back!

Dear Robert,

Regarding the Presto body skin attachment: My main design parameter with the spandex body is attaining a steady tight skin. The fact that the Presto Mounts adjust at foot level for height and angle into the wind compounds the problem. It would almost take an equal and opposite mount at the rear of the vehicle to work in a contrary way to take up

slack and keep the spandex tight because I used the two 30" zippers on the sides. The pattern was limited to just a side panel type body skin (without head slot and rise up to neck).

When I made the spandex ZZ-T for Jim Woodheads *(San Francisco to LA record on a road bike) ride in 1982, it was discovered just how great the side forces are when encountering 35-36 knot crosswinds. We decided for safety sake, not to offer this modification for the upright bikes, but wait for the recumbents or smaller wheel bikes like the Moulton. So with that in mind, I decided to minimize the sides. I think it will still offer some weather protection for the lower body. Also, I did not want the discomfort the riders elbows, as in this particular vehicle they tend to stick out on the side. Even if I would have added the extra foot or so of side panel at the riders shoulders, without the extra hardware at the rear to support it would probably end up under his elbows anyway.

One of my original ideas was to have Velcro straps at the sides of the seat to take up slack. But in conjunction with Angle Tech, Colorado it was decided to go around the seat bag at the back of the seat.

One final word, because of the great distance between the fairing sides and the riders chest area, I felt that their might be a parachute effect of cupping of the wind with a higher/over the shoulder spandex during long downhills. I encourage experimenters to continue developing & testing where our designs leave off.

Sincerely,
Karl Abbe
Zzip Design

*SF-LA June 17, 1982. 21 hours, 20 min. 41 seconds, 401 miles.

Letters to the editor continued on page 13

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COVER STORY: Recumbents and Real Life...continued from page 2.. changed as the tour progressed, irrelevant to the recumbents, of course. People sorted themselves into groups according to interest, performance, or other characteristics. By mid-tour, there had developed a substantial core of genuine interest among maybe a third of the riders; quite a few got the "Kellett pre-flight and launch" into their first recumbent ride, and many were very interested in the fairings....particularly after the first windy days!! It's safe to say that riding together all this time was quietly and effectively educational to all of us; in general, the tour members left the experience with a much sounder appreciation of the wider range of machines available to the tourist.

Outside the tour members, we enjoyed lots of "gawkers". We were even chased down and interviewed by a weekly newspaper editor in North Carolina because a reader had phoned him reporting "two strange machines riding through town"! The result was a very nice picture and accurate informative caption about both Pedal for Power and recumbents in the Benson, NC weekly for October 13, 1993!!

At the risk of getting yelled at by my fellow enthusiasts, I have to say it. Me on my recumbent are slower'n molasses on hills. I hope I've qualified that enough - it's ME riding MY recumbent - but rest assured that our performance on this tour confirmed in many observers' minds the idea that 'bents "don't do well on hills". Now, it also confirmed other aspects of 'bent performance, and led over time to a pretty mature and accurate understanding of the differences in machines. Comfort, of course was clear; one tourist had to miss a couple of days' ride because of chafing. The advantages of the seat comfort were clearly understood. The performance on flats and in headwinds likewise was self-evident.... I even surprised one of the sag wagon drivers who claimed I outran her at 40+ on a downhill...

Now: here's some numbers so everyone can draw his/her own conclusion about 'bents on tour. The rider is a 58 year old male with a slight muscle mass loss in the right leg. In reviewing these data, remember this WAS a tour, not a race or even an informal test of performance.

You can see where, on the hilly days, there's a BIG difference between maximum speed (blasting downhill) and average speed (struggling uphill). Later, on the flats, the two numbers are closer together and the average speed creeps up....not exactly an unexpected change. Don Berry at Infinity and Karl Abbe did a great job of helping us prepare for this, and in supporting us during the ride. On the first day, I hit a pothole and cracked the front horizontal mount on the fairing. I limped on for a day by clamping the rod ON the crack, and finally engineered a kludge repair by getting a piece of copper tubing, filling it with epoxy, and pushing the broken ends of the mount into the tube! Crude, but it worked. Karl, in the meantime, was doing his best to get a spare by overnight shipping to the motel where we were supposed to be...suffice to say the part chased us down the east coast until it finally caught up with us in Williamsburg. That's good support in my book!

It's really hard to share what this kind of adventure feels like. It means different things to different people, so everyone will have a unique personal perception of such a tour. We made some really wonderful new friends... the new best friendship was the remade one with my 35 year old daughter. Then there was the Englishman who, in riding through SC and GA on roads that disappeared in front of him and behind him, remarked that if he found such a road in England he'd "...fall off the edge..."! Or the lady who, in this ride, completed the circumnavigation of the Continental United States. Or "animal Joe", a 72 year old retired engineering professor who wound up pulling pacelines! There's the delightfully enigmatic sign in a front yard in Stafford, CT that says "Universal health care is a step toward capitalism".... the hawk on the side of the road in SC...the circus-like ride through the south Bronx escorted

by New York's finest... the wine and camaraderie by the pool... and on and on and on. It's a wonderful new "real life".

The bikes are Infinity's, with factory supplied drive train components, SPD pedal system, and Super Zipper fairings.

Date	Miles	Average	Maximum	Notes
Sept. 25	91.9	13.9	34.5	
Sept. 26	88.0	13.3	34.5	a, b
Sept. 27	84.4	12.7	40.0	a, b
Sept. 28	80.6	11.5	35.5	a (!)
Sept. 29	81.8	11.6	44.0	a
Sept. 30	82.6	13.2	34.5	
Oct. 1	85.7	12.9	38.0	
Oct. 2	98.2	12.6	21.5	c (!)
Oct. 3	87.3	14.4	35.0	
Oct. 4	REST DAY			
Oct. 5	73.0	15.6	31.0	d
Oct. 6	82.9	15.8	28.5	
Oct. 7	79.3	15.9	30.5	
Oct. 8	91.2	16.2	31.0	b, d
Oct. 9	100.2	15.3	24.5	
Oct. 10	96.2	16.0	27.0	c
Oct. 11	REST DAY			
Oct. 12	81.0	16.7	28.0	d
Oct. 13	64.2	16.8	30.5	d
Oct. 14	58.4	16.7	23.0	
Oct. 15	78.6	15.4	25.5	b
Oct. 16	55.3	15.4	31.5	b

TOTAL 1,640.8 14.3 NOTES: a = hilly;
b = rain; c = headwind; d = tailwinds

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The 21st Century Infinity

By Robert J. Bryant

The incredible Infinity! Where do we begin! When I first became interested in recumbents the Infinity was \$499 for the double crank version and \$599 (triple crank). In the past seven years, the bike has gone up \$50. This is an incredible bargain for the first recumbent rider or the seasoned world tourist.

Design Team

The Infinity was designed by the Mooresville, Indiana crew of Dr. David Pearson (who does much R & D for Infinity, including a custom 2 X 20" wheel model), Don Barry, Steve Edwards, Steve Ballard, Jack Scott, Dave Davis and loyal Infinity owners. The bike has kind of evolved over the past few years from many different sources. The current bike being superior to the early models.

Design Strategy

The Infinity can only be summed up as utter recumbent simplicity. Most all of the fittings are standard and could be purchased at any hardware or bike store. The design is nothing short of brilliant, however, some bicycle traditionalists that like round tubes, brazed joints, braze-ons or cable stops may want to think twice. Not a single one of these items is on the Infinity. Some recumbent fans may be dismayed by the lack of a steering "rod" or the seat adjustment pins that go through the frame, or the wide use of zip ties, but heck, what do you expect from a recumbent bike that costs less than half that of the competition. These "traditional" bike items do not change how a bike rides, but they do change how a bike looks and how convenient it is to use.

Why brilliant?

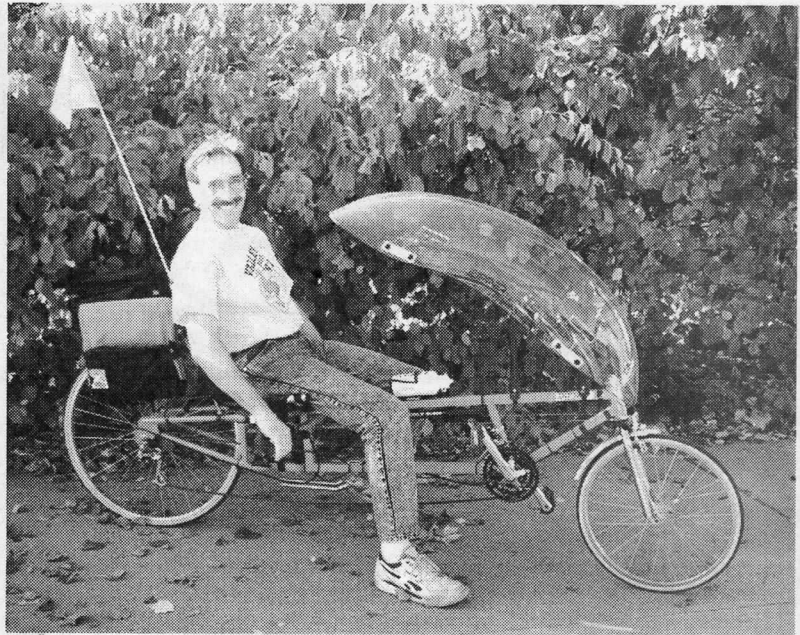
To describe it simply, "downward sloping top-tube." The Infinity top tube runs at a downward angle backward from the head tube. This holds the rider in the seat without a seat-horn and makes the bike more attractive. The Infinity Crew has worked overtime creating an enthusiast recumbent that is practical and affordable. Quite frequently we hear from manufacturers who want to "go after the Infinity market," but in the seven years that I have been into recumbents, not a single manufacturer has been able to approach the fantastic value for the money that comes with a \$649 Infinity recumbent.

"Infinity," This is the appropriate name for a bike which when ridden—one feels it is possible to ride an infinite number of miles; miles that a diamond frame bike would have my body protesting loudly in pain."

I received my Infinity as a give for Christmas 1990. I had sent for a brochure in October, and after it arrived I dropped numerous not so subtle hints about what a fabulous gift such a bike would make for a loving husband and father.

Christmas morning came, and being the snoop that I am, I knew I wasn't getting the bike. We exchanged our presents and I started disposing of the gift wrap when La Vonne informs us she has one more gift upstairs. A minute later my eyes lit up as two large boxes came sliding down the stairs being guided ever so carefully by her and my daughter Amy.

I knew instantly what it was by the shape of the boxes; but how had they kept this secret concealed from me? It seems she and a friend



Michael Hinz on his Infinity
Photo courtesy of Michael Hinz & family

The Infinity mission statement is as follows: "We at Infinity have and will always strive to improve and provide our customers with the best of products and the finest service possible."

Whatever your opinion may be, Infinity has bucked the system and become one of the most sought after recumbent bikes available today.

The Frame

The Infinity frame is made of square section 6061 T6 structural aluminum. There are some round pieces used for the chain stays. When looking at the Infinity frame, you will notice some odd shaped and sized support pieces, these are for areas on the frame that need additional strength. Most of these supports are in areas in which there have been problems in past frames. Infinity has been building aluminum recumbents since 1981 and 4000 bikes have been built. I must admit that we have heard more accounts of Infinity main frames and seat frames breaking than other recumbents. One thing I can say is Infinity takes care of it's customers who experience a frame failure.

conspired by having it shipped to her house where it stayed until Christmas eve. I worked all that day while the three spirited the bike to our house and up into Amy's closet.

What a surprise! I was a kid again. I selfishly spent the morning assembling my beautiful new red Infinity, and by 1 pm, I was out braving sub-zero wind chill temperatures for my first recumbent ride. I seated myself with great apprehension, and pushed off as my wife and daughter cheered me on. My neighbors peered out through their frosted windows with big grins on their faces as I sped past them on my way to one of many new adventures on my Infinity. That was three and a half years and over 10,000 miles ago. I have done several centuries and a one week tour called GOBA in Ohio.

I'm looking forward to another year of cycling and seeing even more recumbents on the streets of Sheboygan (WI).

Viva Recumbency!

Michael Hinz
Sheboygan, WI.

When asked about frame failures, Don Barry had this to say, "We have made changes in the seat support system and have had no failures since. We also have made a change in the tail section of the frame some time back and have experienced no failures since. Any frame or seat without these changes will be updated at not charge to the owner except for shipping." Don also reports that 1% of Infinity frames and seats have failed since 1981 (over 4,000 bikes).

The Infinity is not heat treated as are some other aluminum bicycles. "6000 grade aluminum does not require heat treating after welding," says Don Barry, Infinity Recumbents. The Infinity warranty is sixty days on the components and three years on all Infinity-built parts. This is not exactly the best warranty that we've heard of, but I know for a fact that Infinity has repaired frames well beyond three years. Also, the value for the dollar is so superior with this bike that we feel that the relatively short warranty is less of a concern.

The Seat

The Infinity has a simple aluminum seat frame and a nylon mesh cover. The seat quickly removes from the bike. The nylon mesh seat cover is functional and works well. The comfort from this mesh seat is not exceptional, nor is the quality of the ATP or Presto mesh seats, although I've heard no complaints. Keep in mind that it would be very easy to add foam, padding or have an entire new material section made to fit on your seat frame. The Infinity seats are widely sold to homebuilders and recumbent modifiers. We have heard of Infinity seats on many different types of recumbents.

The Drivetrain

The drivetrain is better than one would expect for the price of the bike, however, the deal is not so good when you compare it to conventional bike prices (this is the sad tale of woe for all commercially built recumbents). The drivetrain is primarily Suntour (although some

Infinity's have come out with Shimano derailleurs). Infinitys do not come with index shifting, although most of the parts on the bike are index compatible. Mostly it just takes dialing it in, as the factory does not set it up.

The 21st Century Infinity comes with a 28/38/48 triple crank and a 13-28 freewheel, providing a 27-100 gear inch range. We have found the low gear to be not low enough for touring or climbing steep grades, and the high gear would be considered recreational rather than high performance. This situation is easily remedied. The Infinity crank is a Suntour X-1 that comes with alloy crank arms (74mm/110mm nonmicrodrive) and steel chainrings. We recommend buying a new set of chainrings in this standard MTB bolt pattern. We would suggest consulting your recumbent dealer or bike shop, but chainrings from 24T. (inner) up to 54T. (outer) will easily fit on this crankset. Keep in mind that there is no chain idler on the Infinity and keeping the chain length to a minimum will keep your chain short and your drivetrain quiet.

The Models

Infinity offers two models of the 21st Century model. The only difference is the wheelbase. One is a 63" for riders from 4'11"-5'9." The standard model fits riders from 5'8" to 6'6." These measurements are highly dependent on your X-seam. We have met 6'3" riders who could not ride an Infinity with full leg extension. With this in mind, we would like to see 'bent manufacturers start using the "X-Seam" measurement. Angle Lake/Angle Tech and Rans have been using this method of sizing for a long time. An "X-Seam" is the measurement that goes from the corner of the seat base and back, out to the farthest reach of the pedal. Riders can get this measurement by sitting on the floor next to a wall or door, with your rear-end as close to the wall as possible. Have someone measure from the wall to the heel of your foot (toes facing the ceiling). This "X-Seam" measurement will ensure that you will fit on any re-

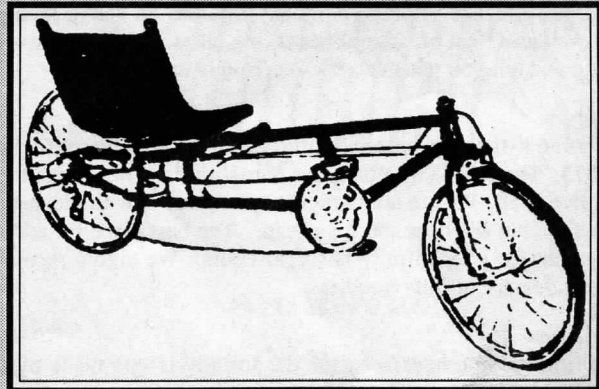


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cumbent that you are looking to buy. We have found the only variation in this measurement to be the type of pedals that you are using. In our experience, we can preadjust the set up of any recumbent within one half inch.

Wheels

Infinity wheels should be considered an entry level wheel set. Our test wheels were entry level alloy quick release hubs and Weinman rims. These wheels should last the recreational rider several years, but high mileage riders should build a second set of wheels as soon as possible or definitely before a major ride or tour. LWB recumbents need a high quality hub, spoke and rim. We suggest a Phil Wood hub, but extra strength at a lower budget can be had by using a bolt-on axle.

Performance

Performance is good for an underseat steering LWB recumbent. Will it live up to all those high performance claims? Will you be able to blow away all the roadies the first afternoon? Is the Infinity the fastest recumbent? Performance claims are bold statements that vary with rider weight, style, ambition, shape and of course, the bike. The Infinity may be fast for an underseat steering recumbent, but we wouldn't go so far as to call it an exceedingly "fast" recumbent. It is probably the quickest underseat steerer that I've ridden, but not for some upright steering performance recumbents. The Infinity chassis is a great choice for a rider who wants to build a streamliner or racing recumbent. The low stature along with the square tubes makes for a good basis for a home-built body. Also, the price is right.

Infinity is a performance oriented company that has an active racing program as well as a fleet of streamliner racing bikes. Don Barry loves to talk racing and tell you what secrets Ace Tool is up to.

Accessories

Infinity offers an extra large custom built frame (69" wheelbase) for an additional \$75. There is also a computer mount that zip ties to the top tube. The price is \$8. We are not particularly impressed with the quality or the design, but it works and it's cheap. The best place for additional equipment for your Infinity is Cyclo-Pedia. We highly recommend their catalog for Infinity goodies.

Infinity Fairings

The best fairing that we have seen for the Infinity is one made by a small company called Breeze Eeze. Several years ago we ordered one from company owner, Gordon Mallet. The fairing was black rip stop nylon with a Lexan windscreen. The fairing came down and covered the top third of the front wheel and was mounted directly to the square top tubes of the Infinity frame. These fairings were also inexpensive. I believe retail was around \$150. As of late, Breeze Eeze does not respond to our many inquires—and the rumor is the company is for sale, out of business or? If you have any information on Breeze Eeze or know Gordon, tell him we'd like to find out what's going on.

The only fairing currently available for the Infinity is the Zzip Design Infinity fairing. It is a variation of the Ryan Zzipper. RCN reader-Infinity rider Jim Kellett reports that the Infinity Zzipper adds about 1 mph to your speeds. The fairing is the same high quality that we all

have seen with other Zzip fairings. The custom Infinity fairing mounts make the fairing rather expensive.

Design Critique

It's hard to say anything bad about a company that offers so many people an affordable recumbent experience. There are thousands of Infinity's on the road. I think the design of the Infinity is fantastic and the bike rides great. The drawback to the Infinity is the fact that the frames seem to break more often than others. I will rely on Ace Tool for the failure rate, but I do know that I have heard from a few RCN readers who have experienced a failure. This is probably the worst trait of the bike; however, Ace Tool tells me the newest models are not failing.

Reverse Marketing?

Infinity has been a great seller for several years—thousands of bikes have been sold. The word we are getting for '94 is they are basically sold out for the season. Ace Tool's current marketing of the Infinity is a slight drawback. The ancient photocopied brochure, ultra laid back sales style and more often than not late bike deliveries. I can only speculate that if the bike was aggressively marketed, sales would go through the roof. Currently, the loyal Infinity owners are the best sales force for the bike as word of mouth that keep the Infinity a best seller.

The Ride

The aluminum frame offers a luxurious and very soft ride. Critics say the aluminum robs the bike of performance. Infinity's Don Barry says that the up and down flex shouldn't hurt performance at all—otherwise why would they race them. The Infinity has a rather steep head tube angle which makes the bike quick feeling and handling for an LWB under seat steerer. This makes the Infinity not the easiest bike to learn on. For a non-rider, allow a few hours to a long weekend to get the hang of it. It is an odd combination of an entry level model, with semi-advanced handling characteristics. For recumbent enthusiasts on a budget, this is a serious recumbent bargain.

The somewhat simplistic approach to sometimes overcomplicated recumbent design aspects makes it easy to decide whether you love this bike or you don't. As far as market competition, there is none. Nobody else builds a 18/21 speed enthusiast quality recumbent that weights in the 30 pound range and sells for under \$700.

Long Distance Customers

The Infinity basically comes as a frameset in one box and components in another. The bottom bracket and headset are installed. The fork is not installed. Assembly is very basic if you have any backyard bike mechanical experience. The instructions are barely adequate and have been photocopied so many times that they are difficult to read. I have never had any trouble setting one up,* but a better set of instructions and preassembly would most definitely help, but at \$649, which is the lowest priced "enthusiast recumbent," what can we say. The bottom line: If you don't have bike mechanic experience and are not willing to buy a book, some bike tools and then practice—order your bike from a dealer.

*Setting up the Infinity: We suggest that you pay careful attention to the steering cable set up. These parts must be greased and tightened just



The Infinity--Photo courtesy of Ace Tool



Terry Hreno's Infinity sponsored "Moby Infinity." Photo courtesy of Ace Tool

road test letter to the editor

Dear RCN,

When I first started selling recumbents over three years ago the Infinity was one of the bikes that we decided to offer. Within a few months we had dropped the Infinity with no intention of selling them again and I had learned a hard lesson.

I featured the Infinity because handling was a good and the price was right. Our initial demo was of fair quality. Soon after I starting selling the Infinity, the problems began. Delivery time was very poor. One particular order was promised in four weeks and arrived after ten. On average, orders were at least two weeks late. Most of the Infinities I sold had to be modified before going to the customer. We encountered brake bolt holes that were drilled out of alignment, the chain would rub against the handlebar, the powder coating easily flaked off around the welds, frames were out of alignment and the seat interfered with the rear brake. I also had riders calling and asking if I could repair Infinity's they had bought direct. One rider stated he had had his frame welded twice and the seat frame once but it had broken again anyway. I made many calls and spoke often to the company regarding these problems. I was always assured, that on the next order, everything would be corrected.

After giving up, I sent a letter stating that we would no longer be selling or promoting Infinities due to the problems encountered and lack of correction. We have never recieved a reply from Infinity.

Since then I had taken in a couple of older (four+ year old), lightly used Infinities in trade for new bents. These older Infinities seem to be of a better quality level overall.

In all I was very disappointed with the Infinity and its makers. Most other recumbent builders I have worked with offer quality bikes and back up their products. One good experience we learned from Infinity was to very thoroughly and rigidly test a recumbent before we decide to sell it.

BJ Strass / Introspect Cycle

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INFINITY ROAD TEST contined from previous page right or the bike could have uneven steering, sloppy (loose) steering or come apart at an inopportune moment. If you have any questions about how it's done, call the factory.

For more information on the Infinity recumbent, contact: Ace Tool & Engineering, Infinity Recumbents, 292 W. Harrison St, PO Box, 326, Mooresville, Indiana 46158, Phone: #317-831-8798, Contact: Don Barry.

Up To Date Delivery Notes: As of press time, Don reports that the bikes on back order should be out within thirty days. For some of you this means bikes are shipping as you are reading this. Current delivery time on new orders is 8-12 weeks. Infinities have always been hot property during the bike season. We suggest that you consider ordering one around October - November.



Infinity Specifications

WEIGHT:	27 lbs. (Factory weight)
WHEELBASE:	67"/ 63"
HEAD TUBE ANGLE:	73 degrees
SEAT HEIGHT:	20"
FRAME:	Welded square 6053/6061 series structural aluminum. Two sizes that fit riders from 4'11"-6'6."
DRIVETRAIN:	21-speed non-index Suntour X-1 Derailleurs Thumbshifters SunTour X-1 triple crankset 28-38-48 13-28 freewheel.
BRAKES:	Weinmann sidepull brakes (non Q.R.)
SEAT:	Sliding seat aluminum framed mesh.
WHEELS:	27" rear, 20" X 1-1/8" front.
PAINT:	Powdercoat White, Red or Blue.
FAIRING:	Infinity Zipper available from Zzip Designs.
SUGGESTED PRICE:	\$649

Performance Upgrades For Your Infinity Recumbent

The Infinity is the most affordable ready to ride recumbent in the USA. Many RCN readers are big fans of this machine. These performance tips are the result of your comments in our "RCN Readers Survey." The conclusions are based on over a year's worth of testing on three different Infinity bicycles by RCN.

Infinity braking performance can be significantly increased by making a few simple upgrades. The first one is to replace the brake cable housing. Purchase some high quality lined housing and have the lengths cut by your local shop. We like to spray a teflon lube such as Tri-Flo into the new housing. Then purchase Aztec brake shoes to mount on the stock sidepull brakes. These do wonders for braking performance. With these two items your braking will be noticeably better. This is the best economy braking system that I have found.

Wheels: The wheelset on a stock Infinity is an entry level enthusiast set. We suggest upgrading the wheels after your first year or two on the road. LWB recumbents need a strong rear hub. Especially if you are a large and/or strong rider or you ride thousands of miles. For commuters and tourists, a good cartridge sealed bearing hub such as a Phil Wood is the best available. If you cannot afford Phil's, consider a bolt-on rear axle for added strength (be sure to get a chro-mo axle). We suggest going for a 700c to replace the Infinity 27." The 700c should slide in

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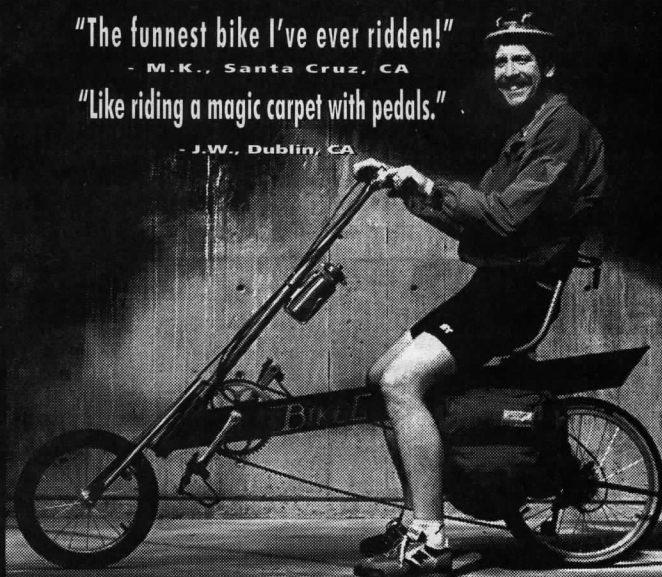
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PERFORMANCE UPGRADES CONTINUED

with only slight brake pad realignment. Going to a 26" MTB wheel would also work fine, but you will need to go with a drum brake or move the brake arches. I have also heard of riders adapting cantilevers to similar bikes. Cyclo-Pedia sells prebuilt 20" wheels with Sturmey Archer drum brakes. These brakes work better on the smaller diameter wheels. Cyclo-Pedia specializes in custom Infinity applications for both Magura Hydraulic and Odyssey Pitbull brake retrofits.

To Index/click shift an Infinity you must use compatible front derailleurs and shifters such as these listed below. I have had better luck with a 6 speed freewheel (vs. 7) although the "6" is getting harder to find. You also must have 6 speed index shifters, since 6 and 7 speed shifters are different. The freewheel should be the same brand as the derailleur or a Sachs which is compatible with either Suntour or Shimano, although I have indexed a SunTour derailleur with a Shimano freewheel. I like to use a 12-26 or 12-28 freewheel to keep the chain length to a minimum. Another key item you will need to set up your Infinity for index shifting is lined index cable housing. Either Weinman, Suntour "Accushift" or Shimano "SIS". Using the corresponding "SIS" cables also helps resist cable stretch. All of these brands work equally well. You should know the lengths of derailleur housing you need and have your local shop cut them or be sure to buy a set of bicycle cable cutters, preferably Shimano brand. This stuff is impossible to cut without this tool. When setting up the bike you should spray Tri-Flo into these lines also. Just about any good front derailleur (that is NOT a microdrive type) will shift your Infinity with good results.

Control upgrades: The Infinity begs for upgrades in this department. We suggest adding high quality Dia Compe MTB brake levers and SRAM Grip Shifts. Another neat way to upgrade your Infinity is to go with MTB bar-ends. Mount them so the bar-end faces forward and slightly up to suit your taste. Then add upgraded brake levers with the open end of the brake lever facing out and then add Suntour or Shimano bar-cons (bar-end shifters) to the outer end of the bar-end. Ryan sells bar-ends used for this purpose. With these controls, you will feel like a jet-fighter pilot on your Infinity.

Bottom Bracket: Older Infinity bikes had the large American style/ BMX bottom bracket. CycloPedia sells a Tioga cartridge sealed bottom bracket set that is an excellent upgrade. Newer Infinities will accept your choice of standard bottom brackets.

Steering: Infinity steering is simple and easy to adjust. This set up can be rebuilt with mostly hardware store parts. The steering cables will last indefinitely if taken care of. We suggest that you pull it all apart one a year to clean and grease the ends. Be sure to keep the proper tension on the cables as if they are too tight, steering will be difficult and if too loose, steering will be sloppy and could be dangerous.

Finally, we have found that a Sachs chain will increase shifting performance unbelievably. Most bike shops carry the Sachs brand and they are reasonably priced. (You may also want to check Nashbar & Performance.) The chain upgrade will help both with index shifting and shifting your Infinity's triple crank. If you don't care about index shifting, at least consider the new cables and housing, Tri Flo, Aztec brake pads and the new chain. The difference is significant. With these upgrades you can change your Infinity into a recumbent with world class performance.

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Recumbent Cyclist NEWS

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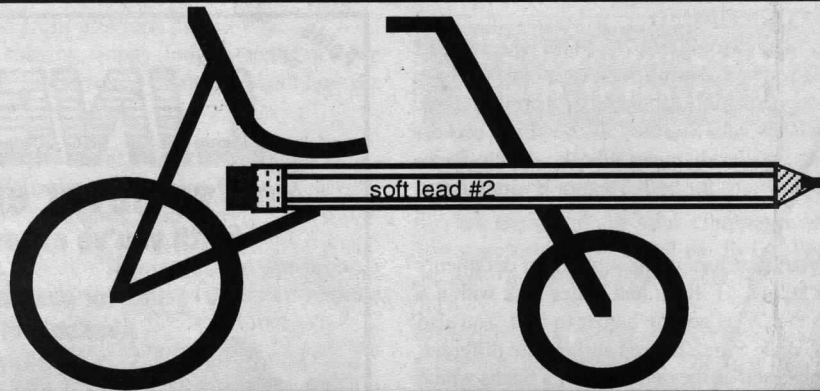
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View From The Big Chair

By BJ Strass

Enhancing the Vision

The Vision by Advanced Transportation Products is a great 'bent. Between my wife and myself, we have many miles on Visions and are very fond of the bike. Sales of the Vision have increased dramatically since its introduction which indicate its great acceptance and popularity. The Vision is a very versatile 'bent with its long/short wheelbase with overseat/underseat steering configurations. These along with seat angle adjustment and wide range of fit make for a 'bent that is easy to get accustomed.

Over about a year of living with the Vision I have made a few "enhancements" that help make the Vision more of "My" 'bent. As versatile as the bike is, an individual can make minor additions/changes to get more personalized use. The following is a selection of these I have made to my Vision which I find work well. All have been designed as "bolt on" changes, can easily be reversed, and do not detract from overall good appearances. Some of these may work on other 'bents as well.

"Back Me Up"

One of my earliest additions was a Back Support Strap. This was a carry over from my Vanguard. I found that when riding up hills I was able to stretch the seat fabric enough to force my back into the seat crossbar. On a tour this caused a bruise. The stretching also takes torque away from the pedals. The strap amounts to a 1.5 or 2" wide piece of nylon such as seat belt material. The length needs to be long enough to wrap around the entire seat back 1.5 times. On one end sew 2 D-rings. A few inches from the D-rings slip on a rubber band just tight enough to stay in place. To install remove the seat fabric and place the strap just above the seat crossbar and using the D-rings as a buckle, tighten. Fasten the loose end with the rubber band and reinstall the seat fabric over the strap. The strap will most likely stretch a bit at first but will stop eventually. Now climbing is better, my back doesn't hit the crossbar, and I get better back support.

"Please Be Seated"

In further riding I found the seat bottom to be a bit short for my large body. Also the seat velcro was difficult to keep tensioned so I would be sitting with the seat horn in my crotch. First I cut down the seat horn by half it's total length. Then I made another strap like the back support.

Install the strap on the bottom seat rails pushed all the way forward to the crossbar support. Tighten the strap and then using 2 zip ties, install 1 on each side of the seat tube, tightly, just behind the strap. These keep the strap from slipping rearward in use. Make sure the trimmed ends of the zip ties are facing inward so as to not snag on the seat material. This little modification helps tension the forward portion of the seat keeping you from sliding forward and lifts the crotch area away from the seat horn.

"On Guard"

By the end of the riding season my calves tend to be quite large and occasionally touch the chain, especially when on the big chainring. After tiring of the greasy black goo on my leg I finally made a simple, light, and inexpensive chain guard. The chain guard is small, simple and adds almost no weight.

At a hardware or lawn and garden store acquire a 2-3 foot piece of 1/2" dia. underground lawn sprinkler hose (the stiff, black kind) and a 3' piece of 1/2" wooden dowel. The hose comes in a large roll and thus will have a slight curve. Calculate the length needed by measuring the distance from the bottom of the front derailleur cage to the chain idler pulley. Take this measurement, reduce by 2 inches, and cut the tube to this size. Now take the dowel and cut to the right length so as to hang on the oven rack holders on the inside of your oven. Preheat the oven to 200-250 degrees. Take the tube and force over the dowel, a fairly tight fit. Hang this in the oven for 5-15 minutes. Individual oven temperatures vary so time and heat may have to be increased or decreased. Experiment a bit but don't melt the hose in the oven. The hose will become soft and straighten itself to the dowel. When it become straight, run cool water over it to "set" the shape. Next remove the dowel and heat the tube ends in a pan of boiling water. While hot, slightly flair each end with a rounded object- I use a boxed end wrench.

Now "break" or separate the upper run of the chain using a chain tool, slip the tube over, and rejoin the chain. The tube is now installed but we need to make it stay within a certain limited range of motion and ride freely on the chain, yet allow for shifting movement. Hold the tube 1" from the bottom of the derailleur and make a mark on the tube aligned with the bottom of the headtube. Around the bottom of the headtube place a zip tie just above the headset cup. It needs just enough slack to

slip the end of a zip tie through it. Slip a second zip tie into the first and close it without tightening, tighten the first zip tie snug against the headtube. Place a third zip tie around the chain tube at the alignment mark and through the second zip tie thus making a chain of sorts. Tighten this tie until snug on the chain tube. This tie should be tight enough to just be slipped forcefully by hand. Now check to see how far forward the tube will move by the chains movement. Tighten the second zip tie until the tube will not touch the derailleur but not so tight as it will hamper shifting of the chain. The chain guard is now complete. I have used one of these for many miles with no problems as long as it is adjusted correctly. The tube is unobtrusive, as it usually comes in black, and makes only a small amount of noise when climbing or accelerating hard. I have yet to clog one with crud or wear one out.

“.....Drink And Be Merry”

One complaint with the Vision is not having a good place for a waterbottle. The braze-ons on the boom tube require the bottle to be mounted pointing forward making it difficult to remove and replace. Experimenting with placements in other areas generally frustrated me and occasionally placed my fingers in dangerous positions. Finally I came up with a foolproof (so far) mount that requires no modifying or drilling on the frame and is easily fabricated and mounted. The bracket mounts the bottle cage under the seat crossbar behind the rider. The bottle is easy to remove and replace, even while climbing, and no squirming in the seat is required. The mount itself is made of a piece of thin (about 1/16”) aluminum strip. It needs to be 8” long and 3/4” or 1” wide. Taking this strip mark a center point 1/2” from each end for drilling. Next mark a line across the width 1 1/4” from each end for bending. Take the waterbottle cage that you prefer to use (I use and sell only

Sachs brand bottle cages as they hold the bottle very firmly, even upside down, but still make it easy to remove. These are also available from Performance mail order as the “Aqua Lok.” Mark through the mounting holes in the cage for the drilling of holes in the strip and center it along the strip evenly.. Now drill all holes as marked with a 1/4” drill bit. Clean up the holes of jagged edges and then carefully bend each end of the strip at the 1 1/4” marks upward at a 90 degree angle. The mounting bracket is now complete. Mount the waterbottle cage to the bracket using appropriate size bolts keeping them short as possible. Now remove the quick release for the rear seat adjustment, slip the cage/bracket into place from the bottom (bottle facing downward, bracket tabs facing upward) with the cage/bracket tabs on the outside of the seat adjustment slots, and replace the quick release. The bottle cage may be oriented so as to pull the bottle from the right or left. The bottle will sit within easy reach, is out of the way, and out of the wind stream. Large bottles will fit as easily as small.

I hope these little changes help to enhance your riding pleasure. They certainly make my metric centuries more of a relaxed experience. Anyone having other tips, for possible print, can send them to me at TIPS, Introspect Cycle, 1029 Amberwood Road, Sacramento CA 95864. Ride and Relax.....BJ

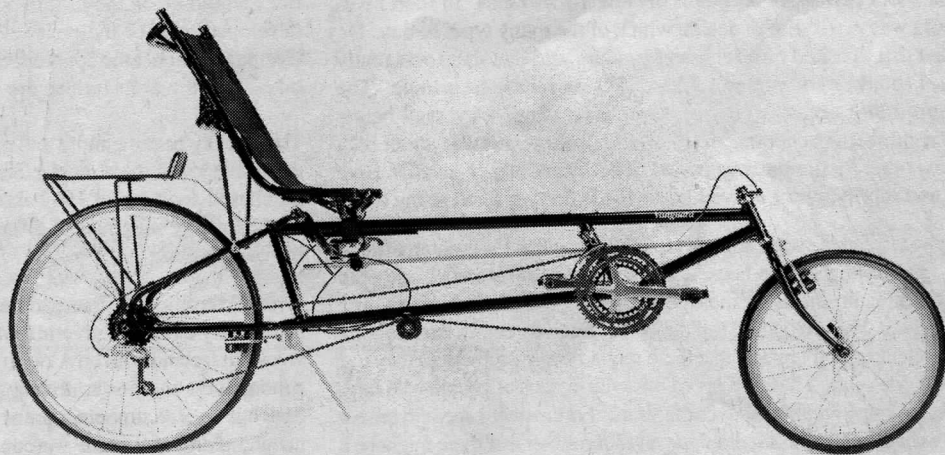
RCN welcomes BJ's new column. BJ has been a recumbent commuter, toured on recumbents and is very active in the Sacramento recumbent bicycle scene. BJ's company, Introspect Cycle's offers a complete line of recumbent models and they specialize in ATP Vision & Haluzak recumbents & custom accessoires. Glad to have you aboard, BJ!

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Riding The Infinity Re- cum- bent



Gene Stucker on his Infinity--photo courtesy of Gene Stucker

By N.E. (Gene) Stucker, Crosby, Texas

It was the summer of 1987 and the League of American Wheelman GEAR rally was being held on Long Island. GEAR turned out to be pivotal for me, there was a display of recumbent bikes by a local recumbent dealer, Dr. Bike. I had been reading about recumbents for some time, and seen a couple of them going by and had even taken a very short ride on one while waiting for a tour of the five boroughs of New York to start. In short I was hooked but I was still trying to decide which of the many types to buy. Dr. Bike settled that. I asked him for advice and he said that there was really no choice, I should start with an Infinity. His reasons were simple. The price of an Infinity was then, and apparently remains today, well below any other recumbent except one you build yourself and it was about on a par with any other for the starting, casual rider. That did it. I gave Dr. Bike a deposit and shortly after I arrived home the Infinity arrived at my door.

Assembly was straightforward and not too difficult so that I was shortly riding down the road in front of the house. For most people the initial ride on a recumbent is difficult; that is for most people over about 12 years of age. The initial difficulty is, I believe, due to self doubt that naturally comes into the adult mind while children don't realize that there might be any problem so they just jump on and ride away. I have observed this with dozens of people who have attempted to ride my recumbent over the years. Fortunately I seem to have a sufficiently childish mind that it didn't occur to me either that there might be a problem. I did make one serious error. Dr. Bike had said that my first rides should be short because my leg muscles wouldn't be used to the slightly different action required. My first ride was therefore a ride that we often take, 16 miles to a nearby town for lunch. After all, only 32 miles isn't much of a challenge, especially when you take a lunch break in the middle of it. WRONG. By the time we got home I was quietly sobbing because the tops of my calves felt like two people with blowtorches were gently playing the flames up and down between the knees and the hips. When he said short, he meant it.

Initially, even when my calves were in shape for recumbent pedaling, it wasn't clear that the Infinity was any advantage over the touring bike that I was riding at the time. It was different, of course, and had an element of fun because of its difference but I wasn't sure that I wanted to ride it instead of any other bike. At that time the decision was made that alternate rides would be on the Infinity and the touring bike until a strong opinion developed and for the next several weeks this alternation was the rule. Eventually it became apparent that I resented "having" to ride the touring bike when it was its turn so the choice was made.

The Infinity became more and more my favorite. By the following spring the Infinity was the almost exclusive choice. Between the time that it was purchased and May of 1992 about 2500-3000 miles per year were logged on the Infinity with most of these miles coming on trips home after work in the evening.

With the confidence that had developed over the first few hundred miles the Infinity did go on several tours. The most interesting was certainly two weeks in Ireland with an AYH group where we make loops out of Shannon headed west and north. Ireland is a superb country for a bike tour in any case but on a recumbent it gains an extra measure of interest. Apparently no one along any route we covered had ever seen a recumbent bicycle before and they were not at all reluctant to point out this fact as we passed by. Often, entering a small town. The pub would empty out to observe the recumbents as we approached. When we stopped in a town the Infinity was surrounded by children asking for a ride.

The downside of the tour was the fact that the New York connection of the flight out of Houston landed in La Guardia while the continuing flight left shortly thereafter from Kennedy and I was left to my own devices to con-

vey the very large box containing the Infinity along with my baggage between the airports on city buses. The best that can be said for the experience is that it made me much more careful checking flight details on subsequent travels.

On a second European tour with the Infinity we traveled to France and found that the French are not nearly so demonstrative. So far as could be determined no Frenchman noticed that there was anything different about the bike at all. In two weeks of cycling along the Loire River valley, at many attractions and at lots of B&B's the only comments about the bikes were from other tourists and other cyclists on tour. On this tour the first significant problem developed, a break in the aluminum tubing that forms the seat. No one in our party had sufficient command of the French language to get the seat rewelded satisfactorily. Fortunately another member of our group was about to head home before the tour ended and she loaned me her bike and took my Infinity home with her so that I could finish the tour. Back at home a friend in the shop at work rewelded the seat tubing and it seemed as good as new.

In May of 1992 we realized a dream that we had thought about for some time. I retired and we started an extended bike tour of the USA. On Saturday, May second, we biked out of our driveway and headed north, intending to ride to northern Minnesota, turn left and ride to Washington State, left again down through California and then a final left turn to return to Texas. We gave ourselves six months. I rode the Infinity and Dina rode her quite new Trice that she decided was a great way to go.

The entire tour is, of course, a long story. We are still driving the Buick that we bought in Montana and that is a story in itself. Suffice it to mention in this article about Infinity recumbents that a tiny town in central Iowa I had a second major problem, the frame failed. The left chainstay broke from the main frame member where the chain had a tendency to nick it. Even though

it was Sunday and the town was little more than a 7-11, within three hours we had unloaded the bike, located a skilled welder who could weld aluminum and who would do it on Sunday, a nearby farmer had volunteered to take me and the bike to the welder and back, the bike was repaired and we were on our way again! I will never forget the wonderful folks in Iowa.

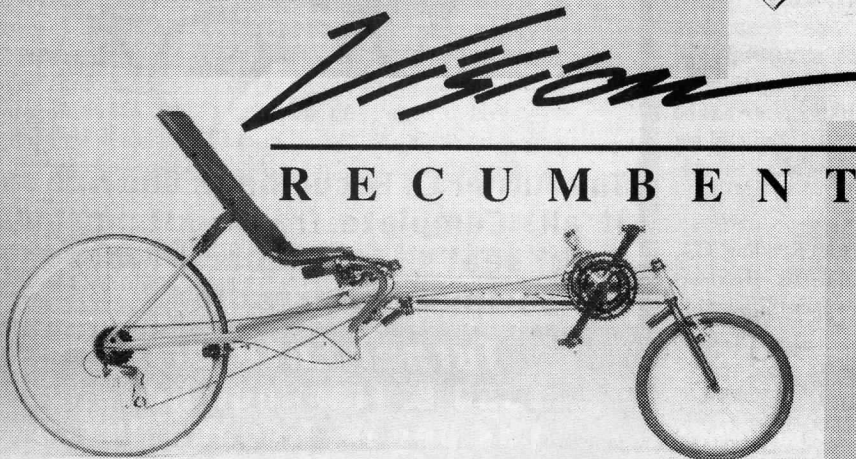
Back at home after the tour I finally called Don Berry at Ace Tool, the manufacturer, to discuss the breaks that had occurred over the six years and about 15,000 miles that I had been riding the bike. Don was just a little put out that I hadn't called before and assured me that even though it wasn't written anywhere they stood behind their bikes and that I should have shipped it back to them if I had a problem. At this suggestion I did send the bike back for his inspection and he reinforced the previous welds, installed a couple of reinforcing plates that they had determined were a good idea and also installed a stabilized bar that was now incorporated in the correct design. Within a few days the bike returned with the repairs and improvements and all at no cost to me! It would be astounding to me if any other bicycle manufacturer in the world would do so much on one of their six year old bikes at all, much less at their cost.

Over the years many of the original components have been replaced. The brake levers were the first to go. Of course new and better brake pads were installed early. A couple of chains have worn out. Lots of tires, two or three rear derailleurs and a bottom bracket. Probably if I were to purchase another Infinity I would buy just the frame and install better quality components. Still this doesn't seem too bad for an estimated 15,000 miles and lots of pleasure.

In summary I can see little reason for spending the extra money for other brands of recumbents, certainly not for an initial recumbent. My Infinity is still a delight to ride, it has given good service and it appears that it will go many more miles with me.

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"bill haluzak's horizon recumbent"

By Robert J. Bryant

We first heard about the Horizon a little over a year ago. For the first time in the history of RCN, recumbent enthusiasts and dealers came to us and suggested that we seriously consider reviewing this new recumbent. The driving forces in this movement were Jim Wronski from People Movers in Orange, CA (who seems to see new recumbents before I do these days), BJ Strass of Introspect Cycle in Sacramento, CA and RCN reader/recumbent enthusiast Kirby Cole of Redding, CA who now owns two Haluzak bikes. With the endorsement of two highly respected recumbent dealers and a dedicated customer, RCN took the hint. We contacted Bill Haluzak to test his bike and took delivery late last Winter. Jim, BJ and Kirby were all right about the Horizon, it is a great bike.

"the design"

The Bicycles by Haluzak "Horizon" is a unique machine. It appears similar to the Vision & Presto (SWB), but the bike offers a wheelbase that is nearly four inches longer, which is actually a medium wheelbase (MWB). Another difference is the indirect underseat steering. In its standard form, the bike has a 20" front wheel/ 26" rear wheel combination, the bike is rather high, I would say it has very similar height to the Presto, but noticeably higher than the Vision or Lightning. This is not a negative feature, but is nearly a given when a recumbent has a 20" front wheel. Haluzak also offers a 24"/16" or 17" version for high performance or for shorter riders.

The Horizon has many impressive design features. One thing I noticed right away was the excellent chain-line. In a discussion with the designer, we found out that this was actually the premise for the bike's design. The Haluzak chain idler system is the best I've ever seen. The dual idler uses precision bearing skate/rollerblade wheels on a stainless steel bracket to carry the upper and lower chain smoothly out to the crankset. And homebuilders, the answer is yes—the idler is available separately and will set you back about \$35 shipped. This idler should also fit on other recumbents as well.

The 40.5" wheelbase offers additional length and good stability. The Horizon's weight distribution is 54% front and 46% rear. The Horizon does have heel interference with the front wheel. The RCN test bike was a large model and my heel overlapped the front wheel by approx. 2.5"-3." Bill said this is one of the trade-offs to the Horizon design. Heel interference can be frightening the first few times it happens, but most riders eventually get accustomed to it. (Heel interference only occurs during low speed turns.)

"the man behind the bike"

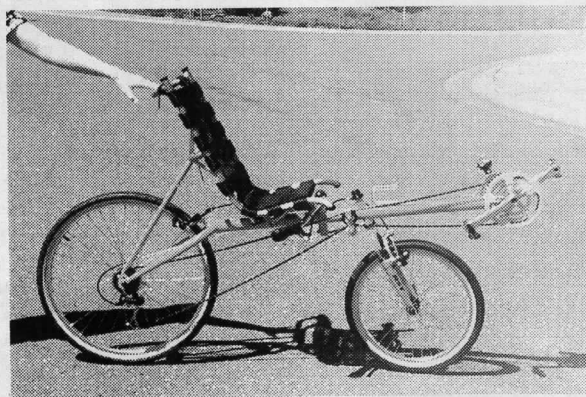
Bill Haluzak is a forty-six year old general contractor from Redding, CA. He has worked as a machinist and has a degree in Industrial Arts. His interest in recumbents came in the form of a project with his then 17 year old son, Erik, the rest of the story is history.

As many homebuilders do, Bill started out with a pile of old bike frames, an old lawn-chair, a hack saw and a torch. After doing some research at the local library, Bill found out that he was practically neighbors with Steve Delaire (Rotator Bicycles). Bill admittedly "hung around" the Rotator shop

and has much respect for Mr. Delaire (as we do). In his words, Steve is an "incredible craftsman."

By the fourth prototype, the Horizon was born and Bill had decided to market his bike commercially. At this time, about thirty Horizons are on the road, we would guess that this number will drastically increase within the next year.

"the frame"



Our test Horizon-staff photo

The frame is nicely crafted. The main frame is 1-3/4" .049 chro-moly steel. The chain stays are made from MTB tandem fork blades (similar to those used on Ibis tandems, another of Bill's neighbors who is also a bike-building mentor). The rear end of the bike is completely triangulated and appears very strong. The boom-tube fits over the top of the main tube, which allows the frame to be shortened if necessary. The TIG welding is comparable to recumbents in the \$1200+ range, but the weld beads were not the nicest I've seen. The standard Haluzak model uses indirect underseat steering. Bill has developed a unique frame jig that allows him to drill

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both the head tube hole and the handlebar/steering mount tube (hole) simultaneously. The underseat steering linkage is via rod-end bearings, very similar to a Ryan recumbent, but with a slightly larger rod-end bearing. There was a very slight amount of play in these bearings which is noticeable when you hold the front wheel and turn the handlebars. The play was not evident while riding. The Horizon come with braze-ons for two water bottle cages, luggage rack and headlight mount (on derailleur tube).

Another one of Haluzak's unique features is his indirect handlebar arrangement. He uses a Teflon impregnated nylon bushing press fit into the handlebar mounting tube. This bearing is designed for industrial uses where machinery is run continuously at slow speeds, this unusual application is beyond adequate for a recumbent. The handlebars are upside down "allaround" tourist style conventional bars with custom stem and linkage.

Bill custom builds the forks for his bike. There are four fork types making their way to the Horizon. The standard fork, which is high quality and the way most should go. There is a lighter weight fork for the high performance model, a beefier version for extra strong riders and finally, what the RCN test bike had, an optional suspended fork. This was an RST 150B BMX 20" suspension fork which is the same brand that Counterpoint uses. This fork requires the use of a cantilever or drum brake.

The paint on our test bike had a problem and was resprayed. Haluzak does Imron in-house. The eventual finished bicycle was a beautiful red. I am not the biggest fan of Imron, but it is an upscale paint that should last for a long time. My problem with it is that it seems to chip easier than the high quality powdercoats or the deltron (one notch higher than Imron on the paint quality scale). There is no need to worry here unless you want your bike as art. If that is the case, there are plenty of painters in the area who can do what you want. Bill did say that he can have Ibis custom spray his bikes for an upcharge.

"component selection"

This component selection is very good, especially when considering the cost of this bike. The drivetrain worked great. We love the Shimano Deore LX system. The SRAM Gripshifts are the old style type that are mounted on the ends of the bar. They shift extremely smooth and noticeably quieter than the new style SRT series, although the wrist rotation is further. The Bull Dog brakes are great stoppers. These are not lightweight high performance racer style brakes, but big hulk BMX style. It is easy to lock up that rear tire with the Bull Dog. The RCN test bike had an optional front cantilever that we did not care for. The pivot linkage* necessary to clear the boom creates an unequal pull between the sides of the brake. If I'd have kept this bike, I'd have put a front drum on it. I have made it no secret that cantilever brakes are not my favorite and If I do have them, they must be perfect—no exceptions.

*ATP (Vision) uses a similar linkage on the front cantilever that works just fine. We took a quick ride on a Lightning with a front cantilever that had a similar problem to what we experienced on the Haluzak.

One small problem we found was the lack of SIS compression index cable housing for the derailleurs. Haluzak is using lined brake housing for both front and rear derailleurs. In some underseat steering bikes I've tested, the compression housing



The Haluzak Horizon-Photo by Bill Haluzak

causes the bike to automatically pull to the right or left. The use of brake housing sometimes corrects this; however, we are certain the index shifting would improve with the correct housing. I would most definitely recommend that SIS housing be installed for at least the rear derailleur.

I believe that the gearing of our Horizon test bike needs an adjustment. We calculated the gear inch range to be 28-118. This is OK for flatlanders or racers, but hill climbers, tourists and NW commuters need lower gears. We would replace the 30/40/50 crankset with a 24/36/46 (std. MTB) for a gear inch range of 22-108. With this bike you could even use Shimano (Micro MTB) drivetrain with a 22/32/42 for a gear inch range of 20-99. This would be superb for NW hill climbing or commuting.

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The wheels are of the fat and tough variety; curbs, rough roads and uneven terrain watch out! The RCN test bike had a 26" x 1.75 IRC Duro Metro (Kevlar beaded) rear and a 20" x 1.75 ACS RL Edge, both pumped to 100 psi. The wheels are Haluzak built and were trouble free during out test. The current hubs are Shimano Deore XT (until his supply runs out) and STX rear. Bill uses stainless 14g spokes. Rims are Bontrager BCX3 front and rear. Haluzak offers a 24"/16" combination as well as a 700c x 20" x 1-1/8" combination as options.

"the seat"

Ahhh, the seat. I am dutifully impressed. As far as comfort is concerned, the sling/mesh seats win hands down. Prior to the Haluzak arriving, my favorite seats were the Vision with Thermarest pad and the Presto seats. I like the quick release feature of the Vision seat, but the Presto seat with suspension is slightly more comfortable. The Horizon seat has a Haluzak-made aluminum seat frame that slides into the main frame (*a la Presto*) although the seat is higher in the back (for tall riders!) and the base frame flares out to the side. Bill says this allows easier access as it "funnels" you into the seat. The mesh/velcro seat material is similar to that of the Presto, and is made for Haluzak by Sew What, which is also Counterpoint's seat material maker.

This Horizon seat is very comfortable. I especially liked the higher back and the lower lumbar curve of the design. The only possible drawback could be that the forward edge of the seat just clears the handlebars by a few inches. Initially, this appeared to be a problem, but the clearance turned out to be just right. Homebuilders: Haluzak will also sell his seat separately.

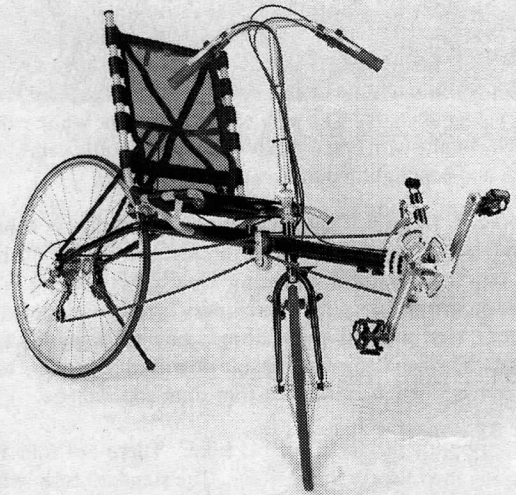
"options"

Bill Haluzak builds each Horizon to order. There are many variations and custom options available. The basis for these options comes from three basic models: the Tour, the Hybrid Race Model and the 24"/16" model (in either configuration).

Here is the option list:

- Extra long boom: (for tall riders)
 - Extra long wheelbase: (for tall riders)
 - Oversize frame tubes: (for large and/or strong riders) 2" .049 main tube.
 - Fork options: Lightweight.
Heavy Duty.
Suspension.
 - Steering options: Upright handlebars or set up to accommodate both. (underseat is standard).
 - Wheel options: 24"/26" rear 20"/17"/16" front.
700c rear / 20" x 1-1/8" / 1-3/8" front.
 - Braze on options: Cyclometer.
Lowrider mounts.
Fender eyelets.
brake studs.
- Custom component choices From what we have seen, upgrades are fairly priced For super top of the line/exotic bikes, ordering a frameset is probably the best idea.
- Custom paint: (Ibis, other or powdercoat)
- The above are charged options that may take longer delivery and cost more.*

- Frame: TIG welded Chro-moly
- Weight: under 30 pounds (our test bike weighed 32 pounds with the optional suspended fork which should put the unsuspended version in at 29-30 pounds-as advertised.
- Brakes: Dia Compe Big Dog or optional front cantilever
- Derailleurs: Shimano Deore LX



Optional Haluzak upright steering kit.
Photo courtesy of Bill Haluzak

- Crankset: Shimano 500CX 30/40/50
- Cassette: 11-28 HG 50 Shimano
- Hubs: Shimano: front-Deore XT; rear-STX
- Shifters: SRAM Gripshift (old style-ends of bars)
- Wheelbase: 40.5"
- Head tube angle: 68 degrees
- Seat height: 23"
- Gear Inch Range: 28-118 (26" rear wheel)
- Components subject to change.

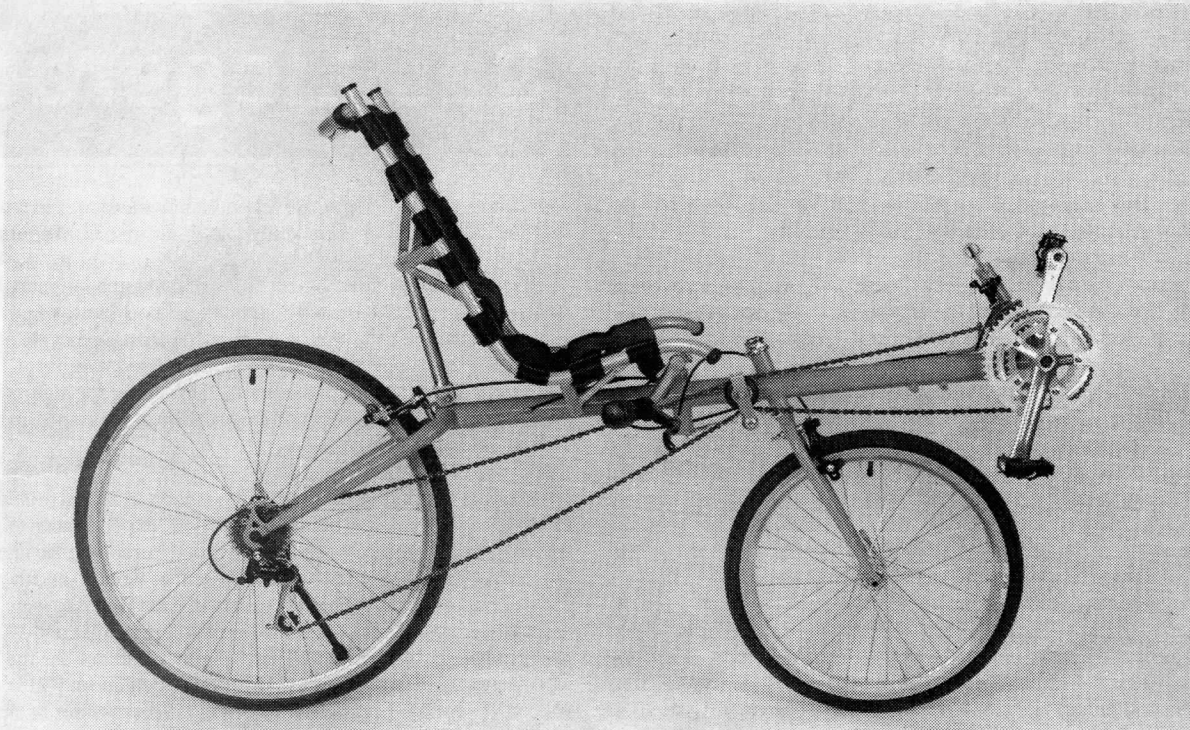
"design critique"

The Haluzak rides very nice. The Horizon's bottom bracket height is slightly higher than that of the Presto, a bit lower than the Lightning, and much higher than the Vision. When I questioned Bill about this, he said this is the optimum position with his superior chain-line in mind. The 1-7/8" main tube with the MTB tandem fork blade rear stays make for a rigid ride. My impression is that the Horizon is a very tough bike. I didn't see any underbuilt or potential problem areas on our test bike.

The Horizon has different and distinctive handling. Bill has chosen a relatively laid back 68 degree head tube angle. This is much more laid back than either the Vision, Lightning or Presto. With the Horizon's indirect linkage steering, it would be possible to have any steering geometry you want—and have any possible deficiencies corrected with the remote steering. Bottom line: the Horizon has some fork-flop. This means if you turn the bike from far right to center to far left there is a high spot in the steering when the wheel is facing forward/going straight. In other words, the steering has the tendency to fall to the right or left. Even with this geometry, the Haluzak can track a straight line and is stable at speed. I also think that the addition of the suspended fork accentuated this characteristic.

"mail order"

I always recommend ordering through your favorite or local recumbent dealer, but Bill Haluzak passed the drop-ship test. The RCN test bike was prebuilt, pretested, road tested, packed and shipped in a timely fashion. The bike ships tightly packed in one standard bike box and is a breeze to set up. The only tough part (for direct customers) was setting the chain to the proper length. With some patience and a chain tool, you'll be set.



The 1994-1/2 Haluzak Horizon with adjustable seat recline angle. Photo courtesy of Haluzak

"Intended use"

The Horizon is an ideal commuter, recreational or touring bike. It's a tough machine that is built to take whatever a rider can give. The performance model is fine, but there are faster bikes. RCN East Coast correspondent, Mark Colliton, has a custom performance Horizon (24" rear/17" front) as well as Lightning RCN test bike #2. Mark reports that the Horizon is not quite as fast as his Lightning and seems to have a bit of flex in the boom and fork as lighter tubing is used in its construction.

"the real deal"

If you are looking for a real deal on a top quality enthusiast recumbent, this is it. The Horizon is direct competition for SWB/MWB recumbents costing \$1400-\$2000. We believe the Horizon to be several hundred dollars undervalued in today's market. Keep in mind that all recumbents are not created equal, nor do they cost the same amount of money to build. We also have found that many new manufacturers offer great deals like this to establish themselves in the market. This is good for customers, as they can get a really fantastic deal. In saying this, remember that a proven track record only comes with time in business and bikes on the road. I fully expect Bill Haluzak to be part of the recumbent business in the foreseeable future, but I cannot imagine that he can continue to offer this bike at this bargain price for too much longer. This bike is "the real deal."

The Bicycles By Haluzak, "Horizon" looks to be a fantastic recumbent and a great bargain. Bill won me over when he started discussing to what lengths he'd go for a custom order. If you are interested in more information in the Horizon recumbent, contact Bill Haluzak at: 2166 Burbank Ave., Santa Rosa, CA. 95407. Phone#707-544-6243. Pager#707-491-8814. Haluzak recumbents are sold through selected dealers throughout the USA.

RECUMBENT DEALER NOTES:

I had the chance to see/ride Bill Haluzak's first prototype bike. I was very impressed and encouraged him to further pursue and develop the bike as he didn't know if it would sell. I also took delivery of one of the first production models. I really loved the bike. I rode a few metric centuries and commuted on the bike and only found a very few drawbacks. It was definitely my favorite. On the plus side the remote link underseat steering was superb and the best handling SWB I had ever ridden. The wheelbase length felt good and I didn't feel I was sitting on top of the front wheel. I also liked the height of the seat, close to a Presto. The Imron paint was slick, wet looking and shines better than powdercoat, but easier to scratch. On the down side I felt the seat was too erect and cramped me a bit. The front fork gave a smooth ride but was too flexy for my size, especially under braking. Also the height of the seat was too much for persons with short legs or of a height less than 5'9".

Bill was willing to listen and make a few improvements. The seat is now adjustable for angle and a new stiffer fork has been added. I also saw the prototype of the model made for shorter persons using a 16 x 24 wheel combo to make the bike lower. Also the basic model has Deore LX components, Sun rims, hand built wheels, and excellent welding and accuracy in the frame, all at a price that is almost unbelievable.

Overall this bike is my personal favorite out of all the bikes we sell and I have ridden. I just took delivery of my new Horizon frame set. It will have Cook Bros. cranks at 182mm, Magura hydraulic brakes, bar ends, and Deore DX components. I expect to get a lot of riding out of the bike.

BJ Strass / Introspect Cycle

Book Review: Das Liegerad

Gunnar Fehlau, *Das Liegerad*, Kiel: Moby Dick Verlag, 1994, 167 pp.
Review by Dick Mandell — Columbia, South Carolina

We who ride sitting down have a neglected past, a vigorous present and an exciting future. We are assured of all this in a solid, lively piece of literature which, alas for the American cycling public, is in German.

Fehlau begins with the past. He produces pictures and sketches to show that the "Liegerad" (literally, "lying down wheel") were an aspect of the modern bicycle's fertile engineering period around the turn of the last century. He says that, even then, the advantages of presenting less resistance to the wind and the usefulness of using bigger muscles more efficiently to turn the crank were known. And most of the technical variants (including lying on the stomach) we now have can be seen in some European bicycle museums or some illustrations in early sporting magazines. For a while before the first world war, Peugeot mass produced a recumbent.

Another vigorous period of development was in the early 1930's. There are group photos of English and Germans recumbentists wearing knickers. The Frenchmen Charles (father) and Georges (son) Mochet produced a series of long-wheel-base, partially faired, racers that won many matches they had against trained-up athletes on uprights. Most of these machines had an intermediate gear transfer, like our present tandems. Many had a steering column connected to the front fork by a universal joint. The author blames the decline in interest in recumbents to the depression and the second world war, but mostly to the decision of the UCI (Union cycliste internationale) in 1934 to ban official competition between recumbents and conventional bicycles.

Some pioneers are presented as shamefully neglected heroes. A recent one is Paul Rinkowski (1915-1985) who, isolated in East (Communist) Germany, established the supremacy of the short wheel base, raised steering recumbent. Rinkowski, as early as the 1950's, used wheel disks, a new kind of high-pressure tire and fairings for the pedals. Among his many inventions was a curious machine (Here, too, a picture is provided.) with arm as well as foot propulsion that he insisted was very fast, but could teach no one else how to ride well. A west German hero who does a lot of technical experimentation is Professor Schoendorf of the Technical College in Cologne. Schoendorf told Fehlau that, if he had known of the work of the Mochets in the 1930's, he could have saved ten years of development work. The author is well informed about recumbent technology everywhere. Another hero is Chester Kyle, founder of the IHPVA (International Human Powered Vehicle Association) in 1976.

The honoring of Kyle indicates the stress of this book. For Gunnar Fehlau is keen on speed. In fact, the remainder of the book is a tale of the technical work done and suggestions for more work to be done so that all of us will go as fast as possible. Comfort and ergonomics, which surely are worth the attention given them by American innovators, come up here sort of along the way. The book inserts as entertaining anecdotes within the author's text gripping and/or funny stories of riders who dusted road bikes in the mountains or in endurance rides and who add, almost as after thoughts: "And my knees, ass ("Po"), neck and arms weren't sore either."

There are some listings of the additional advantages of recumbents over upright bikes. They require little special clothing, are less damaging in accidents and even the low position in city traffic is a "safety-plus due to the show effect." Because of the flashiness of a recumbent, criminals avoid them. A theft would almost be an act of public theater. Fehlau is categorical in stating that in all conditions, including steep mountain climbing, the

well-tuned, high-performance recumbent is superior. He provides a figure — 15%. A partially or completely faired machine is, of course, even faster.

A chapter on the biomechanical bases of a recumbent's superiority is technical, detailed, revelatory and convincing. I now know why I feel so clumsy and deprived when I climb on even a fine triangle bicycle after riding my recumbent for a long time. In a section on pedaling form, Fehlau claims that running is excellent preparation and training for high-performance recumbent cycling. The power and musculature of the trained up runner transfer well to the horizontal position.

Most of the last half of the book is devoted to technical problems of design. First the author advises his presumed non-expert reader to go ahead and just buy a production item (By the way, good European machines cost roughly twice what an equivalent American machines would.) and then, just in case, in fine detail informs the home craftsman what he has to keep in mind when he makes his own. The stress is on reducing weight and wind friction — performance at high levels. There is a lot of advice for the home builder who wants to make his own full fairing. Fehlau may also reflect an advanced or peculiar European concern in his discussions of shock absorbers for front and rear wheels.

But let me not suggest that this is just a technical treatise, that it is other than a must, a feast for the HPV enthusiast. There are more than a hundred pictures, some in color. Besides the ones of historical interest, there are pictures of recent bikes with front wheel drive. One picture is of a recent high-performance, lie-on-on-the-tum bike with the crank behind the back wheel. There is a stunning picture of the low-slung, un-faired works of the "Cutting Edge." I had assumed that high-performance recumbents (like my Lightning P-38) had to be ugly. There are several photos of recent beauties (one a tandem by the Dutch firm, "M5") taking advantage of carbon fiber's adaptability to sleek, sculpted forms.

In all of these discussions, as well as in the inserted narratives of some exhilarated riders, the style is witty, cocky and charming. The style is also a little odd. I have never encountered a German stylist who so daringly employed the grammatical possibilities of his language to incorporate so many essentially foreign words.

The author and his accomplishment are to be welcomed, treasured perhaps. Among many other things, *Das Liegerad* is a powerful illustration of the losses to American high and technical culture due to our neglect of other languages. Still, I think the HPV enthusiast might want this fine book on hand for the pictures, which can be understood, and as a sort of possessed monument. If the American monoglot had on hand a thick German - English dictionary, he or she might become even smarter.

I furnish below the address of the German publisher. The price in Germany is 44 DM or about \$27.00.

EDITORS NOTE: As per our instructions, the address to order this book is as follows: Send \$34 to "Das Liegerad" c/o Babette Schemensky, 108 Ryerson Ave. Newton, NJ 07860. Apparently, books are being dropshipped.

Moby Dick Verlag
Speckenbeckerweg 116
D24113 Kiel
Germany
Tel: (0431) 6498222
Fax: " 6498221

RECUMBENT NEWS

EURO NEWS:

An inside bicycling industry source recently visited the Holland bike show and reported that the show was loaded with recumbent bicycles.....and the booths were mobbed. The **GIANT** Bicycle Company, with their progressive new leader, Jay Townley, has hired the services of renowned Windcheetah HPV designer, Mike Burrows, I wonder what this means.....

MAINSTREAM MANUFACTURER REPORT:

TREK RUMOR OF THE MONTH:

Which year, which month, which day, which rumor. A Trek spokesperson mentioned to an RCN reader online that Trek had no interest in

recumbents.....word has it that 30%+ of Trek dealers said that they could sell a Trek recumbent in their shop. **CANNONDALE:** Bob Humphries reports that they are still plugging away on the 'bent project, however, I got the impression that an Interbike unveiling would be ambitious (???)

COUNTERPOINT/ANGLE TECH: The news is that the Triad (Presto Trike) is available and they are taking orders. The Triad is available in SE63 and CL models with prices ranging from \$2799 (\$2999 for the SE63). Both models use the Sachs 3 X 7 rear hub (3 speed internal & 7 derailleur gears) as well as Sachs drum brakes up front. The latest word is that an upgraded brake system with hydraulic Magura/Sachs drums will be an option priced at \$250. The hydraulically activated drums correct a problem most trikes have, equal pressure & adjustment on both front brakes. With the hydraulic system, both brakes are connected to one brake handle and automatically provide equal pressure. I have ridden the Presto Triad and it very well could be the best commuter trike in North America. It has proper height to ride in traffic and is very wide to relieve the possibility of a roll-over. Presto Triads also fold up. I have seen designer Jim Weaver put the Triad in the back of his compact car. For more information on the Triad, contact: Angle Tech's 24 hour line, Ph# 1-800-793-3038.

RECUMBENT PRESS RELEASE (manufacturer written & provided).

RANS RECUMBENTS: As of late '93 RANS has been making deliveries of a new recumbent, the "response." is designed to fill the demand for a moderately priced high quality recumbent. The frame features a 1.5" x 1.5" square 4130 main beam which has yielded both less weight and excellent riding characteristics. Rans produces the "Response" in volume using their hi-tech Aircraft plant where computer manufacturing equipment and technique abound.

Frames are MIG/ TIG welded then powder-coated with a super high-gloss coating. The "Response" can be purchased at a high-level of pre-assembly. The bike features the new "C" style bars, offering more ergonomic steering and streamlining.



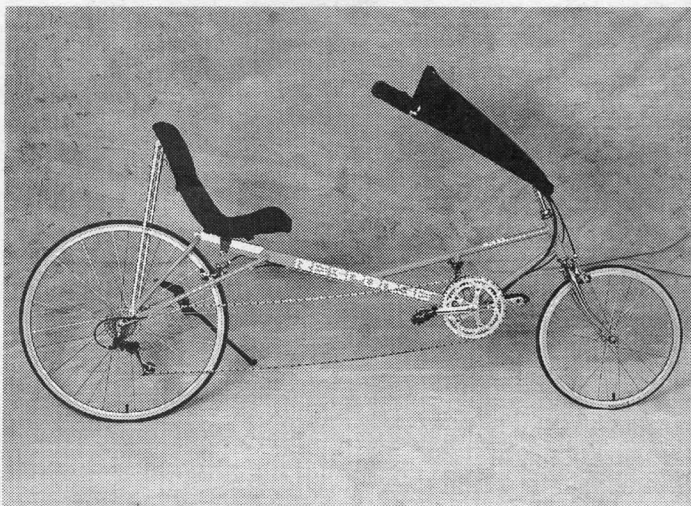
The 1994 Counterpoint Presto Triad--Photo courtesy of Angle Tech.

RANS has been producing a complete line of recumbents since 1976. For more information contact: RANS Inc., 4600 Highway 183 Alternate, Hays, KS, 67601. Telephone #913-625-6346, FAX #913-625-2795.

RANS RECUMBENTS: The "Tailwind 7-speed recumbent is our first offering in what is termed compact long-wheelbase (CLWB) recumbents. This configuration exhibits excellent ride and handling. The frame is strikingly simple, but clever in design. To enhance ride comfort, the main frame tube and rear triangle are optimized for proper flex. The effect of controlled frame flex and seat spring yield a surprisingly smooth and responsive ride equal to longer wheelbase recumbents.

The shorter wheelbase affords surefooted handling even on rough roads or off-road rides. "This is an unexpected pleasure to have a 'dirt-bike' feel, yet have good road speed," says Randy J. Schlitter, President of Rans.

Weighing in well under 30 pounds, the Tailwind is light by recumbent standards and extremely light for its price range. Acceleration is also increased due to less overall weight and chain mass.



The 1994-1/2 Rans Response-Photo courtesy of Rans.

"The compact long wheelbase design allows optimization in frame materials, and less chain mass. Add the surefooted feel, and the cushy but responsive ride, the 'Tailwind' at \$675.00 should become a most wanted recumbent," says Mr. Schlitter.

RANS has been producing a complete line of recumbents since 1976. For more information contact: RANS Inc., 4600 Highway 183 Alternite, Hays, KS, 67601. Telephone #913-625-6346, FAX #913-625-2795.

TURNER ENTERPRISES: We are offering two complete recumbent bicycle models, sold customer direct, only in areas where there are no retail outlets.

Our \$499 plus freight bike is built on the "E" frame. The drive system and all other parts (except the Odyssey brakes) are Suntour. This is an eighteen speed bike with bar-end shifters, that can always be upgraded with the taller seat and aluminum wheels that enable a higher pressure front tire to be fitted.

Our LB "2000" will be offered with XC Suntour components with micro drive and the fiberglass tall seat will be standard. Frame weight on the largest version of this bike is only six pounds and has been ridden throughout the world for thousands of miles without a single frame failure. The LB "2000" is only \$1595 plus freight, which should be about \$50 shipped by Greyhound.

Our most recent offering is a new light version of the "E" frame. We will attempt to hold the prices down to the same low prices as the standard "E" model.

This bike has such neat features such as the rear fork ends capped, an open front derailleur tube for attaching a fairing, computer or light system.

The designation for this new model is the "E-LITE," and it will only be available in medium and large sizes. This model will accept 26" MTB wheels, but will also work fine with a 24." The E-LITE will accept any of the Turner seats (Low-Back, Fiberglass Hi-Back or Kevlar/Graphite).

We offer a demo VHS tape on our products for \$20. For more information, write Turner Enterprises, 1350 East Flamingo Rd. #73, Las Vegas, NV, 89119 or call Ph#602-290-5646.

INTRODUCING THE NEW S & B RECUMBENT TANDEM FOR 1994.

Almost all riders agree that a tandem can outperform a single due to reduced wind resistance and increased rider horsepower. A perfect

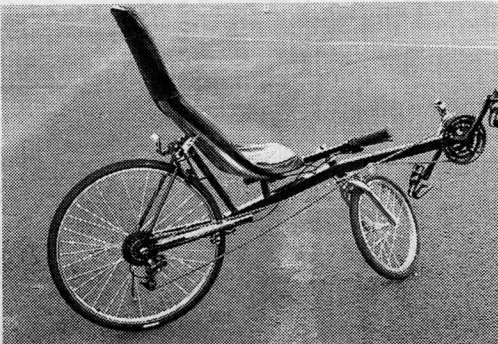


The 1994-1/2 Rans Tailwind--Photo courtesy of Rans.

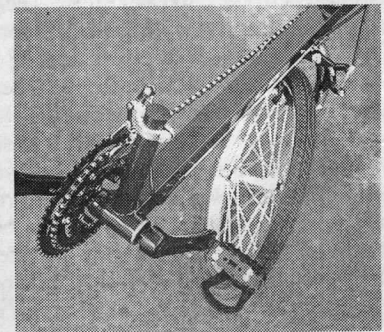
match would be made by producing a recumbent tandem. S and B has produced the most advanced recumbent tandem on the market today. The S and B recumbent has a lower center of gravity, lower frontal area, better aerodynamics, ergonomically correct and efficient pedal stroke and seating positions.

The frame design is a triple and quadruple space frame utilizing 4130 chromoly tubing of .049" wall in a supported truss design. The frame is TIG welded throughout and sports a fine powdercoat scratch resistant finish. Seats are fiberglass backed with foam cushion under a rich velour pleated cover. Shifting is easy with Aris Power Grip shift attached to a 14 speed Shimano drivetrain. Seat height is low (17") providing a low center of gravity and low wind resistance. Maneuverability is enhanced by the 16" x 1-3/8" front wheel and the 26" x 1.5" rear wheel. Braking is accomplished by twin Odyssey 2000 calipers. Overall weight is a light 42 pounds. The S and B 14 speed tandem is \$2450. S and B Recumbents Ph#310-608-0008 or 310-762-2243 phone/ Fax.

BICYCLING MAGAZINE: Our friends over at the world's #1 bicycle publication have tested three recumbents+ the Ryan Duplex tandem in their August 1994 issue. We haven't seen the issue yet, but calls from Jim Boeder at BikeE and Dick Ryan at Ryan Recumbents indicate that their bikes were tested and that reviewer Jim Langley (friend of recumbent riders) had nice things to say about the bikes and recumbents in general.. RCN was also mentioned. (Thanks guys!)



The Turner Laid Back LITE-Photo courtesy of Milt Turner



The Turner Laid Back LITE-Photo courtesy of Milt Turner

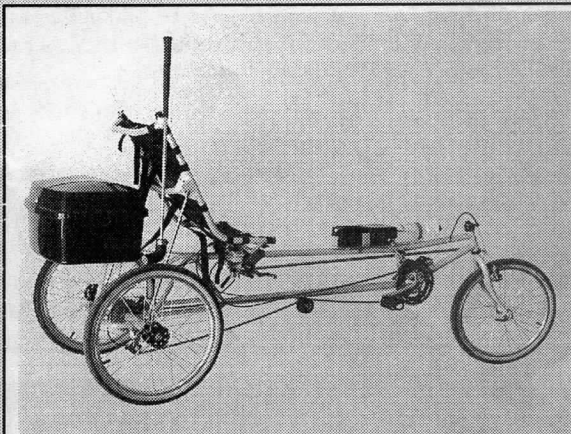
RECUMBENT NEWS CONTINUED:

HUMAN POWERED MACHINES: Jan VanderTuin of Eugene, Oregon has sent us a press release of his new offerings. His company is called Human Powered Machines and Jan also designs and builds custom recumbents and hpv's. Lower & upper right photo's are the "Tritan." This (two wheels in back) trike has a sling/ mesh seat, a TIG welded chro-moly frame, powdercoat paint, three 20" wheels, and comes stock with a 21 speed Sachs drivetrain with a rear drum and front cantilever brake. The City of Eugene has used these as Parking Officer Vehicles. The "Tritan" sells for \$1595. Another model is the "Flyer." This is Jan's version of the Don Harse, "Coo's Bay Flyer." This (two wheels in back) trike has a sling/ mesh seat, TIG welded chro-moly frame, powdercoat paint, three 20" wheels, folding frame, aircraft style steering with cables (*ala* Infinity), and Magura Hydraulic on the rear and cantilever brakes on the front. The "Flyer" sells for \$1595. The lower left photo is the "Tri-Hauler." It is a FWD (similar to a Flevo) trike (two wheels in back). This (two

wheels in back) trike has a sling/ mesh seat, a TIG welded chro-moly frame, powdercoat paint, three 20" wheels, and comes stock with a 21 speed Sachs drivetrain with a front drum and rear Magura Hydraulic brake. The Tri-Hauler also has front suspension. Prices start at \$1695. Human Powered Machines PO Box 1005, Eugene, OR, 97440. Phone#503-343-5568

Jan is known throughout North America for his work designing and building his version of the Danish Long John and British Long Emma. The Long Haul is a familiar sight on the streets of Eugene, Oregon. Jan's bike building business is located at the Eugene Center for Appropriate Transport. The Eugene "CAT" offers recumbent rentals, recumbent and bike trailer building classes as well as coop bike repair. You can reach CAT at: 455 W. 1st Ave. PO Box 1005, Eugene, OR, 97440. Phone#503-343-5568.

Top - Secret
RCN Super-Spy
Photo files

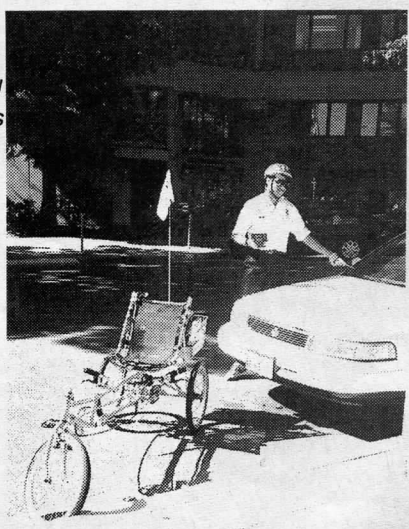


The "Tritan" by Human Powered Machines-- Photo by HPM.



The Human Powered Machine's FWD "Tri-Hauler"--Photo by HPM

The Human Powered Machines "Tritan" in Eugene--Photo by HPM.



RECUMBENT CYCLIST CALENDAR

**JULY 15-18
CYCLE FEST 1994**

"A large scale gathering of enthusiasts for alternatives to the pervasive diamond-frame cycle-for human powered vehicles." RCN's own Ron Schmid will be in Lancaster England to cover this event and he promises a report. John Bradshaw, CycleFest '94, S. Martin's College, Lancaster, England. Ph# +44 524 63446.

**JULY 22, 23 & 24
DA VINCI DAYS:**

Oregon's annual HPV fest. This is the best event in the NW. For more information regarding the HPV segment of this community event, contact Paul Atwood Ph#503-752-6410. DaVinci festival information Ph:#503-757-6363.

**AUGUST 1-7, 1994
IHPVA SPEED 20TH ANNIV. CHAMPIONSHIPS**

These are the dates for next years event to be held in Eureka, California (not to be confused with Yreka, Ca.). Contact: REHPV, Al Krause, 2338-18th St., Eureka, CA 95501 *Ph:#707-443-8261.

**AUGUST 26-28
EUROPEAN HPV CHAMPIONSHIPS**

Contact: Jurg Holzle, Future Bike, Spizackerstrasse 9, CH-4410, Liestal, Switzerland. FAX 33-28-30-39

**AUGUST 28
STEVE'S (Delaire) 40TH BIRTHDAY RIDE**

40 rolling miles of recumbent fun. Meet at 8 am at Howarth Park (in Santa

Rosa) Potluck Picnic begins at noon. For more information, call Steve (Rotator Bicycles) at 707-539-4203

**SEPTEMBER 10
The Great Kinetic Sculpture Race**

Contact: Evan Mills, POB 3770, Omaha, NE 68103

**SEPTEMBER 9-12
INTERBIKE 1994 Bicycle Industry Trade Show.**
To be held in Anaheim, CA. Interbike Ph#714-722-0990

**SEPTEMBER 21-23
Bicycle Industry Organization (BIO) Trade Show in Las Vegas, Nevada**
Ph# 303-444-4BIO

**SEPTEMBER 26-28
1994 INTERNATIONAL HPV SYMPOSIUM 1994**
Human-powered flight. Contact: Museum of Flight, 9404 E. Marginal Wy. S., Seattle, WA 98108.

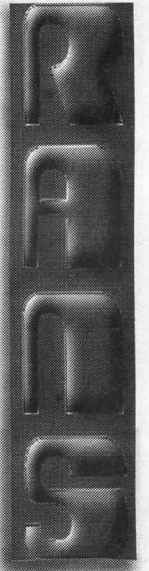
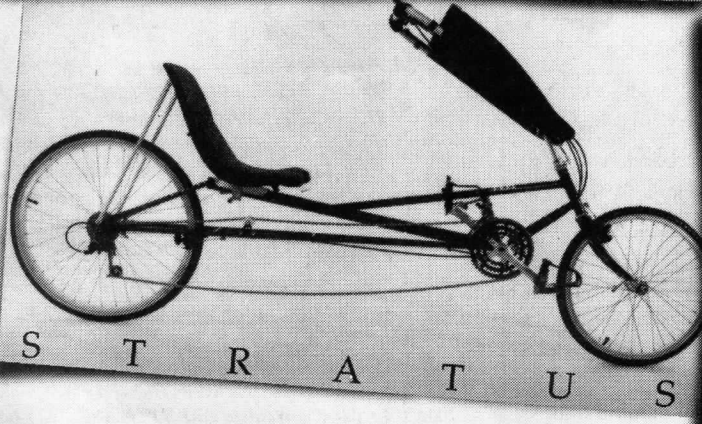
**OCTOBER 2 (tentative)
3rd ANNUAL SACRAMENTO VALLEY RECUMBENT/ HPV RIDE & RALLY**
8:30 am ride up the beautiful American River Bike Path 12:30pm BYO picnic & rally. For info call BJ/ Introspect Cycle Ph#916-973-1945

**OCTOBER 9-12
INTERBIKE 1994 Bicycle Industry Trade Show.**
To be held at the Pennsylvania Convention Center. Interbike Ph#714-722-0990



kan-kle (rang-ke), kan-
anger, irritation and annoyance of
rans (RANZ) vt. 1. to cycle in comfort and speed with
superb handling n. 2. a form of recumbent cycle
adj. 3. to be extremely well crafted, yet a great value
n. 4. a really cool company bent on building incredible
bikes. ADDRESS: RANS Inc. 4600 Highway 183 Alternate,
Hays, KS 67601 Phone: (913) 625-6346 Fax: (913) 625-2795
kan-sack (kan-sak)
to search
ly or rough

defining
the
Ride



RCN RECYCLE CLASSIFIEDS

RECUMBENT DEALERS

WINDCHEETAH, KINGCYCLE, RADIUS, BROMPTON & LINEAR! Hal's Custom Bikes. We specialize in the finest European HPV's. Personalized service is our specialty. LAX airport pickup & mail-order sales. Come see the new Windcheetah, Kingcycle & Zipper fairings. By appointment only. Ph#310-376-5882. (CA/19)

THE WHISTLESTOP

New & Used Recumbents in stock. ATP Vision, Lightning P-38, Ryan Vanguard & Fleetwood, Rans Stratus/ Nimbus, ReBike, and Turner. We buy, sell, trade and, consign. Test rides and rentals available. Ph:#303-224-5499. Fort Collins, CO (CO/18-25)

INTROSPECT CYCLE: Your Northern California Recumbent Specialist. We offer Haluzak, Ryan, A.T.P. Vision, Maxam, Rans & others. Recumbent accessories and custom modifications. We are Vision Experts. Call for our current listing of used recumbents. Showroom hours by appointment only. 1029 Amberwood Road, Sacramento, CA. 95864. Call B.J. at Ph#916-481-2906. (CA/21)

PEOPLE MOVERS: See Us At Our New Location! We specialize in Ryan, Linear, Rans, Infinity, A.T.P. Vision, Haluzak, BikeE, Rotator, Maxam, Comffy, Lightning & ReBike recumbent bicycles. Drop-ship anywhere in the USA. People Movers, 980 N. Main, Orange, CA. Phone # 714-633-3663. Your full service recumbent shop.. Open 7 days. (CA/21)

MARYLAND-D.C.-MT.AIRY RECUMBENTS. Many in stock, ready to ride- New, Used, Tandem, Trade & Rentals. Obscure parts- Instant Worldwide Delivery. Frame Repairs, Brazing & Custom wheels in one day. Traffic-free test area. Long rural rides. Airport pickup for out-of-towners. Call #301-831-5151. (thru #-25)

Recumbent Cyclist International

We have the best prices on recumbents. RCN test bikes can be new & still in the box or have a few miles on them. Please write for our Fall Special Flyer.

Please send us a \$1 or four .29 cent stamps for our current list of special deals. This list is available for free via Email-DrRecumbnt@aol.com or write: RCI, PO Box 58755, Renton, WA 98058-1755

RECUMBENT DEALERS

*****SOUTHERN*****ARIZONA*****

BIKE Rx: FULL SERVICE RECUMBENT SOUTHERN ARIZONA. We stock Rans, Linear, ReBike, Vision, BikeE and Turner. Complete line of accessories. David Sader, 28300 S. Foxwood Way, Amado, AZ 85640. Ph#602-398-9226. (AZ/22)

*****WESTERN*****MICHIGAN*****

Shel's Fat Tire Works

Serving Grand Rapids and southwest Michigan. We sell Linear, Rans and ReBike, will add other lines as requested. Test rides, rentals, personal service. Also sell Bianchi, Workman and Burley. Come see us today! 1334 Logan SE, Grand Rapids, MI 49506 or phone #616-454-3260. (MI/22)

*****ARIZONA*****

Recumbent Bicycles of Northern

Arizona. Featuring: ATP, Infinity & more. Visit the Grand Canyon....test ride a recumbent. RCNA, 1925 N. Main St, Flagstaff, Arizona, 86004 or call #602-779-3818. (AZ/22)

NEW RECUMBENTS

WINDCHEETAH--KINGCYCLE--RADIUS

The Finest European Recumbent Bicycles are now available in North America, imported exclusively by Linear, Mfg. Inc.. Call for the information on the dealer nearest you! Linear, Mfg. Inc.: Phone# 319-252-1637. (IA/19)

WANTED: BIKES/ PARTS

WANTED: Front fairing for Lightning P-38, disk wheel, Fabric Wheel cover and work stand. Ph#803-771-0246 (SC/22)

INTERNATIONAL HUMAN POWERED SPEED CHAMPIONSHIPS (IHPS) VIDEOS:

19th Now Available. Also Available 17th & 18th Two Hour NTSC-VHS or 8mm. \$25 US, \$5 Extra overseas. *Robert Bryant* says, "An RCN Favorite." Send To: Steve Iles, 5419 Crestlawn Dr., E. Canton, OH 44730. Call #216-488-2470 (OH. '94)

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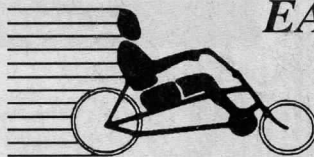
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