

RCN

RECUMBENT CYCLIST NEWS

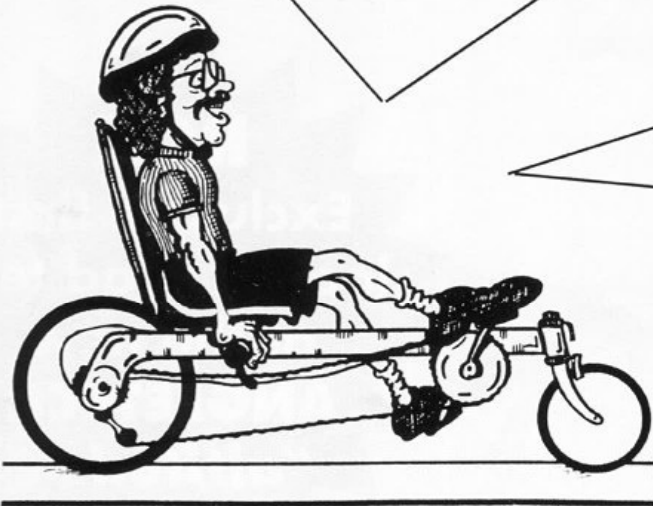
RCN
Exclusive first
look & road test
of the new
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"altitude"

HPM
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and
HALUZAK
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RECUMBENT CYCLIST NEWS



Suki Sommervold on her Rans Stratus at home in Peyton, CO—John Cunningham

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What's Coming Up!

RCN#42 Nov./Dec. 1997 included an article on the Silver Thread/Slumgullian Tour in Colorado. We also have a '98 Easy Racer Tour Easy 24-speed test. We have a Gold Rush Replica Black Gold, a '98 Vision Metro, and '98 BikeE RoadE tests coming up.

RCN#43/44 will be our 1998 DOUBLE ISSUE BUYER'S GUIDE issue due out by March 1, 1998. The '98 Guide will be even better version with all of the up-to-date specs for the new year as well as EVEN MORE RCN RATINGS and RANTINGS! For more information on RCN see page 40, or call 206/630-7200 for a copy of the new RCN brochure, or call 714/633-3663 to charge your order on a credit card.

RCN PUBLICATION INFORMATION

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OFFICE Ph/FAX: Ph#253/631-5728

Email: DrRecumbnt@aol.com

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EDITOR & PUBLISHER

Robert J. Bryant—Email: DrRecumbnt@aol.com

CIRCULATION MANAGER

Marilyn Jayne Bryant
ASSOCIATE COPY EDITOR
Paul Arends—Vienna, VA.

RCN SPECIAL CONTRIBUTORS

Richard Drdul
Gene Standley
Cheryl Fisher
Bill Patterson
Dave Tipping
Ryan Young

RCN MAIN ADDRESS

RCN, PO BOX 58755, Renton, WA 98058-1755

UPS/FEDEX/OVERNIGHT ADDRESS

Please Call.

RCN#41 Cover: The Angletech Altitude—photo courtesy of the Angletech. Cover and layout design by Mark Colliton, Kensington Heights Design.

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Editorial License

by Robert J. Bryant

Email: DrRecumbnt@aol.com Voice mail#206/630-7200 Fax#206/631-5728



Penile Numbness, 'Bents CAN climb and Bob Rants

This has been the year that we will be talking about for some time to come. I actually never thought it would happen, but it appears as though we're finally on our way to a limited mainstream success in the bike market. So while we're on the roller-coaster, let's hope everyone survives the trip! We've heard of really long ship dates (2+ months), a few bikes shipping with missing parts and Rans is taking orders for '98 models!

The greatest thing that's happened this year is *Bicycling's* pro recumbent press. Okay, so the July issue was still a bit of recumbent fluff. Ed Pavelka's review has put Easy Racer sales through the stratosphere, though unfortunately, Dick Ryan's Vanguard sales have suffered in this roller coaster season and the post-*Bicycling* fallout.

As the July recumbent special was winding down, all of a sudden the August *Bicycling* with its very bold article on "Impotency and Cycling: The Unseen Danger." It discusses penile numbness and why men should not ride upright bikes. Ed Pavelka wrote about how this had affected his life. "...there's already been some improvement. As I write this—six weeks since switching to a recumbent..."

This article hit me like a ton of bricks. I had just squandered some sumolians on a new Trek 1220 road bike. I'd had several debates with 'bent heads about how roadies in the peloton were just faster than we were, as I described a scene on Lake Washington Boulevard where a pack of club riders went racing up a hill at 18+ mph. I was thinking that I couldn't do that. Well, boy was I wrong. As I found out, my Trek 1220 is quite a bit slower than my Gold Rush Replica Black Gold and a few weeks later I climbed to the top of Colorado's Slumgullian Pass—13,361 feet on a V-Rex. I was the in the first group to the top, along with John Williams of Philomath on a Rans Rocket Saturn-V, Oregon and Barb Butler of Colorado Springs on her Cannondale R500. Anybody who thinks that recumbents are poor climbers should have been there. I'll have



RCN publisher Bob Bryant with his custom Angletech V-Rex in Creede, Colorado. Read all about the Slumgullian tour in RCN#42.

more on the Silver Thread—Slumgullian Tour in RCN#42.

As for penile numbness, my Trek 1220 rips me up.....bad. After my 22.4 mile training ride I'm dying: sore wrist, neck, hands, hiney road rash, and even some bleeding—fun stuff! I've been spoiled too long. Riders who can suffer this abuse have a better pain tolerance than I. I've been timing my wedgie recovery—to see how long it takes to regain feeling in all of my body parts, if you know what I mean—12 minutes is what it takes.

I'm a bicycle advocate, but riding road bikes really sucks. They belong on the Tour de France ridden by paid professional athletes. How mainstream magazines can even put the words *comfort* and *road bike* on the same page seems outrageous to me. Any performance claims quickly peter-out as non-pro-athlete riders

can't take the pain as long. The roadie-fatigue factor is a definite issue so far ignored by the mainstream press. If they say, "you can't climb hills" or "recumbents are slow" ask them how fast they are or how good they can climb after all day in the saddle, or on a long tour. After four days, just under 300 miles and approximately 12,000 feet of climbing, I was ready to do it again, though I'd never even consider touring on a wedgie! How publications can ignore recumbents in touring bike listings is beyond me. After my brief experience, recumbents seem like the only choice without risking permanent bodily injury and miles upon miles of pain, road-rash and numbness.

The Trek 1220 has a saddle called a "Comfort Flex"—what a farce. If I had to ride this much longer, I'd probably give up cycling. The bike is gorgeous to look at with

its blue/purple fade, RSX road triple components and new fangle STI (brake lever/shifters). It's light and all of the systems perform great, but I have no intention of riding it again. It's sooooo painful!

Do recumbents climb slow? Not a chance. This is 100% myth purveyed by the mainstream media and some writers who haven't spent enough time on a 'bent. Granted, you need to build your leg strength and develop your aerobic capacity to fly up hills, but it's possible to climb better on a 'bent—I am living proof of that!

NEW ORDER FORM

We've come up with a new order form/envelope on page 39 that will save paper, envelopes, trees, and will smooth out the process. As neat an idea as it is, it's not ours. We were "inspired" by a remarkably similar form in a magazine called "Backwoods Home."

NEW RCN T-SHIRTS

Low Down & Laid Back: Recumbent Cyclist News: As we go to press, we're finalizing our new T-shirts. They will be dark shirt with white ink in size L or XL. The cost is \$15 + \$3 S/H. More info and graphics will be available in RCN#42, though they are available NOW!

1998 BUYERS GUIDE

We will be mailing our 1998 Ad Rate/media kit/Buyers' Guide Questionnaires soon. Please contact RCN if you have any questions about ads or listings in the guide.

As always, we will be looking for action photos of RCN readers and their bikes. Stay tuned for the coolest 'bent stuff ever!

'98 POPULARITY CONTEST

Our annual Buyers' Guide Reader Survey/Bent Popularity Contest is in this issue on page 16. You can call (voice mail), fax or email your responses (do it!) to Ph#206/630-7200/Fax#206/631-5728, DrRecumbnt@aol.com

Viva Recumbent!
Robert J. Bryant

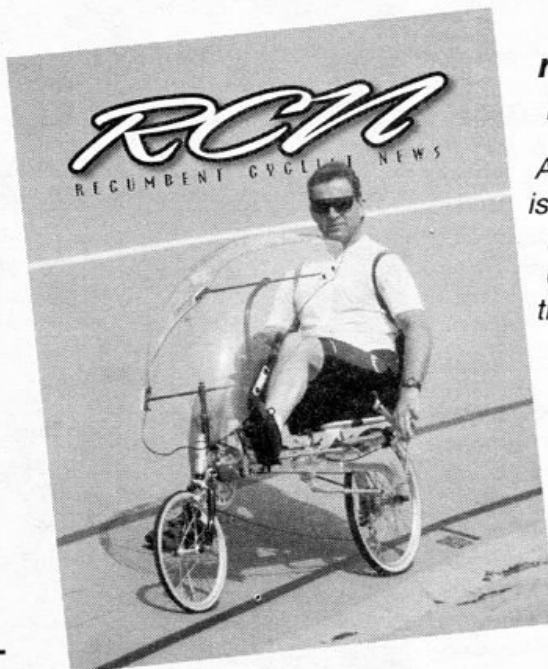
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Email to: DrRecumbnt@aol.com If you disagree with an RCN opinion or have a differing viewpoint or experience—we want to hear about it! RCN reserves the right to edit submissions for clarity, content and space limitations. If you write to RCN and DO NOT want your letter published, please make this request in the letter.



Have you received your RCN#40 yet?

All active subscriber issue mailings should have reached their destinations by this time. If yours has not arrived—give us a call today.

The postal service occasionally misplaces a bulk mail issue or two. Call 206/631-5728 if you've had a problem.

STRATUS UPDATE

I just wanted to drop you a note to reassure all of those loyal RANS Stratus owners and future owners that the Stratus is in the 1998 line.

The Stratus is the first two wheel recumbent design by Randy Schlitter. We put the Stratus into production in the late 70's. If and when there comes a time for a Stratus replacement, that replacement will have big shoes to fill.

1997 has been a record year for sales. 1998 will see the introduction of the best line up of recumbents ever compiled from RANS. RCN readers have the advantage to see first what's new from RANS as we continue to support the best source on this earth for recumbent information.

Bob and the RCN crew, keep up the great work. To you and all the RANS owners, I would like to say thank you and remember, keep spinning those pedals.

John Schlitter
RANS CO.

T-LITE UPDATE

I enjoyed your review of the Turner T-Lite. As the proud owner of the RCN review bike, I can say that you were basically on the mark.

So far it has been an interesting project. I've added a Vision chain idler, upgraded some cables, gotten speedplay frogs and some Carnac shoes. I also picked up an identical fork (unused and unpainted) for \$15, to which I recently had canti bosses brazed on. I've also gotten a Magura hydraulic brake that I'll install this weekend (I got it cheap over the

internet). The braze-ons were very reasonable and well-done, so I'm thinking of putting a V-brake on the rear as well.

It may sound like I've spent more time working on the bike than riding. But I did take the bike with me on a recent working vacation where I was able to ride 20 or more miles every morning for 2 weeks. Unfortunately, I developed a shin splint which has since healed.

I'll let you know when "dial-in" is achieved. My ultimate goal is to ride the RAGBRAI (at least one full day) next year. That might be the basis for a good RCN article.

Mark Stamp
stamp@zombie.ncsc.mil

FAVORABLE REPORTS ON FREE RCN TEST BIKES

I'm halfway through the current issue and would like to say that it is good to read that you do not always write "Favorable" reports on all of your free test bikes. I'm sure that some of your readers felt that you gave good reports to whoever gave you a test bike. The Turner report will add credibility to your magazine. Keep up the good work!

Wally Kiehler
Kiehler@Juno.com
Wally, thanks for the note and comments. RCN DOES NOT receive FREE test bikes. This is 100% myth, possibly started by a disgruntled manufacturer. The majority of RCN test bikes are loaners. If a manufacturer will not send a loaner, we occasionally buy the test bike for the benefit of readers. When we do this,

we almost always lose financially when the bike is eventually sold—Robert.

A JOB WELL DONE

I have been sitting by the sidelines watching you take hits from the various manufacturers for usually trivial and even imaginary negative remarks. Not everyone agrees with all of your opinions, but no one else has gotten off their 'bent-butts and taken on the monumental task of putting together a purely recumbent publication.

I think sometimes you take these comments too much to heart. Roll with the punches. You do an outstanding job, but no one will always agree with you. I think you given adequate space to other people's opinions. Keep doing what you are doing!

Bill Wheeler
Flolan@aol.com
Cary, NC

'BENT SAFETY CONCERNS

I like your presentation in the buyers' guide; your opinions in addition to the manufacturers info were most valuable in selecting my first 'bent. My biggest concern with a 'bent is safety in traffic. I've ordered a Vision Metro from People Movers and my numb hands and especially my sore butt can hardly wait. I'm looking forward to your magazine and my first comfortable bike.

Jim Shipp
Fort Worth, TX
Jim, many recumbent newbies are overly concerned with visibility. The

factor most do not consider is how different a recumbent looks riding down the street. Aside from low racers and really low trikes, our experiences have been better visibility and more respect from drivers. Just to hedge your bets having a good safety flag, sock, spinnie, light system, LED flashers, and reflective gear is recommended. Ride safe—Bob.

RECUMBENT MYTHS

The latest issue of *Bicycling* sent me scrambling for your address. I love cycling, but do not relish the thought of impotence. I must say that I'm not wild about recumbents. I read Forester's book *Effective Cycling*, and he brought out many concerns. Here are some of my concerns:

1. Can't climb hills (despite what your ad says).
2. Difficult to transport.
3. Difficult to repair-few dealers.
4. Difficult to store.
5. Difficult to choose.
6. Will I be able to ride with my friends (they look so weird).
7. They are heavier.
8. Pollution worse at a lower level.
9. It is easy to stand up when you are stopped on a wedgie, can this be done on a recumbent?
10. More susceptible to sunburn.
11. Difficult to stay dry in the rain (without a fairing).

Bill Edwards
Bill, **CLIMBING:** I just got back from the Slumgullian tour in Colorado. Just under 300 miles in four days with what I can figure is 12,000 feet of climbing. Recumbents can climb if you train for it. The problem

with all of those myth makers, is that most have only ridden a recumbent for few hours. Standing on your pedals only helps you for a short time, so muscle power is where it's at. **TRANSPORT:** SWB and CLWB go easy on bumper or roof racks. LWB bents can be carefully placed on either with a long or custom tray. If this concerns you, buy a SWB. **MAINTENANCE:** Most recumbents use standard parts. Any qualified shop can work on them. There are regional specialists, though I suggest that owners learn to do their own maintenance. **STORAGE:** SWB and CLWB are no larger than a wedgie. If you have a long LWB, hang it vertically from a hook in your garage. **CHOOSING:** That's why there are RCN and recumbent specialists. **SOCIAL:** How comfortable on the bike you are with your wedgie friends is up to you. Be bold, dare to be different, be a leader, not a follower. Maybe you can influence your roadie friends who may be sitting on the fence like you. **WEIGHT:** Yes they are heavier. Gram counters have light Lightnings and Visions to choose from. Weight isn't as important on a recumbent because of aerodynamics. This is why my Gold Rush Replica is faster than my Trek 1220 or much lighter SWB models. **'BENT SUNBURN:** You may in fact get a better tan. A full fairing such as an F40 will take care of this, or ride in tights. Personally, I just carry sunblock and enjoy the sun. **STOPS:** Stops are easy. Hold the brake while at a stop on a 'bent as most all 'bents are lower than wedgies. It is possible to stop flat footed and not get out of the seat on many recumbents. **RAIN:** It's tough to stay dry on any bike. At least some 'bent manufacturers are addressing wet weather riding with fairings and ponchos. I ride with a Goretex rain coat and other standard rain gear. The tone of your letter makes it sound like you really don't want a recumbent and they are weird. Most recumbent owners are infatuated with their bikes after a few painless cycling rides. This could be you—Bob, RCN.

COOL HED WHEEL

Enclosed are some photos of my new 17" HED/Moulton/Phil Wood aerodynamic front wheel. The hub is a special narrow-flanged version for 20 stainless steel bladed spokes. I have used "Spinskings" Kevlar tire liners in this new front wheel. Formerly I was using a "Mr. Softee" liner made of a pink latex/butyl material. Though it was 25mm wide, it didn't stay centered (or I



Long time RCN subscriber Dave Yust has a new HED/Moulton 17" wheel on his custom Lightning P-38—Dave Yust

failed to center it carefully enough) in the Wolber Moulton tire. So after two flats, I have false confidence in it. The Spinskings tire liner is much easier to center in the tire casing. Spinskings have to be ordered in the appropriate size. If they are cut down, the Kevlar edge, I understand, can wear into the tube. Friendly thoughts and safe riding.

Dave Yust
Ft. Collins, CO

The HED wheel and Spinskings are available for almost all recumbent tire sizes from 17", 20", 24", 26" and 700c from Angletech in Woodland Park, Colorado.

'BENTS FINALLY ARRIVED?

It has finally happened. Bicycling Magazine has put recumbents into the mainstream. In the July issue, in Jim Langley's article, "Get Bent," there are some unbelievably positive comments and testimonials about recumbents, along with beautiful photography. Ed Pavelka's article, "Make Mine Supine" is really well done on his experience.

In the August issue there is a several page article about how the wedgie seat possibly causing impo-

tency, and that the recumbents pose no risk for developing this problem. Then to top it off, Ed Pavelka has an article about being afflicted with this problem and that since switching to a recumbent (Gold Rush Replica), the problem has gotten a lot better.

I believe that the big bike manufacturers will now see the market potential and that there will be an explosion of recumbent activity in the next couple of years.

Randy Phillips
Sioux City, IA

S & B UPDATE

RCN#40 is a great issue ... I liked the S&B review. Here are a few points... 1) The Cro-Molly frame is way stiffer than the standard mild steel. 2) If you are mechanically inclined ... buy the frame kit and build up a bike from a used Mt. Bike. 3) The reason I just ordered another S&B frame is that no one else makes custom sized frames at anywhere near the cost. My latest has a 39" wheelbase, is set up for a 16" front wheel and a 700c rear. It is quite lightweight but has a stiff boom and fits me perfectly.

Thanks
Bill Volk ☐

GLOSSARY

ABOVE-SEAT STEERING (ASS): Handlebars above the seat, knees or frame—Above-Seat-Steering. A standard bicycle type steering similar to that of a hot rod/Stingray type bicycle of the 60s.

ALUMINUM: AL, or Alum. A lightweight ductible, tarnish resistant material.

BMX: Bicycle-Moto-Cross: A tough (generally) kid bike that uses very tough steel or sometimes alloy components.

BAR-CONS: Bar-end shifters.

BAR-ENDS: Mostly used on USS bikes to bring the controls closer to the rider. They are similar to those found on MTB's.

BOTTOM BRACKET: (BB) pedal axle & bearings, sometimes called boom-bracket.

BRAZING: A frame joint is created by flowing brass (usually) around the tubing junctures. Builders then either file/sand the joints smooth or leave them natural.

CARBON-FIBER: A high tech, high strength composite material that is black in color.

C.G.: Center-of-gravity

CHAIN-IDLER: A modified skateboard wheel, derailleur pulley or custom-made wheel that carries the chain slack on short and some long wheelbase recumbents.

COMPACT: CLWB or MWB recumbent

COROPLAST: Plasticized cardboard that works great for homebuilt recumbent fairings

CLWB: Compact Long Wheelbase 47"-60."

CroMo: Chrome-moly steel.

DOM: Drawn-over-madrel. This is a type of higher quality HiTen steel.

FWD: Front Wheel Drive

GEAR INCHES: A formula used to determine range of gears: front chainring divided by rear cog multiplied by drive wheel dia.

GRIP SHIFT: A trademark of the SRAM Corp. A brand of twist-grip shifter.

GRR: Gold Rush Replica

HiTen Steel: High tension or mild steel.

HPV: Human Powered Vehicle.

INDIRECT STEERING: Underseat steering via a rod, linkage or cable that connects the handlebar to the fork.

KEVLAR: A high strength, bulletproof composite material that is gold in color.

LWB: Long wheelbase 60"-71"+ (crankset low and behind front wheel).

LOW-RACER: A SWB recumbent built as low as possible for HPV racing (may exceed our wheelbase range for a SWB).

MAGURA: A high quality, strong German hydraulic caliper brake.

MID-DRIVE: A mid-ship mounted, two-chain drive freewheel shifted by a rear derailleur offering very wide gearing.

MOULTON: An English full suspension conventional bicycle using 17" & 20" wheels.

MTB: A dated abbreviation for mountain bike.

MWB: The same as CLWB. Formerly used to describe longer SWB bikes.

NEXUS: Shimano's internal 4/7 speed hubs.

PEDAL STEER: Pedal-induced steering input that makes the bike harder to track in a straight line. This generally happens on SWB recumbents in with wheelbases of less than 39" or a laid back head tube angle.

RCN: Recumbent Cyclist News founded by Robert J. Bryant in 1990.

RWS: Rear-Wheel Steering.

SWB: Short-Wheelbase 33"-47" (crankset high and in ahead of front wheel).

TIG WELDING: Tungsten-Inert-Gas; a proven no-lug process common with MTB's.

SACHS 3 X 7: This is the Sachs Internally geared three speed with 7-spd. freewheel (21 speed total).

STEERING ROD: The steel or aluminum rod that connects the fork to the bars.

STEERING STRUT-RISER: An ASS extension that rises from the stem or head tube to raise the bars over the legs.

UNDERSEAT STEERING (USS): Steering via handlebars beneath the seat.

V-BRAKE: A new very strong (and controversial) style of cantilever brake that has high arms in a "V" formation.

X-SEAM: A measurement used for recumbent fitting. This measurement simulates the distance between the seat back/base out to the farthest reach of the pedal stroke.

ZIPPER: A Lexan fairing by Zzip Design.

The Angletech Altitude GL63

"It looks like some kind of a human powered Red Planet Sojourner"

by Robert J. Bryant

Angletech produces some of the nicest recumbents on the face of this earth. Company owner, Kelvin Clark, specializes in "Angletech spec" models from other manufacturers. This year, Angletech added their own line of custom built and designed models and is not only a custom-spec company, but a full service manufacturer. Angletech began selling recumbents in the early 1980's at Angle Lake Cyclery in Seattle, Washington where the Clark name in northwest cycling goes back over thirty years. Angle Lake still sells recumbents, Moultons, Bike Fridays alongside Trek and Giant uprights, though the majority of the custom-spec recumbent business was moved to Woodland Park, Colorado a few years ago. Above-the-clouds at 8,500 feet, Woodland Park is a sleepy bedroom community 18 miles and about 1800 vertical feet above Colorado Springs, and is the perfect destination to test ride recumbents.

Kelvin Clark and Angletech are two of the most respected names in our industry. You can find stock Vision Metro, Rans Rocket and other models, though expect suggested upgrades. The majority of Angletech business are dream bikes, like the new Angletech Altitude. The mainstay of the company has been the Angletech V-Rex with upgraded components, Sachs 3x7 63-speed drivetrain and suspension fork upgrades, with custom paint in any dream color. I've heard stories of customers chasing down cars to get the paint code off the door, and seen bikes painted up in cow colors (white with black spots). Angletech's painter, Rainbow Cycle, is one of the finest painters in the country and every custom paint job seems to have a special creative touch, such as Randy Johnson's Lu Lu the cow bike, complete with "cow with an attitude" wearing dark shades and a tie looking at you from her perch on the SWB head tube. Another Angletech dream bike seen recently was Bob Meierhans' Angletech Easy Racer Gold Rush Replica, painted gold, with HED wheels, a Sachs 3x7 laced into the rear HED wheel and one of those trick White Industries



The Angletech Altitude now has a lower tail tube, curved and painted boom and a new one-idler chain management system—Angletech

rotational shifters. If it can be done, Kelvin and Angletech can do it.

The Altitude is a bike inspired by the high Colorado peaks in and around Woodland Park. It may also be stimulated by the rough roads, ruts and bike trails of the area. The ultimate test ride course is the 14 mile round trip between Angletech and Lake Manitou. It's downhill nearly

all the way to the lake—and uphill all of the way back. This is the longest 14 mile test loop I've ridden and the perfect spot to try out the Altitude, though don't be too upset if you are a flat lander and have sluggish performance above the clouds.

Our Altitude road test bike was a final prototype-production demo. Altitude orders are currently being

taken, though additional refinements to the bike are currently being made.

THE SUSPENSION

The Altitude is a true full-suspension bike with a rear swing arm, shock and suspended front fork. The frame is built by Rich Williams of Boulder Bicycles on a mountain top in Lyons, Colorado. Boulder devel-

oped the suspension geometry utilizing their own state-of-the-art Boulder Line Air Shock with 4.5 inches of travel on a swing arm that pivots on roller bearings. The shock is made to a Boulder design by Risse.

When you first sit on the Altitude there is a hesitation, and the rear shock makes a "cusshhh" noise and stabilizes to your weight. The shock comes with a Risse Racing Technologies shock pump to custom suit the dampening to your riding style. The shock pressure is something that needs to be watched constantly. If you have said you don't need suspension, one ride on this bike may change your mind. Most riders of non-suspended bikes have no idea just how smooth a ride can be.

The front fork is a Ballistics tunable aluminum fork with MCU foam elastomer springs offering 1.75" of travel. Some may scoff at the use of this medium grade 20" BMX/MTB fork, but truly, it's all you'll ever need on a recumbent. I've ridden 600 miles this summer with the Ballistics and it does the job right. The biggest issue for me is the aesthetics of this mini-moto-looking fork as it doesn't have the curvy look of a steel fork. This shock'ed fork adds 1.3 pounds to the weight of the bike. An optional upgrade carbon fiber Ballistics fork will be available as well.

THE SEAT

The most comfortable recumbent seat available today comes from the Rans Company. You will find a special version on the Altitude that folds forward with custom Boulder-designed hinge which allows it to fold flat. Two large ball/detent pins stick out the sides of the seat. The fold feature is nice—if you'll use it. The lower two laces need to be removed to fold the seat and are reusable zip ties. Angletech/Boulder sells this kit to retrofit to any Rans seat (\$85).

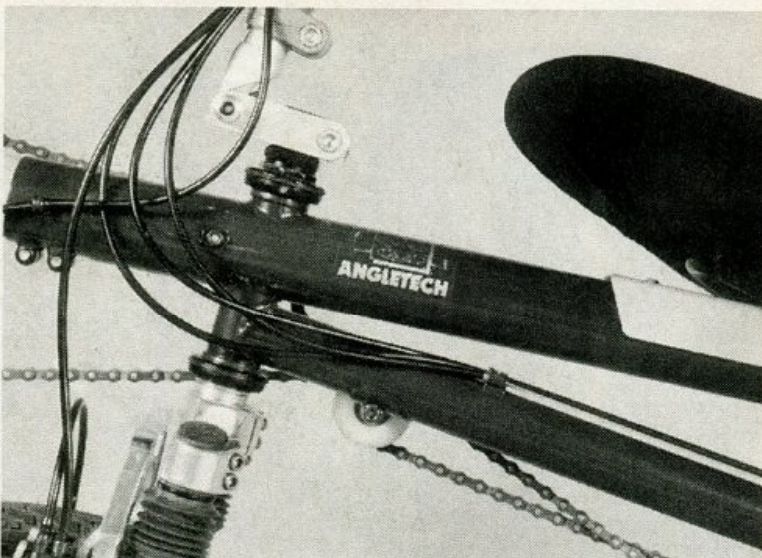
The Rans seat is special in that the mesh doesn't flex or give as much as some of the other mesh-back seats. There are no velcro straps to break away or retighten. This means you can really press into it without power loss, which is generally the major complaint about mesh seats. The ergonomic cutaway seat base cups your hiney perfectly, and the new 2" foam makes it feel like a king's chair. The Altitude is available with low or high back seats to suit your body measurements, "Anglefit." I've said that the Rans seat is more comfortable than any piece of furniture in my house, and it's true. I recently rode 400 miles in Colorado over a week, exclusively on a Rans seat and had

0-pressure points and virtually no pain. The Altitude seat height is 24" off the ground.

THE FRAME

The Altitude frame is unique and has a look all its own. There is definitely a lot going on with this busy frame. The mainframe tubes are straight and seriously triangulated, the swing arm has a soft rounded look, as does the production curved boom (not shown in article photos).

On the rear of the bike there is a frame tube that rises from under



the seat base back off the bike. It looks like a built-in rocket launcher or something. The purpose of this tube is to support the rear seat mount as it cannot be attached to the swing arm of the suspension. This tube will be lower on production models.

The Altitude was designed by the team of Angletech's Kelvin Clark and Rich Williams of Boulder Bicycles who is a degreed engineer. The seat, Flip-It tilt adjustable handlebar/stem/riser and Screamer tandem rear seat support are courtesy of the Rans Company. The Altitude has a Rans quick release seat slider/track as well as a sliding boom for guaranteed perfection in seat position dial-in and the ability to custom fit your optimum recline angle.

The standard Altitude frame is a TIG welded 2" diameter CroMo frame built in the Boulder factory. The frame and matching boom are beautifully powdercoat painted by Rainbow in Colorado. The boom tube is aluminum and available in the rider's choice of two bottom bracket/pedal heights to further dial-in this dream bike. The optional boom position is more extreme than a Rocket and very comparable to a P-38. An optional lighter weight TIG welded, heat-treated, double-butted 7000 series Easton Aluminum frame

with CroMo rear triangle or a Titanium frame with a matching swingarm are available option. The main frame is very stiff, though there is a slight bit of flex from the aluminum boom.

Altitude model weights can be as low as 30 pounds (24 speed/alum. frame). The dual suspension aluminum Altitude with a Flip It stem, high-back seat and 3x7 hub weighs 31 pounds.

There is *not* a host of braze-ons on the Super Touring Altitude. Two waterbottle cages mount to the sides

of the Rans seat. A rear rack/fender braze-on is standard and front fenders are mounted with Cateye clamps. The frames are custom ordered, so added braze-ons are certainly available. During the RCN test, I combined two waterbottle cages with a Blackburn hydration system mounted in between the Angletech seat bags which worked well.

The Boulder craftsmanship and fabrication quality are very fine and in the upper realm of recumbency. The bike has some special touches such as the Breeze vertical dropouts as well as some curved (bent) tubes. The trademark Boulder suspension complements the frame by hiding most of the shock within the tube.

Boulder has been building high-end suspended mountain and road bikes for years and are one of the most respected suspension bicycle companies in the world today.

IT FOLDS!

The Altitude is a compact bike and there is an optional Transit Bag available. The folded size is 31" x 46" x 10." The swing-arm folds underneath, the Rans seat Q.R.'s off and folds flat and the stem comes off. The bag includes a pedal pocket, chain pocket, web/velcro wrap for Flip It bar/stem and top tube and a

seat envelope. The Altitude stows nicely in the Transit bag offering the finest compact recumbent touring package available. For those who want to travel with a high quality bike, the Altitude is the ticket.

THE DRIVETRAIN

The Altitude drivetrain is a fairly straightforward mix of proven dependable componentry matched with a Sachs 3x7 (hub with 7-derailleur gears + 3 internal hub gears x 3 front chainring ranges= 63-speeds). The three internal gears offer the following gears: #1 is a reduction gear of 73%; #2 is a 1:1 lockup; #3 is a 136% overdrive. The 3x7 is becoming quite common on recumbents, though most 63-speed models come from Angletech.

Our stock Altitude GL63 Super Touring model was outfitted with a Shimano 105 triple rear derailleur, a Sachs Quartz full size road (non-microdrive) front derailleur shifted perfectly by Grip Shift SRT600 twist shifter. The Sachs 3x7 is shifted by a trigger shifter mounted on the right side inboard of the Grip Shift. The trigger shifts the 3x7 with effortless spring loaded ease.

The crankset is a Sugino Mighty 38/50/61. It is an understated, yet durable and attractive crankset. It is cold forged aluminum and very similar to the Ritchey Logic (made by Sugino). The gear inch range is 17.4-140, which means you can climb Rocky Mountain passes at less than 3 mph and speed down the other side at 40 while still pedaling.

The bottom bracket is a Shimano UN52 sealed unit and the headset a Suntour Grease-Guard, both very good components. Since most Altitude customers won't be pinching pennies, I suggest the \$270 upgrade to a Phil Wood hub, bottom bracket and a Chris King headset.

I did have a problem with the Sachs Quartz front derailleur while in Colorado testing the Angletech V-Rex GL63. The cable bolt hanger (part of the casting), snapped off during an adjustment. This has happened before on our Turner T-Lite with the lower line Sachs Centera. Kelvin said he's only had one other Quartz failure. Angletech will upgrade to the near bulletproof Shimano 105 or Ultegra road triple front derailleur at no extra charge.

SACHS 3X7—LOTS OF GEARS

Sachs 3x7 63-speed drivetrains have received mixed reviews in RCN. Riders either love them, or they don't.

The benefit of the 3x7 63-speed

drivetrain is an incredibly wide range of gears. The granny super-low-gear was nice to have while riding in the Rockies. I only used it for a mile or two near the summits. Shifting under load with the 3x7 shouldn't be done. One must anticipate shifts in advance—which can be a bit of a pain, especially with 63-gear combinations. Once when I needed it on a steep climb, I did a quick U-turn-360 to take the load off the drive train and shift. Another time on a 7° grade, I stopped to shift. So be sure to plan ahead, especially on steep climbs.

The 3x7 adds complexity, though they rarely fail. The largest user of 3x7's in the world is Bike Friday and they tour around the globe with virtually no failures. Bike Friday still has some of the roadie customers who prefer not to use 3x7's.

It's generally the 'bent head technoweenie racer types in peak fit condition concerned about the added grams and arguable friction loss who don't like them. Less than fit riders looking for an edge, gear-heads, equipment freaks, or those just looking for a cool, fun to use drivetrain usually love them.

If the idea of having way too many gears makes you smile, the odds are that you'll love it too. If you are a 'bent roadie into simplicity and high performance—forget it.

There are lots of people giving free advice on 3x7's, even in this magazine. I suggest taking advice from only those who have like views and riding skills to your own. I like them for some recumbent applications, and not for others. I feel they work particularly well with dual 20" wheel bikes, though I feel they are less necessary on bikes with full size rear wheels. 3x7's make the bike heavier in both weight and feeling,



add drag and I feel they do slow you down some. Another mark against the 3x7 is that the rear hub is a non-quick release bolt-on system.

Many will ask whether the 3x7 is necessary, the answer is probably not. The 3x7 63-speed is a unique drivetrain for those who want ultra-wide gearing. It may be overkill, though this depends on the rider and application. Some manufacturers swear by them and others will not

use the Sachs 3x7 on any model.

All considered I enjoyed the 63-speed 3x7 drivetrain on this deluxe touring recumbent, though I can't recommend 3x7's for high-performance applications except maybe in the case of small drive wheels.

CHAIN MANAGEMENT

The RCN Altitude test bike shown has a rather intense chainline that was problematic on our test bike.

I experienced an abundance of unwanted chain noise, vibration and a heavy friction. Later, the rear idler finally split and finally broke.

Since our test, the chainline has been redesigned and simplified by deleting the rear idler and one of the front idlers (not shown). This makes for a single idler drivetrain with much less pressure on it—and less dramatic chain angles. The chain on production models will travel in between the swing arm stays. This is now possible due to a slight repositioning of the suspension pivot point.

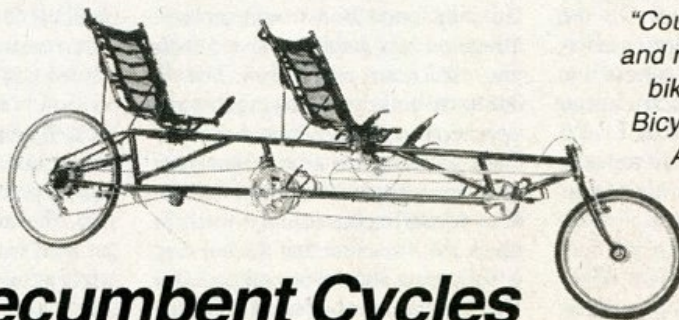
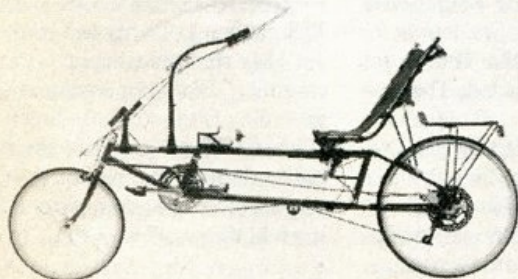
The new single idler system has a much more direct chainline with much less friction. This is a vast improvement over our test Altitude.

WHEELS

Angletech wheels are built in-house using only the finest Araya or Mavic rims, DT spokes and Sachs hubs. If you don't agree to their definition of "finest," they can build up your dream wheelset with any parts you want. Our V-Rex24 GL63 wheels were perfect over the 400 mile test. The Altitude rear wheel became quite noisy with spokes squeaking and ready for retensioning at the 500 mile mark.

Both our Angletech V-Rex24 GL63 and Altitude test bikes were outfitted with the much touted Araya RB17 rims and both had front brake pulsation problems. Dale Clark, of Angle Lake Cycle, found a rim imperfection, or blip that was causing this pulsation. I found the same blip on the Altitude's front Araya rim, but not on the identical rear rim. The blip is where the rim seam is machined. Apparently, this seam was ground down too far. Kelvin agreed that this was unacceptable and agreed to check the rims more closely. He

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has only a few problem rims every year and two of those were on RCN test bikes, and the third went to a local NW rider for his Presto.

COOKING OIL IN THE LINES

Yes, it's true, there is mineral oil in those little black hollow tubes called Magura brake lines. Amongst the Angletech crowd, I need to look around to see who's listening before I pipe up about Maguras—and I have a reputation to keep up (or so these guys keep reminding me). In the past, I've made comments about hydraulics in old MG's, leaky master cylinders and what to do if you spring a leak in your system.

Magura hydraulic brakes are very much like the systems found on today's automobiles. The brake lines have pressurized fluid that actuates the rim brake pads. The lines are set up by the bike manufacturers/dealers. The Magura system is very dependable and has the strongest rim brakes available. In fact, this made our front brake surge problem more noticeable.

Maguras work wonderfully, especially on SWB or fat tire recumbents where the only other choice may be BMX sidepull or left-side-pull road brakes (rare). Maguras offer better braking power and modulation than most recumbent V-brake applications, though there is some appeal to the simplicity of the cables. Angletech offers Controltech V-brakes with Machinetech levers as a no charge option to those so inclined.

When used on a suspension SWB, the Maguras are so strong that they can intensify the suspension actuation (dive) when braking, especially on fast high-speed descents.

My biggest concern about Maguras is who will maintain the brakes. If you live near a dealer that fixes them, great. If you don't want to mess with hydraulic brake lines, you may be out of luck. Dale Clark has argued that once setup, they need very little maintenance. On the Slumgullian, Randy Johnson accidentally pulled his front Magura line out and unbelievably nobody had an overhaul kit. Randy placed Lu Lu (cow Presto) on the sag and rode the final day on the nose of Dale's Opus IV tandem into Gunnison, Colorado.

Descending from 11,361 feet off Slumgullian to Lake City, 3,000 feet of descent in less than 10 miles—no wimpy brakes are allowed. I was really glad to have such strong brakes on my test V-Rex for that trip. I generally prefer the simplicity of cable actuated Shimano 105SC/Ultegra/RX100 dual pivots. They are simple,



Kelvin "the Kelvinator" Clark gives a quick Altitude riding lesson to Suki Sommervold in Creede, Colorado. Dale Clark of Angle Lake Cyclery in Seattle (left) and John Schlitter of the Rans Company (right) supervise.

tough, and durable, however, they don't fit all bikes. With this in mind, the Maguras are a great upgrade for your Rocket, V-Rex or as standard on the Altitude.

THE \$4,000 RIDE

This is one of the very smoothest riding SWB recumbents ever to grace the RCN garage, though the question is if it lives up to its cost and complexity and your take on the design's aesthetic appeal.

The Altitude does not feel overly quick and you won't need to hold on for dear life on fast descents. I initially found the bike quicker handling and less stable at speed than our test Rocket and V-Rex. This is due to the brakes causing the suspension to dive during fast descents. Once accustomed to the suspension, the ride is very much defined and the bike tracks exceptionally well. It gives the sensation that the tail-end is following the front end around. The wheels are in better contact with the pavement offering more defined tracking and unequalled traction.

For a full suspension touring bike, the Altitude performed well. On our 22.4 mile test loop the bike had an 18 mph average speed, just

slightly slower than our stock Rocket. The suspension does not slow this bike down, however, the added weight of it along with the 3x7 hub and suspended fork does in comparison to lighter hard tail models.

Hill climbing is excellent for a suspended bike. The Altitude's low-speed stability is world class. The 3x7's ultra-low gears made climbing a breeze, though it's a granny-low climber. If you are a high-power fast climber and try and stay in a mid-range gear, you will find the Altitude a bit sluggish. Our test model was a bit on the chunky side weight-wise (steel version), though newer production versions and the aluminum framed model are lighter. The suspension bobbed once or twice during a hammer-mode steep climb in the middle chainring, though there was no pedal-induced pogo effect.

The ride is very smooth, though the rear suspension didn't seem as active as maybe it should be over the small stuff and compared to elastomer springs. I ran the shock with 125 psi and utilized most of the 4.5" of rear travel and the shock never bottomed out. The shock is a beefy unit designed for serious heavy duty mountain bikers and is perfect for

'bent tourists or commuters.

The Boulder shock can be fine-tuned from an onboard system that I was unable to try, but will be standard on new models. The compression-rebound-damping curve can be dialed to soften the ride even more. Perfect dial-in will be an ongoing process, and to some, an annoying one. The system requires periodic pumping about as often as you check your tire pressure.

ANGLEFIT

During the ordering process of our Angletech V-Rex, I went through the Anglefit process. SWB fit is more difficult than LWB due to the VASS (Angletech's term for Vertical Above Seat Steering) bars and riser placement. If this is not considered, there may be interference with the knees when riding. This possibility can be alleviated somewhat by using the Flip It stem on other Rans models, though the Anglefit will be a bonus to all riders. With the Anglefit bodily measurement, Kelvin can tell which stem and riser size and seat size to use and get riders ergonomically comfortable with the magic 90° arm/forearm bend that makes the VASS work so well.

On both the V-Rex24 GL63 and Altitude I felt like the bike was more dialed to me than on my test Rocket. I found the Anglefit process to be bordering on perfection. The bikes needed virtually no final fit or adjustment. It's a good thing too, as recutting Magura lines would be a pain.

The only Anglefit glitch came when Kelvin spec'ed 170mm crank arms for my 32" inseam/44" X-seam. I have been riding 175mm (180mm on my old Gold Rush Replica) on almost everything. When I ride with 170's, I can truly tell and am slower with the shorter pedal stroke. Kelvin said that I was right on the Anglefit borderline between 170 and 175. We decided that this came down to a personal preference issue, as he installed 175mm cranks on my test bike.

My recommendation is to very carefully take your measurements according to the Anglefit directions. If you have any questions about the method or measurements—call Angletech as one messup in measuring will throw off your fit.

OPTIONS

Even if Angletech Altitude and other high end bikes won't fit your budget, Angletech offers some of the best optional equipment known to 'bent-kind. The Angletech or Rans seat bags are a must and will fit perfectly. There is a Transit bag for trav-

eling. A Blackburn low-rider rack mounts custom Boulder mounts fixed to the mainframe. Angletech offers BOB Nutz so you can hitch to the 3x7 hub and tow a BOB trailer, which is your best bet for SWB touring. Fenders and computers are a must—get them put on before you take delivery. Kelvin is up on tire selection and either knows about or has seen and tried every new do-dad in the bike industry. At the bike trade show, the RCN crew will often shadow Kelvin and Dale Clark to learn their secrets of ferreting out the new and cool stuff.

Here is a partial list of neat Angletech stuff: Sachs 12-speed hub, ski-kits, stereo for bikes, real wood fenders and chainguards, indoor trainers, Blackburn racks and hydration systems, Time clipless pedals and shoes, hydraulic shifters, custom trunks and travel bags for many bents, Draftmaster racks, UNI discs, Kevlar tire liners, cables and locks, 20" suspension forks, Avocet computers, Ortlieb waterproof panniers, Cook Bros mini crank-arm skewers, WTB Greaseguard components, Giro helmets, Bouré recumbent shorts, White Industries, Zzipper fairings, a complete line of tire sizes—even studded snow tires.

During these tests I had the opportunity to try out the Angletech V-Rex seat bags for both short and tall seats. The short seat version has been perfect and trouble free, though I wish it had an outside zipper pocket for my keys and wallet. The tall seat version was great for three days. Granted, I was testing it and probably had it overloaded with junk on Slumgullian (see picture on page 4). On the fourth day, the bag fell off the bike as the mounting cap seam ripped on a bumpy road section of expansion cracks ten miles outside of Creede, Colorado during a 20+ mph recumbent paceline. Luckily my co-horts slowed to let me catch up after I did some creative mounting technique to get the bag hung on the seat. Needless to say this was replaced under warranty.

WHERE'S THE V-REX GL 63

This V-Rex test had been scheduled since January of '97 and discussed for a year previous. I took delivery of the new Angletech V-Rex24 GL63 in mid-June in Colorado to ride on the Slumgullian tour, an Angletech sponsored event. By the first of August, it had been unofficially announced that the V-Rex24 was being taken out of production in favor of the '98 V-Rex which will be a 26/20 with the 24/20 steering

geometry, a 2" longer wheelbase and a 3/4" lower seat. You will be able to read all about the Slumgullian Tour in RCN#42. Did I like the V-Rex? Yes, I loved it and can hardly wait for the new '98 V-Rex test bike. At this time, my only minor criticism of the V-Rex was the 24" rear wheel size. It's rare and hard to find unless you deal with Angletech or Terry Bicycles. Tire size issues aside, the V-Rex24 offers exceptional ride and handling qualities. These bikes will be quite the find on the used bike market. It looks like the '98 model will be the perfect Rans SWB and ultimate V-Rex. The Slumgullian tour was the best ride of my life and I was riding the most perfect bike for this tour of the Rockies.

Because we could not get a '98 V-Rex set up in time for this test slot, the V-Rex test has been postponed again. By the time you read this, I will have tried the '98 V-Rex and will have a new "Vivo" suspended test bike as well. Watch for the upcoming tests.

ANGLETECH MODELS

Angletech is primarily known for custom Rans models and now the Altitude, however, this is just the tip of the 'bent iceberg. Angletech does Visions, Easy Racers and Lightnings—all with 63-speed drivetrains, Vision Metro's with 12-speed hubs and travel bags, imported Ostrad full suspension SWB/LWB, Streetglider, the new Angletech/Thorpe Mako, the Quadrapped hand and foot powered and Tri-Speeder (foot only version) recumbent trikes. I would venture to guess that a Turner T-Lite GL63 probably won't be offered.

A high-zoot model of the Altitude exists in the SS version. It's available with an XTR/White Industries derailleur/shifter system, XTR crank and bottom bracket, Chris King headset and Control Tech V-Brakes with Machinotech levers. The wheels are HED with 28 Ti spokes with Continental Grand Prix 20" x 1.25" rubber and custom deep powder paint, all for \$4799.

ANGLETECH TREATMENT

At nearly \$4,000 this is a bike for the most fastidious and meticulous customer. I don't have the four large to afford this bike, but I can tell you that I meet the persnickety customer profile.

The Angletech treatment is certainly in the upper echelon of the recumbent world in service and price range. From the detailed ordering process, custom fit and catering to every whim of the customer. Kelvin

Clark is an expert at walking customers through the bike selection process. A low-key Angletech by-appointment two-hour demo-session will most certainly result in many enlightened observations impossible with just a phone consultation. Kelvin's method is to get customers on bikes to keep their minds open before making recommendations or developing any biases, so we hope his customers read RCN so we can tell them ours.

Our Altitude had many odd problems. First the front derailleur breaking, then the chain/drivetrain woes, the brake surge problem caused by the defective Araya rim and finally the chain idler situation. The Altitude and V-Rex GL63 also had an odd chain skip/invisible stiff link problem that drove us crazy for a few days while in Colorado. This could have been a very negative experience had Angletech gone on the defensive or ignored the issues as seen in some past reviews.

Like many other recumbent companies, Angletech has been swamped this season. Unfortunately, that is no excuse to somebody paying this kind of money for a bicycle.

Angletech has an extremely high customer approval record and guarantees satisfaction. As a result of this test, Angletech has extended their two-tiered pre-delivery shake-down ride as an added safety measure to catch potential problems before bikes are shipped out. Even though this was far from the most trouble-free road test, all of our complaints was handled courteously and professionally by Angletech.

'BENT BOB'S R & D COMPANY

I am an equal opportunity critic. I'm capable of rants about bikes in every price spectrum of the 'bent world and the Altitude is one bike I didn't expect to have any trouble with. The most prevalent problem during our test was that our version of the Altitude was not a finished product. Through the course of the test, writing, rewriting and more rewriting, Angletech and Boulder were constantly refining—and this went on for over a month. The end result is an Altitude that has evolved into a very nice ride. Though at a price—my patience. As for time spent—this test is one for the record books. If there is one criticism that I can offer our industry is that new models need to be torture-tested by hammer-heads for a season before they are put into production.

I wasn't expecting to be so involved in the R & D process of

the Altitude. I'm doing so much R & D work this year, it has me considering a career change (kidding....). The saving grace is that the latest Altitude is a much improved machine—remarkably better than our test bike.

RECOMMENDATIONS

Riding with suspension is awesome and something I could definitely get accustomed too. This could be the perfect SWB for uses anywhere from recreational rides to round the world travel. The Boulder designed Risse air shock does a great job on the Altitude. My only criticism of the suspended ride is that it doesn't dampen out all of the road vibration like an elastomer would, though overall it is a more refined, expensive and advanced system.

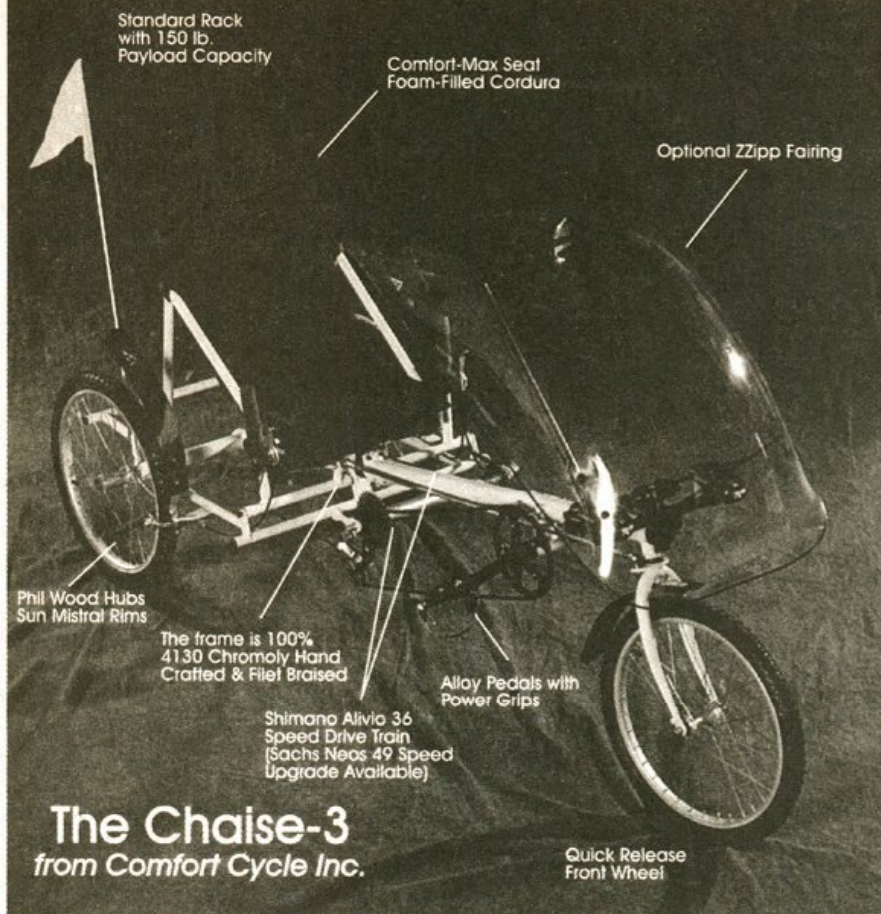
The Altitude components are decent, though at this price you might as well pay the upgrade to even fancier parts that do this frame justice. The fabrication quality is on par with a V-Rex, but the refinement level of the product was not. The primary drawback of the Altitude is, of course, the price. At \$3599.99 + options, this is an exclusive machine geared to an upscale clientele.

The Altitude is more expensive than the new 1998 Rans suspended SWB code-named "Vivo," though its not intended to compete with production bikes. Heck, it costs over \$3000 to buy a Boulder mountain bike—these are not price-point bikes.

Angletech's pitch for high-tech wizardry can be overkill to for some riders (hammering 'bent roadies). Not everyone needs a 3x7, full suspension, Magura brakes and especially one White Industries rotational shifter. These options are cool, and make your bike unique, though they complicate matters and can double the cost of your bike in a hurry—which in turn can overshadow the wonderful simplicity of a bicycle.

The only other consideration is the aesthetics of the design itself. Even if you like suspension and 3x7's, saying that the look is unique is an understatement. It looks like some kind of a *human powered Red Planet Sojourner*. The odd design does grow on you though. Altitude owners will have a unique machine that will attract attention everywhere.

As a recumbent marketer, Angletech is in an elite and very small group in North America (and possibly the world) who allow this much time for each customer and sale. Angletech is extremely detail oriented and will spend the time necessary to customize a dream bike specifically for you. □



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ALTITUDE SPECS

■ **MODEL:** Angletech Altitude

■ **PRICE:** \$3599.99/
\$3869.99 (AL)/\$5207.99
(Ti)/\$4799.99 (SS)

■ **TYPE:** Full suspension
SWB Tilt ASS

■ **DIMENSIONS:**

- Wheelbase: 40"
- BB height: 2-positions
- Seat height: 22"
- Boom length: 20"
- Chainstay length: 70°
- Seat recline: Adjustable
- Head tube: 70°
- Weight dist. Adjustable
50% front/50% rear

■ **Weight:** 31-32.5 pounds

■ **FRAME:** TIG welded
CroMo/Optional Easton
Alum. mainframe or full Ti.
Braze-ons for water bottle,
pump, rack and fenders

■ **Fork:** Ballistic suspension/
aluminum 20"

■ **WHEELS:** 20"/20"

■ **Hubs:** Sachs Neos 3x7
(rear) Sachs Quartz (front)

■ **Rims:** Araya RB17

■ **Tires:** Continental Top
Touring 75 psi

■ **Spokes:** 36 DT SS 14
gauge

■ **Builder:** Angletech in
house custom

■ **CRANK:** Sugino Mighty
38/50/61170/175mm crank
arms

■ **DERAILLEURS:** Shimano
105GS triple (rear); Sachs
Quartz (front)

■ **COG CASSETTE:** Shimano
Hyperglide IG 11-28

■ **CHAIN:** Sachs Sedis

■ **BOTTOM BRACKET:**
Shimano cartridge UN52

■ **HEADSET:** Suntour
Greaseguard

■ **GEARING:** 17.4-140 In
inches based on a 20" drive-
wheel

■ **SEAT:** Rans high or low
back with Angletech/Boulder
folding hinges

■ **Back:** Aluminum frame,
suspended folding mesh back
with zip tie fastening

■ **Base:** Composite with
open-cell foam, stretch fabric
cover

■ **Adjustment:** Sliding seat/
Rans Quick Release and
adjustable boom

■ **BRAKES:** Magura
Hydraulic

■ **Brake Handles:** Magura

■ **PEDALS:** Customer's
preference

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aluminum ASS/stem

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ANGLETECH



The Human Powered Machines Titan

by Robert J. Bryant



Jan Vander Tuin is the key man at Eugene, Oregon's Center for Appropriate Transport, a bicycle co-op and training center. Jan is also the chief builder at Human Powered Machines. He builds the Tritan, a two-wheel-in-back Ryan Vanguard-like trike, the "Trick" a \$650 SWB for kids and small adults built of aluminum in an "A" frame design similar to the English Kingcycle. Another of Jan's specialties is cargo hauling bicycles. He builds custom heavy duty work bicycle trailers for capacities of up to 500 pounds, as well as the upright "Long Haul" a LWB MTB with a 200-pound cargo capacity container forward of the rider currently used by Pedalers Express and placing first in the cargo category of the Cycle Messenger World Championships. The Tri-Hauler is the equivalent of a recumbent flatbed truck utilizing a Flevo-like FWD unit. This is the only adult FWD trike

of its kind built in North America. Jan also does custom design, fabrication and can make your HPV dreams come true. He built some of the prototype Coo's Bay Flyer trikes from a few years back and just recently had his "Swift Folder" bicycle written up in *Bicycling Magazine*. The issue had an article on CAT and its philosophies.

The Human Powered Machines Tritan trike was originally designed as the Ryan Trike by Dick Ryan back in 1991. Dick built a few trikes, but it was a time consuming project. When Jan inquired about continuing production in a limited capacity, Dick agreed. The Tritan has since been refined into an original design which has no imitators.

TRITAN DESIGN

The Tritan has two-wheels-in-back, with the right side being the drive wheel with a rear axle con-

nected to a freehub and a Sachs disk brake. The left wheel is a dummy and bolts on independent of its driven counterpart. Other than the rear drive unit and disk brake, the Tritan is very similar to the Ryan two-wheeler. The head tube angle is more laid back and the seat/steering unit are quick release and slide easier than the Vanguard on the frame's dual top tubes.

TRITAN SEAT

The seat itself is a modified Ryan style sling/mesh with no seat-horn. The "horn" is a metal hinge or tube (Vision) that suspends the front tip of the seat mesh to keep you from sliding out while annoyingly brushing against your groin area. The seat works well thanks to the wide front tubes of the Haluzak-esque seat frame though you'll want the seat reclined a bit more than usual to hold you in. The mesh section seemed nearly identical to that of the Van-

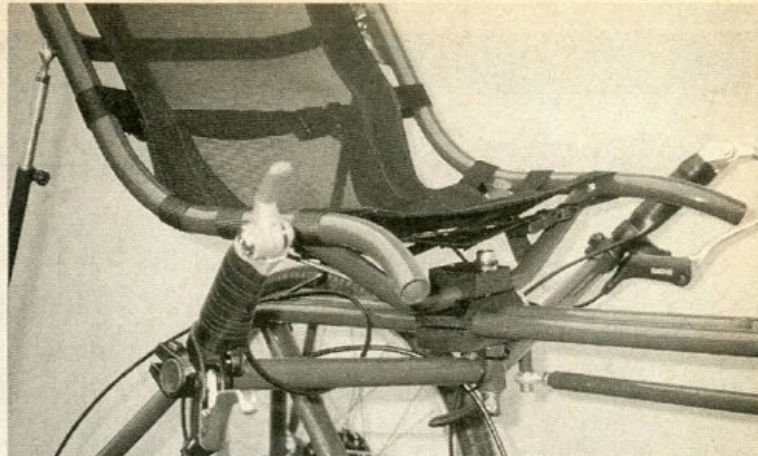
guard, in fact, I wish Dick Ryan would use this seat design to get rid of his seat horn. The seat-stays are telescoping for a very adjustable recline. The adjustable reclining sling/mesh seat and the low-BB don't make for a very high-performance stance, though that is not the intent of this machine.

The Tritan is a special trike that would be ideal for practical uses, commuters or for those requiring special needs such as an individual with limited or no use of a limb. If you've ever wanted a two-wheeler but have a balance problem, this is your vehicle.

On the RCN test loop I didn't put down my feet even once. The Tritan speed is limited by the design, high c.g., and braking. It's not a fast trike. With this type of trike design, there are torsional forces that oppose or fight each other twisting side-to-side. Using body English, or leaning



The Tritan's rear end seems complex but is actually quite simple. The Sachs brake is very strong. Just the right rear wheel is driven and braked, the left rear wheel has a separate axle.



The Tritan seat has flared out side bars like the Haluzak along with bar-end controls and a quick-release seat that rests on the twin top tubes of the frame. The seat stays also telescope—RCN

is essential for anything but a low speed turn. The off-camber downhill turns on the test loop were a real test for me, requiring new skills, a slower pace, and bringing a few close calls with the sticker bushes. This trike will tip over if pushed. In fact, I had it on two wheels several times. Climbing was a breeze as there are no balance issues to contend with, though it's a slow climber. After an hour or two you'll know the Tritan's limitations and strong points. The best of which is that I didn't have to unclip my shoes a single time during the test rides.

DRIVETRAIN

The drivetrain works just like a LWB two wheeler. The drivetrain is Sachs/Shimano shifted via Shimano bar-cons on bar-ends. The brake levers were also mounted on the bar-ends which is our favorite USS setup. Front shifting was effortless, however, the rear indexing was poor given the use of 8-speed bar-cons with a 7-speed cassette. New models will have an 8-speed cassette to match (24-speeds total). The gearing is quite low, but perfect for the use of this trike.

The braking is the one aspect of the Tritan that is a bit odd. The rear Sachs disk is very powerful and will skid the rear wheel to an immediate stop, however, it brakes only the right wheel, the left is a dummy with no brake. During our braking tests, we were surprised that the Tritan brakes as straight as it does, though there is always that constant, and very strong, pull to the right. The Tritan's front end has a tendency to wander when you initially brake. Corrections are fairly easy and you usually don't get too far off track or go too fast. The more experience you have with the Tritan's rear brake, the more second nature it becomes, however, the speeds at which you can

safely ride down hills will be limited.

The front brake is a bit like the left rear wheel, a dummy. I don't know what the problem is with Ryan-type front brakes and cable routing, but dragging my sneakers would have stopped me faster than this Tektro V-brake. Our best guess is that it's something to do with the cable routing on the long Ryan-like front end. Interestingly enough, Dick Ryan has just made a V-brake standard on his Vanguard and reports excellent results.

The wheels are a triplet set of 406mm (BMX size) 20" x 1.75" wheels on custom hubs, stainless spokes all with matching 100 psi ACS ribbed tread tires.

The custom fabrication on the Tritan is impeccable and every part on the bike was prefit and preadjusted prior to UPS shipping (yes, this trike does ship UPS!). Installing the rear axle/brake disk unit was an exercise in following instructions (without pictures)—very carefully. The Tritan was on the road and dialed to perfection within 90 minutes. The beautifully TIG'ed full CroMo Tritan frame was powder-coated a very pleasing Forest Green with matching Cro-Mo painted bars, seat stays and steering rod. The attention to detail is very nice as was the preassembly/prefit of the parts. The Tritan is no lightweight at 39 pounds, though it's strong and stiff, not wimpy and flexible.

The Tritan is available with optional fenders and a lockable rear cargo container as well. There is one accessory mount on the twin top tubes that could be used to creatively mount a water bottle or computer.

Human Powered Machines is also unique with its dedication to youth. As a part of the Center for Appropriate Transport, HPV is the apprenticeship program where teen-

agers can acquire the diverse skills for a career in bicycle building. Eugene Bicycle Works and CAT have HPM vehicles on display and available for test rides or rentals. You can also visit the fabrication facility at the same site.

I wouldn't recommend buying a Tritan for high-performance use, but for a functional transportation vehicle or for a balance problem or other special need, this is a fine tricycle built custom to fit suit the individual customers needs. □

TRITAN SPECS

- **MODEL:** HPM Tritan
- **PRICE:** \$1695 direct
- **TYPE:** Trike: two wheel in back, USS
- **WHEELBASE:** 73"
- **BB HEIGHT:** 15.5"
- **SEAT HEIGHT:** 22"
- **SEAT RECLINE:** 65°
- **WEIGHT:** 39 pounds
- **FRAME:** TIG welded CroMo, water bottle braze-on, front fender bosses
- **Fork:** TIG welded CroMo Unicrown
- **WHEELS:** 3 x 20" x 1.75" 406mm, Weinman rims
- **TIRES:** ACS RL Edge 20" x 1.75" 100 psi (Rear)
- **CRANK:** Shimano 24/36/50
- **DERAILLEURS:** Sachs Centera 24-spd speed
- **COG CASSETTE:** Sachs 12-30 8-speed
- **CHAIN:** Sachs Sedis
- **BOTTOM BRACKET:** Shimano sealed
- **HEADSET:** Shimano sealed.
- **GEARING:** 16-83 (based on a 20" drive-wheel)
- **SEAT:** Aluminum mesh, painted to match bike, nylon mesh.
- **Adjustment:** Sliding seat/Q.R.
- **BRAKES:** Tektro V-Brake (Front); Sachs hydraulic disc (Rear) with Tektro handles
- **BARS/STEM:** HPM CroMo USS with MTB bar-ends
- **SOLD BY:** Human Powered Machines Jan VanderTuin 455 West First Ave. Eugene, OR 97401 Ph# 541/343-5568 Fax#541/686-1015

Designing a Single Track Vehicle for Handling Qualities

by Bill Patterson, wyms@lightspeed.net

Most engineering analysis of bicycles and motorcycles have been approached as a problem in stability. The designer is perhaps, not as interested in stability as in the much simpler question of handling qualities. A way to approach 2 wheel vehicle design may be to compare bicycle design to the adjustment of a computer joystick. The joystick has a spring that tends to return the stick to center. It has a sensitivity option so that a given motion of the stick will have a varying effect on the cursor. And it may have a trim adjustment to zero out the residual force of the stick at some proper position. A bike designer can control the geometry of a bike to adjust handling qualities in a like manner to the computer operator adjusting the handling quality of the joystick.

We must also keep in mind that a bike has one other wonderful control feature. The front wheel will flop in the direction that the frame is falling. When this happens the bike will automatically turn in the direction of its fall and right itself. Thus, the bike actually aids the rider in maintaining the rubber side down.

My purpose is not to recommend a particular set of values for sensitivity, spring rate, trim or wheel flop. I only wish to point out how changes in frame geometry affect each of these qualities. The builder can determine a value for a bike with admirable handling qualities and build the new bike to have similar handling quality values, even though the wheelbase or c.g. height may be very different.

The following terms will be used.

A Wheel base. The distance between the axles

B Horizontal distance from the rear wheel contact point to the center of gravity of the bike. The center of gravity is roughly just above the rider's belly button.

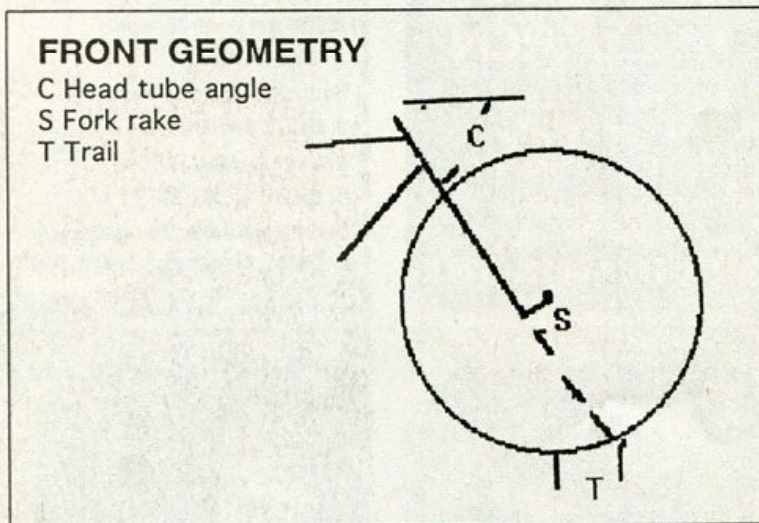
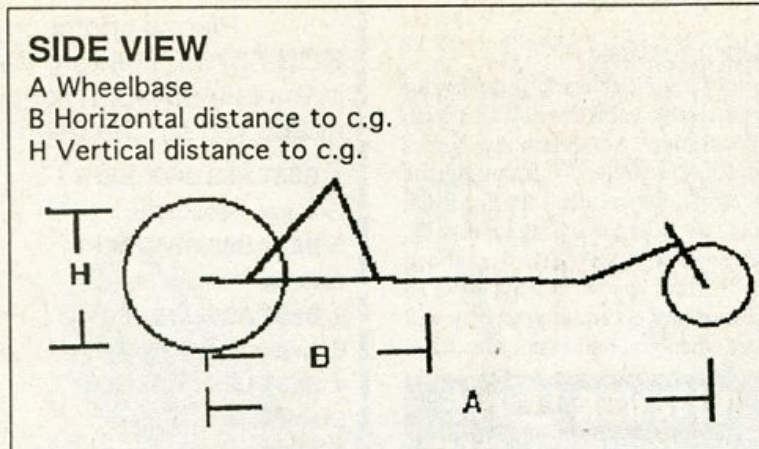
C Headtube angle. The angle from the horizontal to the axis of the headtube.

D The roll angle of the frame in a turn.

H Distance from the ground to the center of gravity.

R Front wheel radius.

S Fork rake. The distance that the front axle is offset from the steer-



ing axis.

T Trail. The distance from the point where line of the steering axis intercepts the ground and the contact point of the front wheel.

V Velocity.

W Total weight of the bike and rider.

SENSITIVITY

Two values are important. The first is the change in turn rate and the other is the change in roll rate for a given handle bar rotation.

Turn rate sensitivity: $(V/A)(\sin(C)/\cos(D))$

Roll rate sensitivity: $(B/H)(V/A)(\sin(C)/\cos(D))$

These linearized equations tell us what we already know. When **A** (wheelbase) is large for my LWB, I have a less sensitive machine. The roll rate equation also indicates that a very low machine (**H** is small) will have a high roll rate. This is true and low machines should be maneuverable. Other equations tell us that a

low rider is more easily controlled when the rider is forward (**B** is large compared to **A**) and will be harder to control when the rider sits farther from the front wheel, on a LWB. The above sensitivity can also be considered control authority terms, and it should be noted that non geometry values have a great effect on sensitivity. Just moving the hands closer on a narrow set of handle bars will make the bike more "twitchy" by increasing the effect of hand movement on handlebar rotation angle.

WHEEL FLOP

This handlebar torque is truly our friend. When the bike starts to fall, the handlebar automatically tends to turn in the direction of the fall and rights us keeping us safe. I have a LWB with no wheel flop whatsoever. A few riders have great difficulty riding my bike. They control the bike mostly by the feel in the handle bars. When the bike starts to fall, they don't get the required sig-

nal to turn and just fall over.

Before we can predict the wheel flop term, we need to find trail.

$$T = R/\tan(C) - S \sin(C)$$

Wheel flop with respect to rotation.

$$T \sin(C)(B/A) W$$

We might not perceive rotational errors as quickly as lateral motion errors. In that case we might wish to find:

Wheel flop with respect to sideward motion: $T \sin(C)(B/A) W/H$.

We see that **B/A** is the major difference between LWB and SWB bikes. The Wheel Flop equation, also introduces the importance of trail. The $T \sin(C)$ term is the distance of the front wheel contact point from the headtube axis, and is another important term in the Handling Qualities search.

Most LWB (long-wheelbase) bikes have such a small force supported by the front wheel that wheel flop isn't much help. A front-wheel-drive bike handles more like a mouse than a joystick. It has no feel or feedback at all. Its interesting that most LWB bikes have very little trail and steep head tubes. The steep headtube certainly helps give a little more sensitivity. Maybe no one has tried to help the rider by exaggerating trail. A LWB with increased trail, might be an interesting experiment.

TRIM

Happily, all bikes are in trim when they are riding straight and level. Unhappily, I can't find a nice linearized equation to provide a simple relationship for the designer. I have a computer model of bikes that predicts that most bikes have trim problems in a steady turn. It also predicts that bikes with vertical head tubes will always remain in trim as the bike maintains a constant rate constant speed turn.

Another experiment is to build some Street Glider clones with more than vertical head tubes and backwards forks.

SPRING RATE

This is the tendency of the handle bar to return to the undisturbed position. It is how we are able to ride a safety bike hands off. However, spring rate is not just a product of frame geometry. An example of

other spring rates would be the centering force caused by the racer's hands on the handle bars of a safety bike. The extended stem causes the front wheel to seek the forward position just from the weight supported by the rider's hands. Is this the problem we see when the recumbent rider is using a tiller steer system? The force of the hands is generating a negative spring on the fork and causing the fork to tend to deviate from the straight ahead position.

Returning to geometry, unhappily again, I don't have a nice linear equation for you designers out there. I know its a function of (B/A) and T, but its more complicated than that. My model predicts that the spring rate is actually reversed for low velocities. In other words, if the handle bar starts to turn, it will continue turn-

ing and will not tend to return to the original position. Perhaps this is why we can't ride a bike hands off at low speed.

Interestingly, bikes with Mirror Image headsets. (Backwards pointing headsets) are predicted to maintain a nice stable spring rate even at low speeds.

CONCLUSIONS

The proper handling quality for you and your bike will differ from the rest of us. Some want low forces and don't need feedback through the controls. Others need the feedback and are tolerant of higher forces. There is no ANSWER. The above is to allow you to, at least, have an idea of how a certain geometry will feel when you build your bike. □

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1998 RCN READER BEST AWARDS BALLOT

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Please photocopy, cut-out and mail to: RCN, POB 58755, Renton, WA 98058. Fax to: 206 (253 in the fall) 631-5728 or call in answers to voice mail at 206 (253 in the fall)/631-5728

- | | |
|--|--|
| 1. BEST ASS SWB 'BENT?
Example: Rans V-Rex | 10. WORST 'BENT DESIGN? |
| 2. BEST USS SWB 'BENT?
Example: Haluzak Horizon | 11. BEST 'BENT INDUSTRY PERSONALITY? |
| 3. BEST ASS LWB 'BENT?
Example: Easy Racer GRR | 12. BEST COMFORT ERGONOMICS (riding position)? |
| 4. BEST USS LWB 'BENT?
Example: Ryan Vanguard | 13. BEST PERFORMANCE ERGONOMICS? |
| 5. BEST CLWB "COMPACT"?
Example: Rans Tailwind | 14. MOST COMFORTABLE 'BENT SEAT? |
| 6. BEST TRIKE?
Example: Greenspeed GTR | 15. BIKE YOU'D LIKE TO SEE TESTED IN RCN? |
| 7. BEST TANDEM?
Example: Ryan DuPlex | 16. ARTICLE YOU'D LIKE TO SEE IN RCN? |
| 8. BEST 'BENT MFR?
Example: Turner Enterprises | 17. 'BENT OF THE FUTURE? |
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The Haluzak Hybrid Race

by Robert J. Bryant

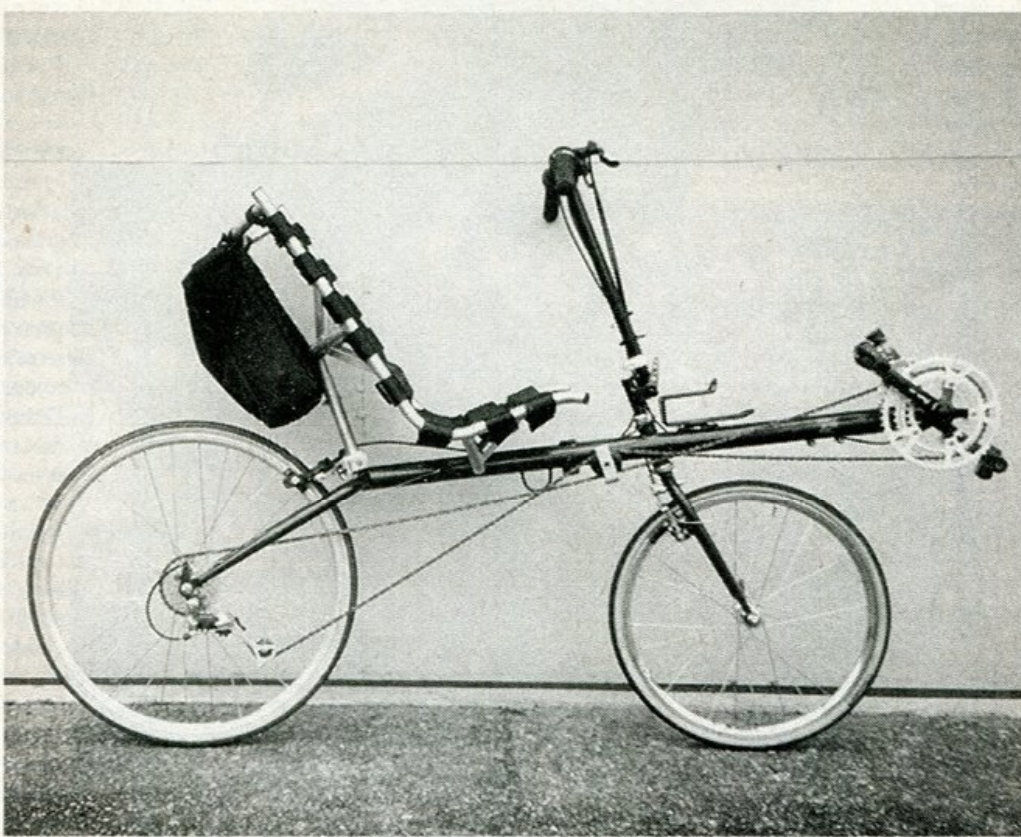
I didn't know Bill had it in him. This is not the kind of bike we usually get from Bill. Sure, Bill builds primo quality touring SWB machines, with slow, yet stable handling. And Bill has a following of owners and riders who love the secure feel of his fat tire USS machines. Of course, I'm speaking of Bill Haluzak, owner, designer and chief recumbent guy at Bicycles by Haluzak (BBH). The Hybrid Race is not your average BBH. It's a sleek, sexy lightweight performance machine that offers excellent components and surprisingly nimble and quicker handling than any other Haluzak model.

Haluzak's main claim to fame is a SWB USS, fat tires with a sling mesh seat, mono-unsupported stays and remote linkage underseat steering. The best selling BBH model, by far, is the Horizon. The Hybrid Race is a lightened 700c/20" version of the Horizon. Some SWB ASS enthusiasts feel that the BBH steering is too slow and stable for their tastes, yet new riders or those looking for a stable, secure, SWB road fee know all about BBH.

Our Hybrid Race has skinny tires, a BBH fold forward ASS bar/stem, custom fork and weighed in about 26 pounds!

SMOOTHNESS

This bike will appeal to riders who like the looks of a V-Rex, Lightning or Kingcycle, though it's quite different by design—and road feel. This Hybrid Race is the smoothest riding unsuspended SWB I've tested. The frame offers a passive built-in frame suspension in the unsupported rear stays. This allows the rider to float over the bumps and road hazards. Unfortunately, it may be too smooth for some. In other words, the smoothness has a price—frame flex. According to BBH, riders around 200 pounds and higher should opt for the stiffer Horizon frame, though BBH will do a Hybrid Race with



either a Leprechaun (16" front wheel) or Horizon frame (stiffer).

Our Kent to Black Diamond 22.4 mile test loop really can tell a lot about a bike. The Hybrid Race is a great bike for this ride, though it also brings out the Hybrid Race's weaknesses, as the pavement can be rough and it's windy, with blustery headwinds billowing down from Enumclaw and Mt. Rainier. The BBH monostays are always flexing and taking that hard edge off the ride. The downside to the design is the flex does odd things to the ride. While really honking down the Auburn-Black Diamond highway I noticed that the bottom bracket flexes rhythmically side to side, up and down by about a quarter inch with every pedal stroke (you can actually see it). Super-smooth light peddlers probably won't notice this, but any "full-power-on" hammerhead riders will. This combined with the unsupported monostays provides a full-on torque-twist of the frame. I couldn't see my stays twisting torsionally, but I could feel them. The whole rhythm adds to the difficulty of keeping this bike tracking in a straight line. Like all BBH bikes I've tested, this one has

noticeable pedal steer.¹

On the backside of our test loop, there is one steep, fast hill with a switchback, a long downhill tight S-curve, lots of traffic, no bike lane and an off-camber landing with scattered gravel from several unpaved driveways and our nasty winter. The speed limit is 25 mph, though no cars ever pass me here. The Hybrid Race accelerates well and dives into the curves, though it was a handfull on the windy days. I've taken the RCN test Rans Rocket and Gold Rush Replica through this course many times and they are rock solid. The Hybrid Race is less controllable and will get your adrenaline flowing. This is where the flexing boom, forward c.g. and frame meet with rough roads and blowing cross winds thus creating an extreme situation. It was at this point, when I wished that the Hybrid Race was stiffer and tracked better, heck maybe even a bit heavier.

I finally did get accustomed to the frame flex and the bike's road manners, however, the one aspect of the frame flex I did not like was steep hill climbing. The Hybrid Race has a seat bag mounted behind the seat. When parked, there is about 1.25"

between the rear wheel and the bag. When climbing the infamous Sunrise Hill out of the Soos Creek trail, the rear tire was buzzing (rubbing) on the back of the seat bag. This means that I was getting an inch of flex out of the stays—that's a lot of flex!

FRAMESET

The BBH frameset is incredibly nice. The lines are petite and a minimalist's dream. The frame TIG welds are among the nicest I've seen. The tubes' wall thicknesses are thin to keep the frame light. The Hybrid Race frame has smaller rear stays and a BBH custom built CroMo straight-bladed front fork that does flex some. One of the nicest touches on the bike is the rear derailleur cable routing and guide that rises

above the rear dropouts. The bike was painted a metallic dark red almost root beer brown powdercoat. The paint was fine and a notch above the generic powdercoat finishes we are accustomed to, however, the way BBH packs their bike (with boom extended all the way in) several boom tube scratches became apparent once the bike was set for a tall tester. I suggested that they might want to remove the boom for shipping. The BBH boom overlaps the mainframe and makes for a unique appearance.

Our test Hybrid Race has optional above-seat steering which absolutely transforms the bike. Instead of a slow handling USS machine, riders have a direct connection to the steering. The ASS folds forward and has a simple recline adjustment. The bars work well, though our one rant is that the ends flare downward just before the Grip Shift. This means that you'll need to keep the bars higher to clear the knees and Grip Shifts. Most every SWB ASS rider eventually makes an attempt to get the bars/stem as low as possible. For this reason, totally flat bars would most likely work better. There are no cable stops on the stem, so continu-

ous cable must be run down to the frame. The upside to this is quick height adjustments. The frame USS head tube was left intact and USS could be retrofitted in the future.

SEAT DESIGN

The BBH seat is a full sling/mesh seat with no foam base or pad. For any riders who've ever enjoyed the Counterpoint Presto seat, you'll probably like this one better. The seat frame is a two piece aluminum frame that mounts into a CroMo frame tube at the base. The only hard fastening onto the frame comes from the series of Velcro seat-belt style straps that make up the seat and hold the two sides of the seat together. The mesh section is a Sew What full breathable mesh and sewn in Auburn, Washington. Sew What still does the nicest quality seat mesh available in the recumbent world.² The downside to this seat is the velcro straps stretch and come loose and need to be tightened and readjusted often.

The BBH seat doesn't offer the initial or short term comfort that the foam based seats such as the Vision or especially the Rans seat offers, but over a century, the full breathable mesh will make a difference. The airflow and ventilation seemed superior to other bikes I've ridden recently. On a hot 40 mile ride to Alki Beach, I noticed that my body was much drier on the BBH ventilated full mesh seat.

All is not perfect in the world of the BBH full sling/mesh seat. There are cross straps under the base of the seat and a strap at the forward edge of the seat that do offer pressure points for some riders. I found the key to ultimate comfort was to recline the seat back³ as far as it would go, thus taking the pressures off the base. The BBH aluminum seat frame's lower rails flare out at the forward outer edge. They always seem to be in the way when stopping, mounting or dismounting. These frame rails are responsible for the tall feel⁴ of this bike and seat. At 6' tall (32" inseam/44" X-seam), I am on the balls of my feet when at a stop.

The BBH seat comfort didn't really come into full view until I'd spent a full day on the bike. This made me realize how nice a fully ventilated very high quality full sling mesh seat can be.

DRIVE TRAIN

The BBH Hybrid Race component selection is outstanding in its class. The Grip Shift SRT600 shifters

have a light, crisp feel and the Deore XT derailleurs shifted very nicely in most instances. For some odd reason, BBH doesn't use compressioned index housing for their derailleurs and there were some mis-shifts, especially in high gear. The first change



I would make to the bike is retrofit some index derailleur housing.

One of the strong points of the BBH design is the superior chain management. First, the bike was designed around the optimum SWB chain line, so there are no severe bends or angles. The BBH idler is a cartridge sealed upper/lower skate wheel type unit that carries the chain quietly and smoothly between the crankset and the rear cogs. It's truly one of the smoothest SWB drivelines around.

WHEELS

The 700c/451 20" Hybrid Race wheelset is built in house by BBH. Past wheel quality examples have been very good, though the Hybrid Race was shipped with one very loose spoke in the rear wheel. After this spoke was tightened, the wheels held true, though after our 200 mile test, both wheels were ready to be retensioned.

The Hybrid Race is available with a 26"/20" 406mm wheel combo or even a 26"/16" "Leprechaun" version for shorter riders.

BRAKES

The Hybrid Race has an odd

brake mix with a cantilever front and a dual pivot road rear. The front Deore XT cantilever (non V-brake) is mounted on the back side of the fork. I've never been much of a cantilever fan, and even less so when mounted on the back side of the fork.

The Hybrid Race's front brakes work fine, though not as good as the rear 105 SC dual pivot sidepull, which is my favorite brake available today. Overall stopping power was very good, though the rear wheel can be skidded very easily. The brake levers are the venerable Tektros. Not that these are bad levers, but they are mushy and come on bikes costing half what the Hybrid Race costs. Upgrading to a better lever, such as a Ritchey or Dia Compe will make a noticeable difference. My biggest rant about the brakings on the Hybrid Race is that if BBH goes to the trouble of manufacturing a fork and reverse mounting the brake, why not design a drop bolt to mount a matching 105SC dual pivot on the back side of the fork. Another option would be to find out where Tim Brummer (Lightning) gets his left-side pull dual pivot knock-offs that are standard equipment on P-38s.

OPTIONS & ACCESSORIES

The BBH Seat bag is made for Haluzak by Sew What. It is smaller than either the Vision, Angletech or Rans seat bag, but it is very nicely done. The only thing missing was an outside zipper pocket for your wal-

let and keys.

BBH offers component upgrades, tubing size upgrades for heavy or stronger riders, a really slick derailleur post light/computer mount that is by far the nicest I've seen from any SWB manufacturer as well as additional braze-ons and lights. BBH does not offer a fairing specifically for the Hybrid Race, though Zzip Designs does, and I've heard of Vision Zzipers being adapted.

PERFORMANCE

The Hybrid Race is a light and a fairly fast bike. In USS form, it's comparable to the Vision R-44 USS. In ASS form, it's similar to the Rans V-Rex and Rocket. In my performance tests, the RCN long term test Rocket was faster by four minutes over our 22.4 mile Black Diamond test loop. Throughout this test loop there are many plateaus where the wind gusts heavily down from Enumclaw and Mt. Rainier.

The Hybrid Race accelerates well, but seems to flatten out at the upper mid-range when trying to crank out high speeds.

Another matter for discussion is why a performance bike, especially one with the word "race" in the name can be so flexible. It seems to me that high-performance and racing bikes need to be stiff. When I asked BBH about this, they said the Hybrid Race is really for a light rider. I say a tall, light rider.

RECOMMENDATIONS

Bicycles by Haluzak offers some of the finest SWB recumbents available today. The level of craftsmanship and availability of custom options, add-ons at fairly affordable prices is exceptional.

As for rants about the bike, I'd install some acceptable index cable housing and make just a few component upgrades. I'd request a matching 105 dual pivot front brake. As long as they are fabricating the fork, they may as well install a brake bridge to make the 105 work. I would also order the Sugino Fuse over the Suntour crank and get rid of the flexy Tektro brake levers.

USS vs. ASS is rider preference. It's no secret that I prefer ASS and always have (except on trikes). Though both work well on this bike, the USS gets more attention and refinement by BBH and it's the company preference. The ASS has a quicker more precise feel and the USS offers a slower more stable feel

and less emphasis on performance. BBH offers a bar-ends with Shimano Ultegra bar-cons shifter option. They use a Delta "L" brake lever, they work fine, though they do give a mushy feeling. Mounting the brake levers and bar-cons on the bar-end extension is the ultimate USS set up. As for the ASS, the Grip Shift SRT600's are the perfect choice, though the spongy Tektro levers leave something to be desired.

Bicycles by Haluzak are easy to recommend with one exception—rider height. This is a tall riders bike. I caught some flack over similar statements in the buyers' guide, but I believe it to be true. My test bike was very high off the ground—the tallest SWB I've ever tested. Our 5'4" tester could not even touch the ground. A 5'10" rider had the same problem. BJ Strass is 6'3" and was on his tip toes. The bottom line is that it's a tall rider's bike. It is possible to slide slightly forward in the seat to be flat footed on the ground.

There is no doubt that this bike's height affects performance, as does the frame flexing, both of which are limiting factors in an otherwise very nice bike. If you understand this, and still wish to have a high quality lightweight performance SWB, this may be it. I cannot recommend it to real hammerheads, as the frame will just flex too much, but to those who desire a performance machine for non-performance reasons, the BBH Hybrid Race is the ticket. □

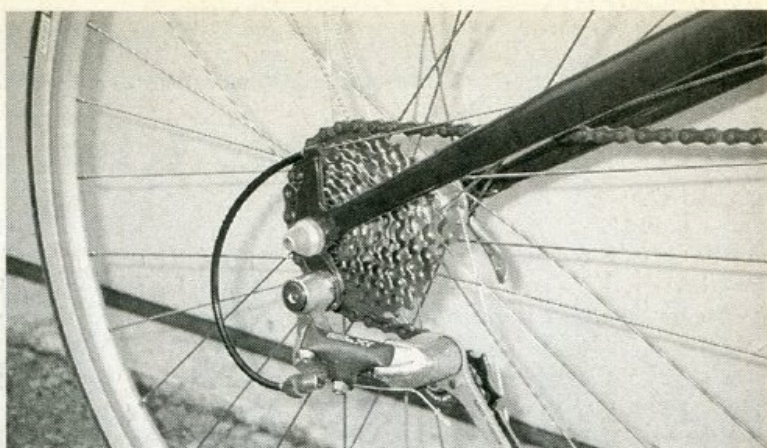
¹ Pedal Steer: Pedal-induced steering input that makes the bike more difficult to track in a straight line. This generally happens on SWB bikes with wheelbases of less than 39" or a laid back head tube angle.

² Sew What is a custom sewing shop that has been doing high end bike bags, travel cases and seats for years (Angletech). The

BBH seat mesh is similar to the Presto seat with a breathable mesh with seat-belt style velcro straps that adjust throughout the back and base of the seat.

³ Seat Recline: BBH ships their bikes with the seat mounts in an upright position. We prefer a more laid back seat. BBH reminded us, this makes the nose of the seat even higher.

⁴ The BBH seat height is within one inch of our test Rocket (which I can sit on flat footed). The main difference is the BBH lower seat rail placement, flare out and mesh-base seat design.



SPEC SHEET

■ **MODEL:** Hybrid Race

■ **PRICE:** \$1795

■ **TYPE:** SWB USS

■ **DIMENSIONS:**

■ **Wheelbase:** 40.5"

■ **BB height:** 24"

■ **Seat height:** 44"

■ **Boom length:** 20"

■ **Seat recline:** 65°

■ **Head tube:** 70°

■ **Weight dist.** 46°(rear)/54°

■ **Weight:** 25.5pounds

■ **FRAME:** TIG welded CroMo. Braze-ons for water bottle, rack and fenders

■ **Fork:** Haluzak custom CroMo

■ **WHEELS:** 700c/20 (451)

■ **Tires:** IRC Roadlite 100 psi (Front); Panaracer 700x23 (Rear)

■ **Spokes:** 28 SS 14 guage (Front); 32 SS 14 guage (Rear)

■ **Builder:** BBH

■ **CRANK:** Shimano or Sugino 28/40/50 175mm crank arms

■ **DERAILLEURS:** Shimano Deore XT (rear); Shimano 105 triple (front)

■ **COG CASSETTE:** Shimano Hyperglide HG70 11-28

■ **CHAIN:** Sachs Sedis

■ **BOTTOM BRACKET:** Shimano cartridge UN52

■ **HEADSET:** Tange Levin

■ **GEARING:** 27-123 (based on a700c drive-wheel)

■ **SEAT:** Two piece aluminum frame, suspended mesh back with seat belt strap/

velcro fastening

■ **Adjustment:** Sliding boom/2 allenbolts

■ **BRAKES:** XT cantilever reverse mount (Front); Shimano 105 SC (Rear)

■ **Handles:** Tektro

■ **PEDALS:** Resin platform

■ **BARS/STEM:** Haluzak fold-forward ASS

■ **PAINT:** Powdercoat red, green and blue

■ **SOLD BY:**
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My Kiwi Adventure

by Cheryl Fisher



I've been an avid cyclist with a chronic disgust of winter for around 8 years. The only cure would be a winter bike retreat. The only problem was that my neck would no longer allow me to view the world from over the bars of my trusty Cannondale. So, last July, I reluctantly purchased a Vision R-40 SWB with under-seat steering. I brought it home and was extremely disappointed. Every molehill that went unnoticed before now seemed like a mountain. I gradually improved and decided if I could survive the Hilly Hundred in Bloomington, I'd be Kiwi bound this winter. I not only survived, but enjoyed it more than any of the three previous years.

KIWI DRUG SNIFFING DOGS

I bought the tickets and sent my check to the touring company in New Zealand, but it never arrived. I took this as a sign from above to go solo, which was what I really wanted to do anyway. I've done several organized tours in the past including a cross country PAC tour that averaged 140 miles per day from LA to Savannah, but nothing compares to the freedom of self-contained touring.

After a short test ride with 25 pounds of gear, I decided to keep the 16" front wheel and replace the rear with a stronger 36 spoke wheel more suited for touring. I would arrive in Auckland on January 6th and fly out of Queenstown on the 25th.

After an 11 hour flight from LA to a royal welcome from a drug sniffing dog at customs, I had finally found summer.

FIRST BLOOD

10 kilometers into the first day my haste to bask in the sunshine caused me to carelessly neglect to tighten the bolts on the crank arm, I fell over while pushing off at an intersection but caught myself with my knee. Drawing blood on the first day is definitely a bad omen, but an inward promise of rocky road drove me on. Bikes aren't allowed on the motorway heading out of town. Having done some prior planning would have been handy about now, though the locals seemed eager to help. It must have been that "I'm not in Kansas anymore" look on my face. 90 kilometers and three major detours later, I zonked out in my tent without dinner.

ACROBATIC KIWI SHEEP

The next four days went much better offering up the typical postcard perfect scenes featuring acrobatic sheep hanging on the near vertical green pastures. I took a tour through the Waitoma glow worm cave, but passed on hiking in the Tangariro National Park. It was taking longer to do 100 kilometers than I figured, which left little time for exploring. So after another long day of riding with increased traffic and decreasing scenery, I caught the bus for the last 150 kilometers of the North Island into the capital city of Wellington. Brilliant thinking! A Friday night in a big city, heavy traffic, no reservations and it's peak season. After turning down several offers from locals, I finally found a hostel.

MYSTIC FOG

It rained the next morning throughout the three hour ferry ride but slowed to a drizzle later on. I shopped and visited in the small town of Picton before heading out to Havelock on the Queen Charlotte scenic drive through Marlborough Sound. The combination of tropical greenery draped in a mystical fog was breathtaking. It was late evening with no traffic and there was a feeling of serenity as the road wound along the secluded covers. I'd love to see it again sometime draped in sunlight, but that would be in short supply over the next three days. But what can you expect from a rain forest? The rain did give relief from the ozone depleted killer rays and it was fascinating to watch it creep slowly over the mountain peaks.

The terrain here was rugged and it cried out for lions, tigers or bears, but there was no wildlife on either island. The only animal here is the red opossum. The absence of predators has caused its population to explode, making it an ever present road kill. The road follows the Buller River for 150 kilometers into the city of Westport.

KIWI GLACIERS

The 440 kilometers of coastal highway hold a wide variety of attractions. Its natural beauty is quite capable of standing on its own without the help of amusement parks or casinos. I visited a seal colony before camping beside the Pancake Rocks. The next two nights were spent at Franz Joseph Glacier. This

area has spectacular tramping tracks and the highlight was an 8 hour guided tour up the actual glacier. Some of the toughest climbing of all was between Franz Joseph and Fox glaciers. The west coast is paralleled by the Southern Alps, which would have to be crossed to reach Queenstown. The Haast pass was the easier of the three passes but I'd been dreading it for days. As it turned out, the pass was a piece of cake compared to the battle at the campground with the rain enraged sand flies.

I was joined the following morning by Nikoli. He was spending six months here and riding something that resembled a tank. As we distanced ourselves from the pass, the cool drizzle gave way to the sun but not before connecting the mountains with awesome rainbows. The landscape was gradually changing from mountain greenery to golden colored hills. The road followed along the shores of two large emerald green lakes that were cradled inside of snow capped rocky mountains. I was glad for the company today because it seemed too much for one person alone to soak up. As an extra bonus, we had a tailwind that toppled over some trees. We arrived in Wanaka early.

KIWI CRASH

Later in the evening, after giving Nikoli and the other cyclist in the camp their first recumbent rides, I headed back to the lake for one last look. I'd forgotten several times before and reverted back to riding on the right instead of the customary left



lane, but this time the oncoming car was unforgiving. With thoughts of fish and chips and Kodak moments on the brain, I checked the wrong lane for traffic and veered directly in front of a Toyota. It all happened in a split second and I can only piece together what must have happened. The right pedal tore apart as it hit the Toyota's headlight and the force drove the center bar into my left lower leg. I did a 180 and was thrown 15-20 feet landing on my right side. Luckily my helmet was safe and unscathed back in my tent. They insisted I go to the medical center and as I was being loaded in the ambulance, bystanders were sheepishly handing me spare bike parts. The only thought on my mind was where to buy a bus ticket for the final day into Queenstown. I was just bruised and dazed and can only speculate that it would have been worse on a conventional bike.

Later I was especially touched by the kindness and concern from the other cyclist and Kate, who was a volunteer from an agency in town

that helps tourists that have been injured. I was travelling solo, but never felt alone.

BACK ON THE ROAD

By morning, I had a change of heart or a major loss of brain cells. The bike and I seemed salvageable, so I headed into town. I paid the medical bill first, which was only \$15 due to a local accident comprehensive coverage. The bike shop owner straightened the aluminum seat brackets in a vice while I replaced the pedals and front tire tube. Both wheels were close to true and there was a three inch rip in the mesh seat. Import fees double the cost of bike parts here, so I didn't replace any of the accessories. After several small adjustments and repacking my bike, I was ready to get back on the horse.

It was 110 kilometers to Queenstown and it was noon by the time I'd left. There wasn't a cloud in the sky and I was eventually able to take my eyes off of the oncoming bumpers and enjoy the view. I was rewarded with a day of black and

gold volcanic hills, complete with sound effects from the Shotover River. I watched the bungee jumpers and decided I'd had enough adventure on this trip. My last adrenalin rush would come from a safe shopping spree.

A SWB recumbent may not be the perfect choice for touring, but it can do the job. I can certainly vouch for the durability of the Vision R-40 and never once had to get off and push it up the hills. I would still take my Cannondale back in a heartbeat if possible, but I am extremely thankful for the people who have the ingenuity to reinvent the bike to make it available for everyone. By the stars I received while riding, I'm guessing that 'bents are rare here. I returned home to find winter still hanging around, but with a good tan and great memories it was tolerable.

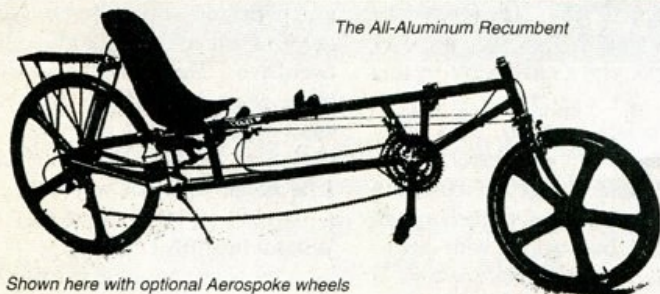
Despite my bad luck, the Kiwi experience lived up to all of my expectations as a great cycling destination. The campgrounds have full kitchen privileges and were all well maintained. Overnight fees ranged

from \$7-\$10 per night. Backpacker accommodations and hostels were abundant and were a great value at \$17-\$20 per night. The bus systems that interconnect all cities can carry your loaded bike upright. The rail service runs the entire length of both islands. If time is limited, I would suggest spending the majority of your time on the South Island, but don't skip the north altogether. There are several good touring books available in bike shops and general tourist info can be obtained by contacting the New Zealand Tourism Board at 1-800-388-5494.

Do not leave the island without trying the Lamb Kabobs and mutton pie! If you think you could benefit from my mistakes or are planning to visit New Zealand and need info, please write me: Cheryl Fisher, 204 Mohee Dr., Hartford City, IN 47348

If you have been some place that would make another good winter getaway or are looking for a tour partner, let me know. □

NOTE: RCN will run FREE tour partner postings for subscribers.



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Recumbent Touring

Vision Quest

Tales of a Cyclo Tourist Since 1958

by Gene Standley

I became a bicycle tourist in the summer of 1958 between my sophomore and junior years in high school, the addiction has lasted a lifetime. Every school day of that sophomore year began and ended with a 50 mile bus ride to the American High School in Augsburg, Germany from outlying American military bases. By the end of the year any activity outside the bus windows had become entertainment and boredom relief. Boredom ended when George Willard, my best friend that year, noticed a group of German high school age students pedaling by on bicycles loaded with camping gear. Excitement swept the bus! By the time we reached home that evening, every kid on that bus fully intended to bicycle across Europe the second school let out. George and I actually went a few weeks later.

We pedaled across Germany, France, England, Belgium, and back across Germany that summer on 3-speed bicycles. Mine resembled the old-fashioned American paper boy's bike. George's was German, but looked like what was called an "English bike" in those years. Both bikes were in the 35 pound range.

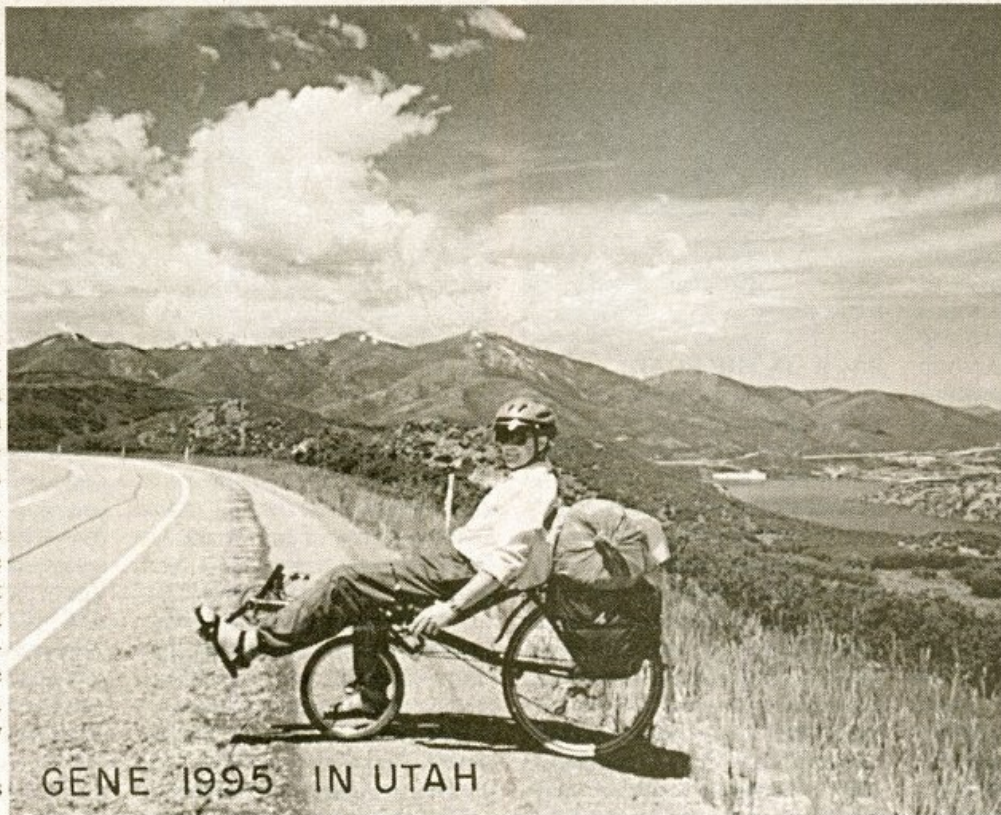
The trip was definitely the high point of four years of high school activities. We stayed in Youth Hostels when they were available and slept in farmers' fields just over the right-of-way fences when they weren't. The highlight of the trip was supposed to be a few days at the Worlds Fair (the first Worlds Fair after World War II) in Brussels, Belgium. But the real highlight has proved to be the memories which recur to this day when I pedal down a rural road and smell the new mown fields or wave to the occasional bicycle tourist.

We averaged nearly 100 miles a day on those 3-speeds. Even at age 15 it was obvious that bicycle nir-

vana was not a 3-speed 35 pound bicycle. Mine had heavy fat tires and George's were light and narrow. He was noticeably faster, but in 2000

ing this in advance, I pulled as much as three gallons every day. The trailer sometimes became unstable at speeds over 35 MPH with loads

fantastic, the people friendly, the bikes worked flawlessly, the trip really fun but that was the trip when we decided there had to be faster, more comfortable bikes.



GENE 1995 IN UTAH

miles I never had a flat. George meanwhile, became so proficient he could change a tube in 90 seconds with nothing more than a toothbrush. In the years since I have tried every type bike I could afford in the search for the elusive "Optimum Touring Bicycle."

During the summer of 1993 a 21-speed mountain bike towing a trailer proved to be a pretty good combination. Heavy, but good. State Highway 12 in Southern Utah between Panguitch and Capitol Reef National Park may well be the most spectacular highway in the United States (at least in desert country). My wife Sandi and I were a little nervous about the availability of water in this area so I decided to pull a trailer. Even though the altitude averages about 6000 feet, summertime temperatures often exceed 100 degrees (F).

Actually we never found any stretch longer than 60 miles between available water, but not know-

ing this in advance, I pulled as much as three gallons every day. The trailer sometimes became unstable at speeds over 35 MPH with loads

exceeding 50 pounds. The downhills on this road are steep and long - so are the uphill!

Both bikes carried 24/34/44 chainwheel and 12-28 freewheels for a 22-95 gear inch range. This proved to be adequate even on 7% and higher grades pulling a 50 pound trailer. Adequate is not perfect, no conventional 18, 21, or even 24 speed gear set will provide the lows and highs you really want in this country.

Not being totally fond of either road bars or mountain bike bars we decided to get radical. Both bikes had road bars turned upside down and backwards with mountain bars bolted across the tops. I defy you to find a set-up with more hand positions than that! Seats with springs completed the attempt to produce "heavy" comfort.

Even with all this, five or six hours in the saddle resulted in numb hands and tail sections, aching necks, wrists, etc. The scenery was

Think Recumbents!

In 1995 we finally approached bicycle nirvana. Two Vision R-42 frame sets were purchased. We decided to really do it right this time. We're in our 50's and as Sandi says, "We only have 10 good years left." We added the best components we could find: Stratics TI Bottom Brackets, Stronglight roller bearing headset, Stratics and Cook Brothers cranksets, Odyssey Svelte pedals, Shimano LX Derailleurs and brakes, Sachs 3x7 rear hubs with Mavic rims & Nimbus 26 x 1.50 tire, 20" front wheels with Mavic 531 hubs and ACS 20 x 1.75 100 psi tires.

Our definition of best is synonymous with reliable! A 24/36/46 chainwheel/13-26 cassette set-up with the Sachs 3x7 3-speed internal hub provides 63 gear ratios with a range of 18-122 gear inches. That should be wide enough for just about anybody! We don't even try to keep track of the actual ratios. The spacing is very close, almost as close as a racing bike. We shift exactly the same as on a normal 21-speed except that on steep hills the 3x7 is used as either an underdrive or an overdrive. This provides an extra three gears up or down with any chainwheel. It's the equivalent of having a 13-speed freewheel cassette when used this way.

What a beautiful system!

We have now logged over 1000 miles of recumbent touring (with 30 to 40 lb loads on the back) in Arizona, Utah and Wyoming. The Visions are totally stable with heavy loads up to at least 50 MPH. We generally average 50 or more miles per day. On standard bikes this is somewhat uncomfortable but on the



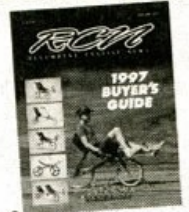
recumbents its like pedaling down the road in a Lazy Boy recliner. No sore wrists, tail-bone, no aching neck, amazing!

We tried the 16" front wheels first, but after one memorable day when we set a record with NINE flats we switched to 20" wheels. The 20" wheels handle about the same and have about the same seat height -IF- you re-drill the bottom seat mount for the minimum possible seat clearance. 20 x 1.75 tires are heavy but tough and available in even small towns (try to find a 16" tire or tube in Podunkville). I can't say anything good enough about the

LEFT: Gene in 1958

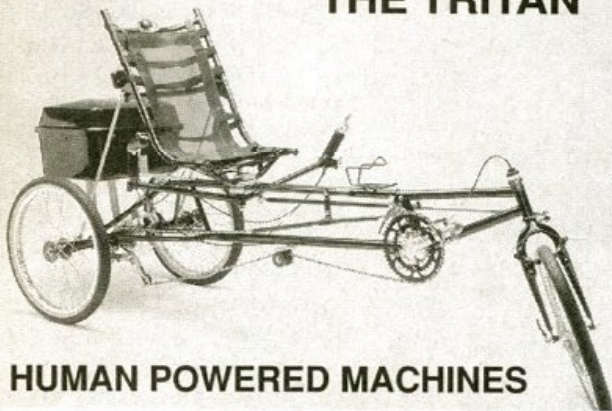
ATP Visions! They're fast, stable with a touring load and they look good! See ya on the Road one of these summers! ☐

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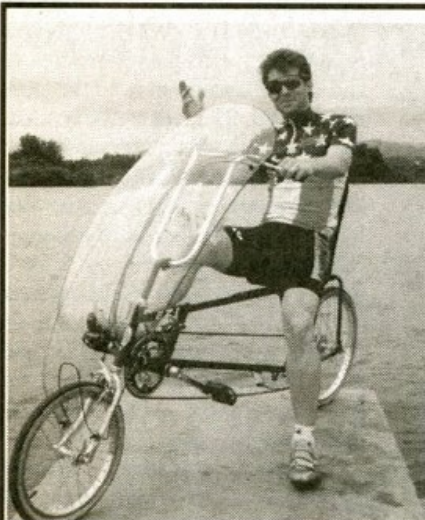
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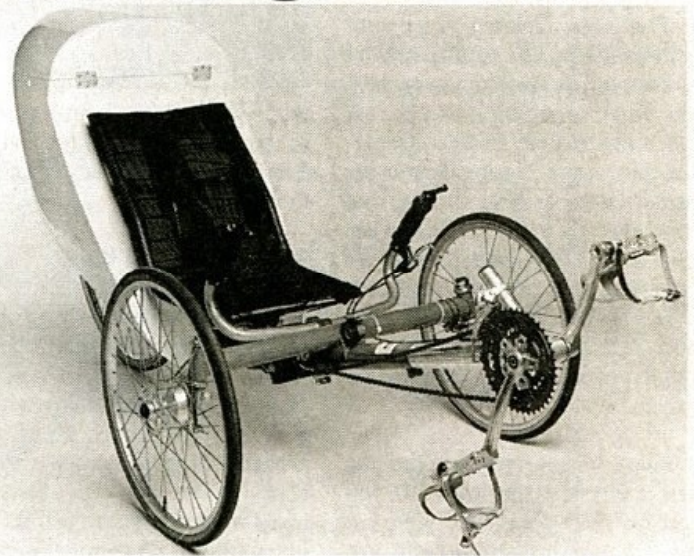
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The Best Clipless Pedals for Recumbents

Story & photos by Richard Drdul, drdul@mindlink.net

Why clipless?

If you haven't already switched over to clipless pedals, you should at least try a pair to appreciate the advantages. Most importantly for recumbent use, they keep your feet where they're supposed to be — on the pedals. There's no chance of accidentally dropping your foot on the ground, running over your legs and hurting yourself in a big way. Clipless pedals are also a lot easier to use than toe clips and straps, or PowerGrips. Pedals that offer "float" are easy on the knees.

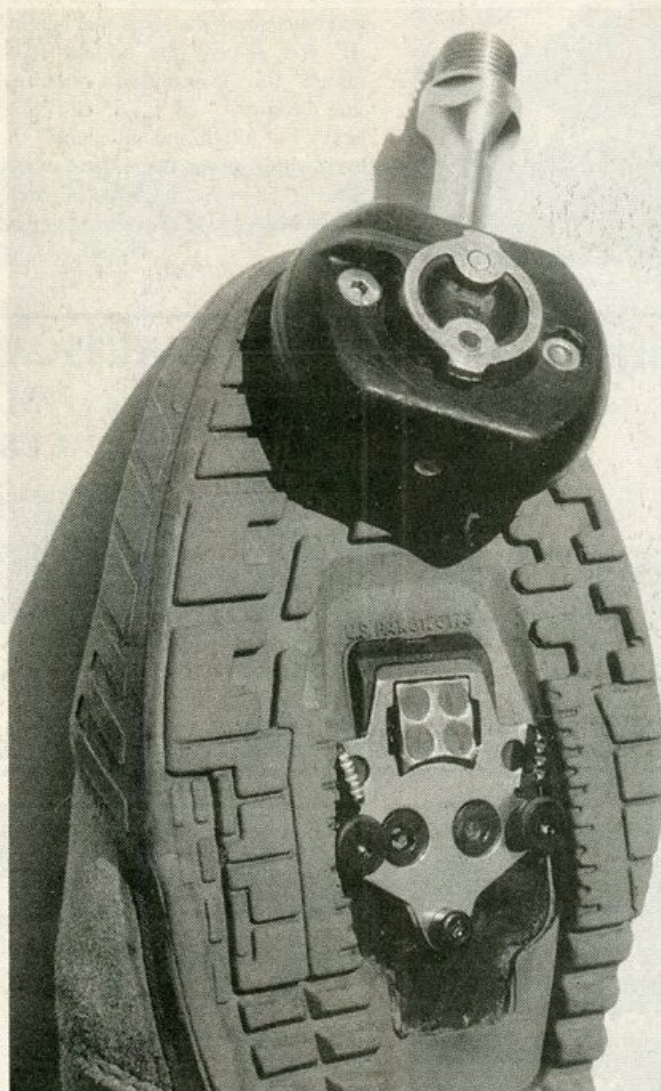
I converted to clipless pedals a few years ago, and at first I was ecstatic! As far as I was concerned, this was the best thing to happen to cycling since the invention of indexed shifting. After a while, though, certain features of the pedals that I was using started to become annoying. More and more brands of clipless pedals were appearing at my local bicycle store and in bicycle magazines, so I began the search for the ultimate clipless pedal.

What to look for

After buying and borrowing many different pedals, I've decided what makes the ultimate clipless pedal:

1. Walkable. Unless you use your 'bent primarily for racing, or you have a full-time companion to carry you over slippery surfaces, walkability is a key feature. Generally, this means that the cleat is recessed in the sole of the shoe, so that when you walk only the sole touches the ground. Or at least in theory — some cleats are so thick that they protrude beyond the sole, and some shoes have thin soles. If you value your hardwood floors, pay attention to this!

2. Float. No one (not even me) is a perfect physical specimen. If you were to ride your bike wearing smooth-soled shoes on platform pedals, you would likely notice that your knee naturally moves from side-to-side a little through the pedal stroke. And your foot rotates a bit on the pedal — it doesn't remain fixed in one position. Pedals with float are intended to permit this to occur,



while still holding your foot firmly in the pedal. I say "intended," because not all float is the same — more on that later.

3. Easy entry and exit. Clipping into your pedals shouldn't be a feat of strength, and similarly getting out of them should require little effort — especially important in a crash or fall when you want your feet to pop out of the pedals. Easy entry is particularly important on a recumbent, because you don't have your body weight to help push the cleat into the pedal. Pedals that were easy to clip into on my upright hpv's weren't so easy on my 'bent. I had to brace myself against the seat and push so hard to clip in that it affected my steering.

4. Reliable. This sort of goes with-

out saying, but you'd be surprised at the inadequate features and parts used on some high-end clipless pedals. I've heard stories about the bearings in "no-name" (and even some brand name) pedals disintegrating within a few months of use. Simplicity counts here. Lots of pieces and moving parts means two things — it is more prone to breaking, and when it breaks, it's more difficult and/or more expensive to repair. I've bought a lot of bicycles and parts over the years, and as a result I've become a firm believer in the "keep it simple" approach.

5. Price. Sure, it's important, but I put price last on the list because in most cases, you get what you pay for. Like anything on a bike, make an informed decision and buy the best you can afford. Maintain it regularly, and

you'll minimize the long-term cost.

Other features that aren't important to me might be important to you. Platform size, for example. My feet are slightly on the narrow side, so I don't find the platform size of the typical clipless pedal to be a problem. However, some people (like RCN's Robert Bryant) report that with their wider feet, they need a larger platform.

There's float and then there's float

"Float" has become the buzzword of clipless pedals. Most models now offer "float," and if you love your knees, you should buy pedals with float.

But, like everything in life, it's not quite that simple. What some manufacturers call float is a poor substitute for the real thing. What you want is "free float." Your foot should be free to rotate *without* any resistance to the point of release from the pedal. You also want a decent range of float — at least 10 degrees.

Some pedals — such as Shimano SPD's — have "sprung float." They use a pair of metal jaws and spring tension to hold the cleat in the pedal. The foot can be rotated, but the spring tension forces it back to a center position. This means that a small force is required to rotate your foot. That may be fine on a technical singletrack descent, but it isn't what you want for recreational road riding. Your foot wouldn't rotate as much as it would with free float, and the pressure exerted on your knee counteracting the spring tension is undesirable.

Some pedals do not have a neutral position. The foot can be rotated to any position. But in some cases — such as with Time ATAC pedals — there is enough force holding the cleat on the pedal that the foot doesn't rotate freely. It remains at whatever angle you left it, until you exert a small force to rotate it to a new angle.

Many pedals on the market offer only a small range of float — in some cases as little as 4 degrees. That means your foot can rotate 2 degrees either side of the center position. I can rotate my foot almost that much just by loosening my shoes a bit. The greater the range of float the better — ideally, you want your foot to be



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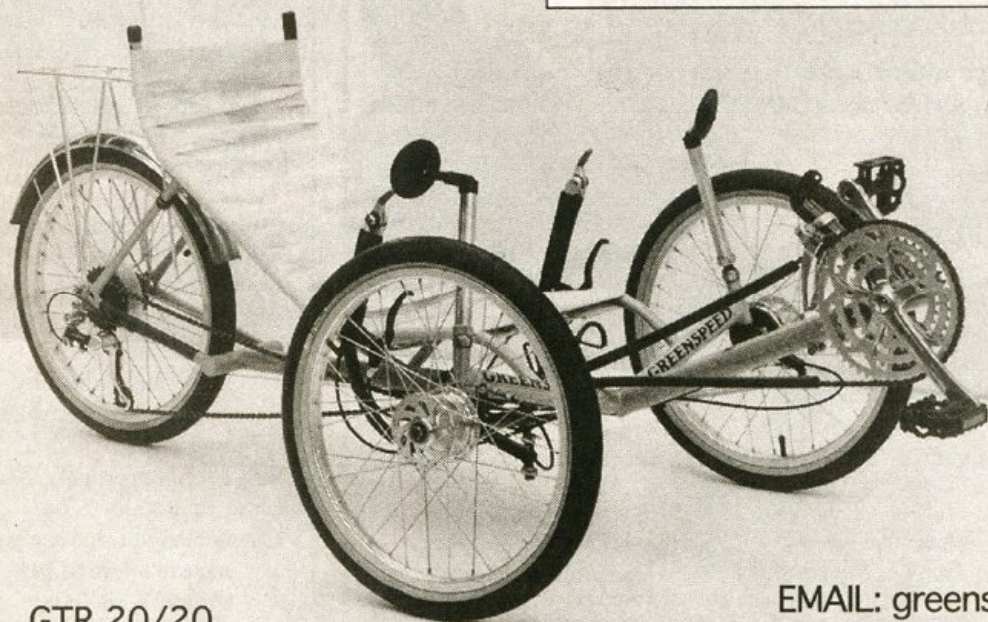
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GREENSPEED RECUMBENTS

free to rotate during the pedal stroke as far as it needs in either direction without resistance or obstruction.

So what's the best pedal?

"Best" is a pretty subjective concept. What's best for me may not be best for you. That said, the best pedal I've found for recumbent use (and upright use, for that matter) is the Speedplay Frog. Here's how it rates according to the five features of the "ultimate" pedal that I described earlier.

1. Walkable. The cleat is recessed, and will fit all SPD-compatible shoes. With some shoes, you may have to trim away the sole of the shoe a bit on the sides of the cleat area — if you're not sure about compatibility, the pedals come with a list of shoes and any modifications required to fit the cleat.

2. Float. How does 32 degrees of free float sound? Upright riders liken the sensation to "standing on marbles," but add that you get used to it quickly. On my 'bent this was never an issue.

3. Easy entry and exit. Clipping in is a breeze, and I never have to fumble around trying to fit the cleat into the pedal. Because they're double-sided, I just push my foot onto the pedal, the cleat guides it in, and I'm set. Release is so easy it's a joke — I just twist my foot out and it falls off the pedal.

4. Reliable. It's too soon for me to tell, but in my many inquiries on the Internet and at various bike stores, I have not heard any reports of failure. I have heard comments about the questionable reliability of titanium axles on pedals in general, and I suggest that you buy the steel axle version (it's less expensive, too). If you're really worked up about the



The Speedplay Frogs—Drdul

extra 45 grams per pair, remember that the Frogs are already one of the lightest pedals on the market at 250 grams per pair.

As for simplicity, it doesn't get any simpler than this. The only moving part on the pedal is the axle, and it's held in place by sealed bearings, which can be easily relubed with a grease gun. There's only one moving part on the cleat — a small metal tongue that depresses when you clip in and then holds the cleat on the front of the pedal. A word of advice — make sure that you get the current version of the cleat, the one with the red elastomer on the underside of the tongue (not the old-style

yellow or clear elastomer).

5. Price. \$130 a pair for the steel axle pedals.

Other pedals I've tried, but didn't like for one reason or another include:

Shimano SPD's. I tried both the SPD pedals without float (old style MTB pedals and the current A525 road pedals) and SPD pedals with float (new-style MTB pedals).

I didn't like the sprung float which forces your foot back to a neutral position. I also destroyed one pedal trying to relube the bearings — it seems that Shimano's poor design positions the steel sleeve on the

axle assembly against the inside of the aluminum body. The two parts froze together and I couldn't get the axle out.

• **Imported SPD clones.** No advantage over regular SPD's, with questionable reliability and availability of replacement cleats.

• **Time ATAC's.** Not free float, either. Because of the design of the cleat and the two retention bars, your foot will gravitate to the outside of the pedal. On older style Time pedals, some people have reported their feet actually rolling off the edge of the pedal.

• **Onza's.** Ten degrees of free float, but I still hated these pedals. Now Onza has gone bankrupt—enough said.

I have heard good things about BeBops, and apparently they offer the same free float as the Speedplay Frogs. I haven't tried other popular models, but have heard enough horror stories about reliability to stay away. Look and Sampson pedals are unknowns. And I've completely avoided Look-style road pedals because the large cleats make walking difficult. □

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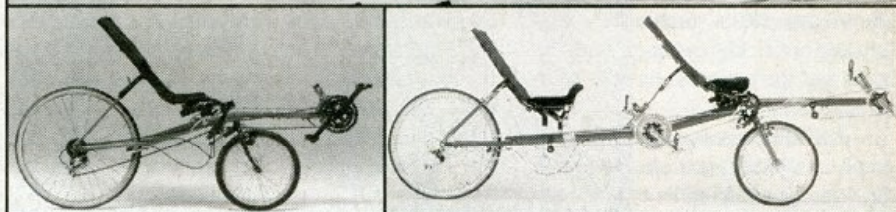
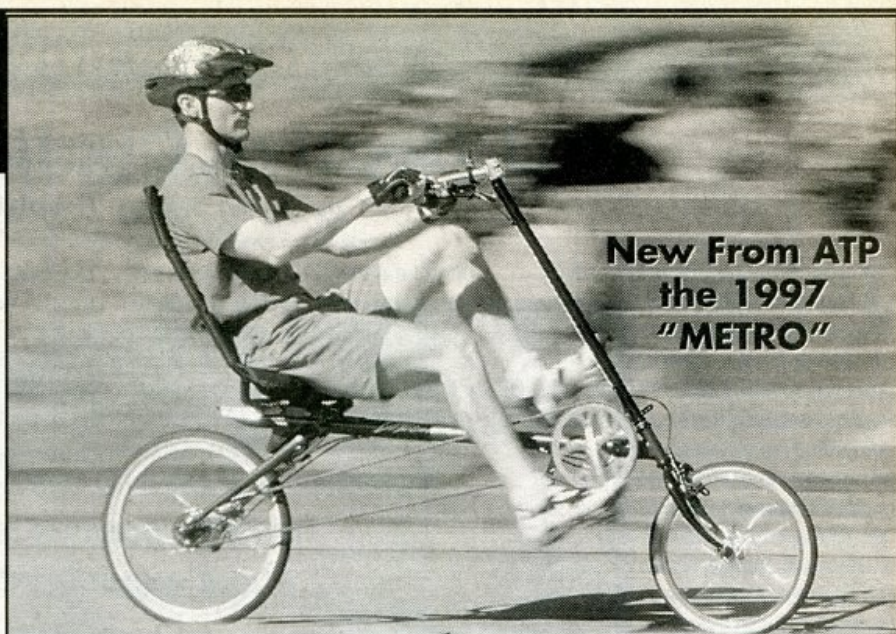
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- KMC UG 50 Chain
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The Rans V-Rex Zzipper (Ryan type bubble) photo courtesy of Richard Drdul

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Effective Cycling Rules

by Ryan Young, Bredt@aol.com

John Forester, formerly of MIT and Stanford, and a 4th generation cyclist, started collecting notes for an adult education class on elementary cycling in 1974. He soon realized that despite the glut of books on cycling, there was no single compendium of all the information needed to make a beginning at the "craft" of cycling. *Effective Cycling* is the name of the book, originally self-published, and the program that evolved from his work teaching the knowledge, skills, techniques, history and politics of cycling. Both the book and the program have a lot to offer ALL cyclists.

MIT Press gave John's mimeograph machine a rest in 1984 with the 4th edition. Mine is extensively thumbed, and several pages spattered with grease. It's my number one bike reference, and the newest edition, the 6th, is even better, since it covers the mountain bike explosion and the rapid evolution of equipment since 1984 (index shifters, for example).

Forester is a bit of a retro-

grouch, and has little positive to say about recumbents, feeling that their claimed advantages (aerodynamics, seating comfort, freedom from pitchover, lower cg) are oversold, and their disadvantages (general

awkwardness, poor climbing) are real hindrances. "I do not believe that the recumbent bicycle has much future." He pines for his old acetylene light, and spends a fair amount of time beating up on traffic engineers, highway safety programs, bike lanes, bike paths, and most of all, the Consumer Products Safety Commission. He loves half-step gearing, bar ends, hub gearing, and most everything English.

His pesky attitude in no way detracts from the fine material on choosing a bike, maintaining it, hav-

ing fun with it, and the absolutely crucial sections, learning to ride in traffic. The extensive material on Traffic Cycling is without peer, and should be read by everyone who puts a leg over any bike.

"Forester is a bit of a retro-grouch, and has little positive to say about recumbents..."

You can get your copy from your local bookseller, directly from the MIT Press or WWW.Amazon.com will sell it over the Internet for 20% off plus shipping. List price is hard bound \$37.50 or trade paperback \$20.00, ISBN 0262560704.

The Effective Cycling course started out as an 11 week adult education class, one hour of lecture and 2 of riding each meeting. Forester and the League of American Wheelmen, now the League of American Bicyclists (LAB), have created a network of about 200 Ef-

fective Cycling instructors all over the world, and the curriculum has been adapted to various age groups.

At the moment, the program is undergoing revision, to split it into separate, shorter (1 weekend or less), often sequential elements (Traffic, Maintenance, Effective Cycling for Kids). The curriculums for each element are also being standardized. Pilot testing begins this summer, and the revised courses become available starting January 1997.

For more information, including your nearest Effective Cycling Instructor, contact the LAB at 410-539-3399. Their web site is www.clark.net/pub/league/homepage.html and their e-mail address is Bikeleague@AOL.com.

The book and the course are vital for beginning cyclists of all ages, and a pleasure for even grizzled veterans. I recommend them very highly, and I'm using them to teach a treasured young friend how to be safe, secure, and happy on two wheels. □



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How to Build A Bent...Cheap

by Dave Tipping, nz1j@juno.com

Since the early 80's, when I first saw recumbent bicycles in the movie 'Brainstorm' and in an episode of 'CHiPs', I've thought that I'd like to try one. An article in *Bicycling* in 1994 intensified my interest. The article also provided the names of a few manufacturers and the address of *Recumbent Cyclist News*. I still wasn't ready to buy a recumbent, however. I had never ridden one and I didn't know if I'd like one enough to justify the cost.

BUILDING CHEAPLY

While I was considering the pros and cons of several different models, I began thinking about building an inexpensive recumbent to get some riding experience before buying one. As my plan to build a recumbent took shape, I decided to make a long wheelbase, above-seat steering model from several other old upright bikes. I knew that old bicycles were easy to come by. I thought that I had enough aptitude to finish the project and I had just about all the tools I would need.

A CHEAP MIG WELDER

The last piece of the puzzle was a way to join the steel tubing. I looked into oxygen-acetylene torches and arc welders. A MIG type arc welder seemed like the best solution for me. I found a model at a local home improvement center that used 110 volts and didn't require any bottled gas.

For \$300 the welder came with a mask, a chipping tool, plenty of feed wire and extensive operating instructions. I justified the \$300 cost to myself by thinking that the welder would last a lifetime and would have other applications besides building a recumbent. Now, over a year later, I have no regrets about the welder.

Though I don't produce professional quality welds, my results are

adequate and still improving. I have used it to build two recumbent bikes, I've fixed a broken heat shield on my car and fixed an office chair and an exercycle for friends. I don't see any reason why the welder would not last a lifetime. After an hour of practicing with the welder, I set out to build a recumbent.

HIDE YOUR WEDGIES

My idea was to use large sections from existing bicycles to minimize problems with alignment and weld strength. I sawed the rear triangle, including the seat tube, off of a 24" bike and removed the chain, cranks and seat. From a 20" bike I saved everything from the seat tube forward. With a couple of lengths of tubing from other bikes, I joined the two partial bikes together. With only a few cuts and a few welds, it was starting to look like a recumbent.

WHO NEEDS A JIG!?

I didn't build any jigs or fixtures at any time during this project. My goal was to quickly build an inexpensive bike to see if there was any point in building a good one or buying one. I clamped things in place and looked at them from every angle possible before welding. When the alignment looked right to my eye, I proceeded. After fastening a 2 X 4

to sit on, joining together enough chains to reach from the cranks to the rear wheel and welding an extension to the handlebars that I could reach, I was ready for a test ride. With no seat back or brakes and only one speed, my only goal was to see if this configuration was rideable. I'm happy to report that after a few minutes to get used to it, I was sure that this bike would be viable. What followed was many evenings of refinements and improvements. I put on some brakes, a 5-speed derailleur, made a seat and seat back from plywood, foam and fabric, made some handlebars and a chain-guard.

\$35 'BENT (+\$300 WELDER)

For about three weeks I was making progressively longer test rides and improving whatever annoyed me the most. After about 150 total miles I deemed the bike finished. I dismantled it and painted it. My cost at this point was \$35. All I bought was odds and ends such as a brake cable, paint and handle grips (and a \$300 welder). My nine year old daughter thought my new bike was pretty nice and asked me to build one for her. Using a 16" bike for the front and a 20" bike for the back, I built hers in much the same way as mine. Both of our bikes are shown in the photo.

WHO SAID HOME-BUILDERS DON'T RIDE

After one and a half seasons with my bike, I've accumulated 1750 miles. In one season my daughter has ridden hers 200 miles. I'm riding more than I ever have. My average speed is higher on my recumbent than it ever has been on an upright bike; this is probably due both to aerodynamics and to my improved fitness from the extra riding.

The only century ride I've ever done was on my recumbent. I felt good enough afterward to ride 40 miles the next day.

My wife really likes my recumbent, but wants

more than the five speeds I have. I'm now accumulating some better quality components: alloy wheels, 7-speed freehub, high pressure tires, etc. to build another recumbent for her.

'BENT SUCCESS

I am very pleased with the results of my experiment. My whole family has been converted to recumbents. The more I ride my recumbent, the more I like it. Anyone that can saw, file and weld can build their own recumbent bike.

PLANS ARE NOT NEEDED

Pick a seat height that feels comfortable. Make the bike long enough so that your legs reach the pedals. Put the handlebars where they're comfortable to reach and they aren't hit by your knees. Anything that you're not happy with can be easily changed. After a few hundred miles you'll have a lot better idea what suits you best; then you can either buy a recumbent or build a better one.

EDITORS NOTE:

We have a hand-out that has some simple hombuilder ideas available for \$3 to RCN HOME-BUILDER, PO Box 58755, Renton, WA 98058. □



Calendar/Rider Group Listings

1997 EVENTS

LOW DOWN & LAID BACK 'BENT RIDES
The first Saturday of every month, 9:30am at Lake Meridian in Kent, WA. We take a ride to the Black Diamond Bakery for lunch. There is a snack bar for those who don't want to partake in the fine dining experience. Ph/Fax #253/631-5728, DrRecumbnt@aol.com

12TH ANNUAL TOUR de POSSUM
September 20th, 1997
Texarkana, TX/AR
Contact: 903/793-7010
Email: Pengr@compuserve.com
http://www.bkx.com/tourdepossum

BOB GALLOWAY MEMORIAL AMISH COUNTRY TOUR "a great bent event"
September 20th
Aurthur, IL.
Contact: Dennis Cunningham @ 217/767-2730, (leave address).

LOW DOWN & LAID BACK RIDE TO THE BLACK DIAMOND BAKERY
Sunday September 21, Noon
Kent, WA Lake Meridian Park parking lot. Cookie, round powerbar (doughnuts) & coffee run. Contact: Bob 206/631-5728

LOW DOWN & LAID BACK RIDE TO THE BLACK DIAMOND BAKERY
Saturday October 4, 9:30 am

Kent, WA Lake Meridian Park parking lot.
Regular lunch ride
Contact: Bob 206/631-5728

LOW DOWN & LAID BACK RIDE TO THE BLACK DIAMOND BAKERY
Saturday November 1, 9:30 am
Kent, WA Lake Meridian Park parking lot.
Regular lunch ride
Contact: Bob Bryant 206/631-5728

LASERR RECUMBENT RALLY
December 1997
Contact Fools Crow Cycle/Ed Deaton
ph#904/224-4767 or_email: edde@freenet.tl.fl.us

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USA RIDER GROUPS

•ALABAMA/GEORGIA (North state): First Sat. of every month, 9 a.m. from Hokes Bluff, AL City Hall-Call Dave @ 205/492-3454 or Email: bur-gess@cybrtyme.com

•CALIFORNIA, EASY RACERS (Watsonville): 3rd Saturday of each month, 9:30am, ph#408-722-9797.

•CALIFORNIA, (LA area): Third Sun. of every month, 10 a.m. at Burton W. Chace Park, Mindanao Way, Marina Del Rey, CA. Chris Broom Email: cbroome@arco.com

•CALIFORNIA, PEOPLE MOVERS, (Orange County): Monthly rides to the beach in Orange County, Ph#714/633-3663.

•CALIFORNIA, (Palo Alto): Call Alvin Chin ph#415-571-5147.

•CALIFORNIA, (San Diego): Last Sat. of every month from the Mission Bay Visitors Center. Bill Volk, 2348 Lagoon View Drive, Cardiff CA 92007. Ph#619/824-8323, Email: bill_volk@lightspan.com,

•CALIFORNIA, EASY RIDERS (San Dimas/25 mi. E. of LA): Casual rides most Sat. 20-50 mi. and Sun ~10 mi. Call Leo Ketterman @ 909/599-0698 or leok@usa.net

•CONNECTICUT Recumbent Yankee Pedalers meet the second Sunday at 9am. Contact for starting point. Prospective riders can contact me: Dave Tipping 203/484-2937 or email: nz1j@juno.com

•CONNECTICUT, Looking for fellow recumbent riders to start up a Riders Group. Contact Laura at (203)483-0806 or E-mail: LG21spd@snet.net

•FLORIDA, FOOLS CROW CYCLES, LASERR, (Tallahassee): Call for schedule. Ed Deaton ph#904/224-4767 or email: edde@freenet.tl.fl.us

•ILLINOIS WISIL HPVrs,(Chicago area): Contact: Len Brunkala, 260 S. Channing, Apt.#1, Elgin, IL, 60120-6619.

•ILLINOIS Riders,(Chicago area): Contact: Fast Eddie Gin ph#773/237-6624

•ILLINOIS, (Champaign/Bloomington area): Tom Smith at ph#217/351-7305, Email tsmith@s.psych.uiuc.edu for info.

•MASSACHUSETTS (North Shore) Bent riders wanted! Zip areas 018 and 019, who might want to meet others of the same persuasion to ride on our nice backroads. Bob Hicks, 29 Burley St., Wenham, MA 01984, (508) 774-0906.

•MICHIGAN: Michael Eliasohn, 2708 Lake Shore Dr., #307, St. Joseph, MI 49085. Ph#616/982-4058.

•MINNESOTA, MnHPVA (Mnpls.): Meets 2nd Wed. 7:00 PM Lake Nokomis Community Ctr. Pre-Meeting Ride 6:00 PM - Mar.-Oct. Contact: Mark Stonich @ 612/824-2372

•NEBRASKA, County Cruisers (Omaha): Ride on the 2nd Sat., 6-30 mi. Contact: Armand Gibbons, No fees, no dues, just lots of fun! Ph#402/553-4472. http://www.nfinity.com/~armandg.html

•NEW MEXICO (Albuquerque) Ride one Sunday morning per month. Contact Hester at Absolutely Recumbent Ph#505/345-7736

•OREGON HPV ASSOC.(greater Portland): Meetings rides and a bimonthly newsletter. Ride contact: Jeff Wills @ 360/254-3736 Email: jwills@pacifier.com OHPV, PO Box 614, Beaverton, OR 97075

•TEXAS: R-BENT (Recumbent Bicycle Enthusiasts of North Texas): 4th Saturday of the month. Call for time and location, Ph#972/329-1225, Web: http://web2.airmail.net/imbent2/bentride.htm

•TEXAS: (Houston, Texas): Ride on the 2nd Saturday, 8am start. Meet at Katy HS year round. Come join us Contact: Pat @ 281/347-3627

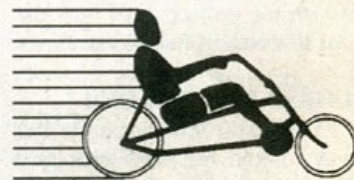
•WASHINGTON, LOW-DOWN & LAID BACK Recumbent Riders (Seattle, So. King Co.): Meet the 1st Saturday at 9:30 am and 3rd Sunday at 12-noon of the month at Lake Meridian parking lot in Kent. Info#253/631-5728, DrRecumbnt@aol.com

•WASHINGTON (SW) Vancouver Bicycle Club recumbent rides meet on the 3rd Saturday of the month from the Old Holland Bakery. Ride starts at 9am. Gale Simpson @ 360/891-1947

•WASHINGTON (SE) WRTW2* (Two Wheeled, Recumbent Riding Trombone Teachers of Walla Walla., Bill email: VonBruno@bmi.net

•WASHINGTON DC AREA: W.H.I.R.L. Meets Saturdays weekly 8 a.m. (9 a.m. winter) at the Viers Mill Rec Center, MD, north end of Beach Drive, weather permitting, at 8am Contact: Vic Sussman @ 301/565-3050 or whirl.cycling.org

•WISCONSIN: Greater Madison Recumbent Brigade. Last Saturday of the month 9am at State St. corner of the Capitol. May to September. Loose format. Bring suggestions for route. Contact: mfox@lss.wisc.edu



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BENT SHORTS

Minneapolis, MN—Calhoun Cycle announces its exclusive line of recumbent cycling apparel. They have chosen a few of the best cycling apparel designers and manufacturers and worked with them to modify their designs specifically for recumbent bicyclists. "Our customers demand high quality" says Luke Breen, owner of Calhoun Cycle. "That doesn't mean spending real money for a pair of shorts that really aren't what you really want, and then ripping out the chamois." After failing in his search for products that would meet his customers' needs, Luke decided to approach the manufacturers directly. "For the most part, they were receptive to the idea, though they questioned whether a market truly existed." The market has proved itself and Luke plans to increase the line for next year. "We've had several special orders for bib shorts and women's jerseys, so we're working on adding them to the line."

Their assortment of excellent apparel includes Bouré Tour Shorts, Pro Jerseys, Mt. Borah Sawtooth shorts and Cannondale liners. "We've tried to get an assortment that will accommodate the different styles of our customers." Luke is most excited about the Mt. Borah double shorts. "Perfect for people who don't feel comfortable in lycra shorts." The chamoisless liner is lycra, but the shell is a loose cut durable Supplex®. The best part is the adjustable leg straps, which cinch down to prevent ballooning. These are a functional, stylish pair of shorts.

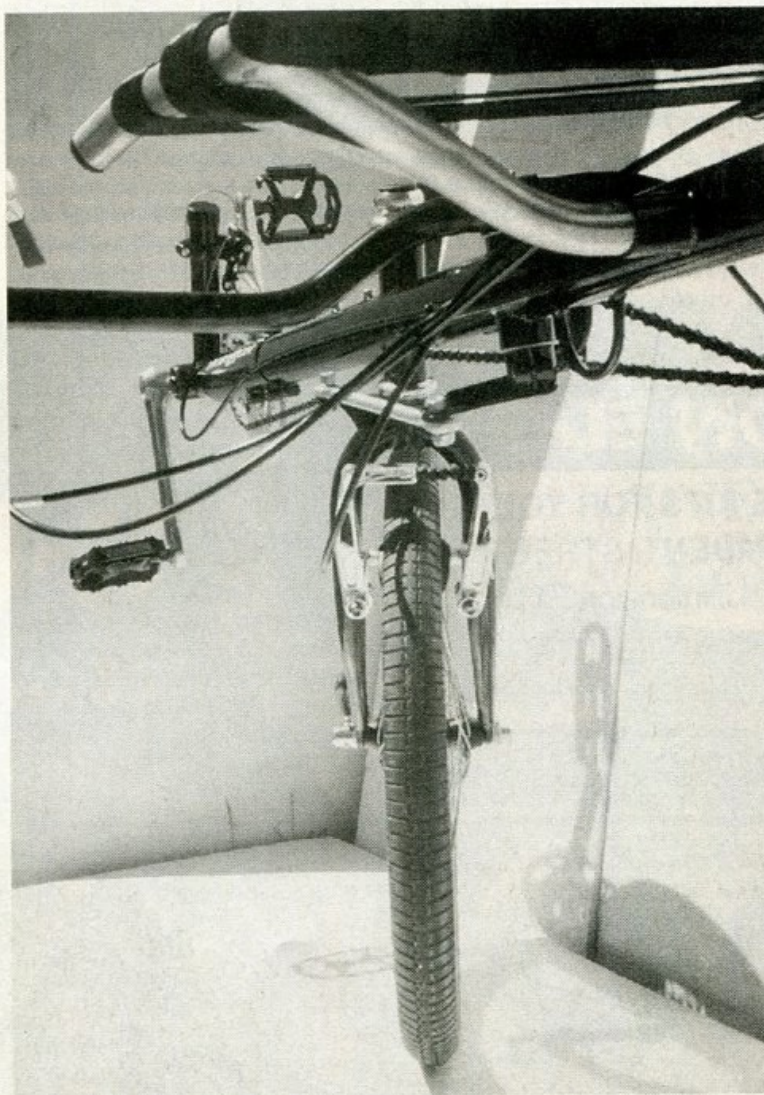
For the classic cyclists, the Bouré Tour shorts are excellent. They have an 8-panel construction, nice wide 1-1/4" elastic waistband, full length leg and "gripper" elastic. The dense Supplex®/Lycra® provides the look and feel of cotton, with the durability and performance of nylon.

Calhoun carries the Bouré jersey to be made without a rear pocket. The Intera® knit dramatically improves evaporation and creates a dry, bacteria inhibiting environment. "It seemed ridiculous to us to ride such high-tech bicycles, and wear cotton. Today's fabrics are high-tech and made for recumbent cyclists."

Calhoun Cycle ships their apparel free of charge and guarantees your satisfaction. To receive a catalogue, call them at 612/827-8231 or email: bent4good@aol.com



The new Haluzak Horizon-A with V-brakes and other select options—BBH.



The Haluzak Horizon-A V-brakes assembly—BBH.

HALUZAK ANNOUNCES HORIZON "A"

Santa Rosa, CA—In the past year many of our customers have opted for bar-end and brake upgrades

on the Horizon and Leprechaun models. Due to overwhelming demand, we have added a new model designation, the "A" models. These will come standard with both bar-ends,

"L" bend brake levers and bar-end shifters.

All Haluzak Bicycles are custom made to customer specifications. Any combination of parts and accessories is possible. All frames are powdercoated Fireball Red Metallic, Royal Blue Pearl or Cedar Green Metallic and come with a lifetime warranty, satisfaction guaranteed! You won't ride a better recumbent. The Horizon A retails for \$1495.

LEFT PULL V-BRAKES

Muir Beach, CA—We are pleased to announce Shimano XTR V-brakes with a custom modification for left side cable entry. These are ideal for SWB recumbents! You can now have the best possible rim braking power available for your SWB recumbent. The left-side pull XTR V-brake is \$93 + S/H. Contact: Zach Kaplan Cycles 415/381-5723 or email: zakaplan@earthlink.net

ATP VISION INTRODUCES NEW TANDEM CRANKSET

Seattle, WA—Advanced Transportation Products, Inc. is pleased to announce a revolutionary new product for tandems; the Independent Pedaling System (IPS). This unit allows for either tandem rider to pedal or coast at any time. The IPS is designed to replace a traditional tandem crankset with no frame modifications whatsoever.

Ideal for on and off-road tandems, the IPS makes starting and stopping the bike a breeze, as well as allowing either rider to rest at will. When used off-road, clearing obstacles is much easier since either rider can stagger their own crank.

The IPS unit is designed to be low maintenance and easy to repair if problems do arise. It uses standard 74/110mm chainrings, so about any gearing designed is available.

The IPS will be available in both 170mm and 175mm crank lengths (and possibly a shorter "kid back" version), and with an MSRP of \$495 for the complete set, without chainrings. The IPS is sold exclusively through bike shops.

COROPLAST FAIRING VIDEO AVAILABLE

Chicagoland homebuilt fairing guru, Ed Gin, along with Jim and Linda Wronski of People Movers in Orange, CA, put on a Coroplast Fairing Building Seminar this past Spring. The video is professionally produced and offers the best compen-

dium of homebuilder fairing information ever put together in one place. In the pre-build discussion, Ed Gin discusses how your bike should be dialed in mechanically, and how important good brakes are once you get the fairing on. He discusses how speeds 25% faster are possible with a coroplast body. Many of the Chicagoland coroplast fairings are built on Lightning P-38 and Stealth chassis because they are lower than most other SWB recumbents. For this seminar, the fairing was built on a stock Rans V-Rex24. From the video, the V-Rex is seemingly made for this conversion.

The SWB coroplast body can be built for less than \$100. A few sheets of coroplast, zip-ties, lexan, electrical tape and a few tools and you're on your way to a poor man's F-40. During the seminar, the fairing was constructed around a V-Rex in less than seven hours, with test riding at the end of the day. The excellent video lasts about 90 minutes and shows all of the steps in the process. A booklet of builder tips, photos, tools and supplies needed is also included. If you've ever considered building a fiberglass fairing, building plugs, moulds, you could be into it hundreds of hours. I once read a book on fairing construction, and had decided not to do it after the first chapter. The Ed Gin Coroplast method is the way to go for the aver-

age recumbent rider who wants ultimate performance, but doesn't have \$5,000 to spend on an F-40. To order your copy of this excellent video, call People Movers at 714/633-3663.

COMFORT CYCLES...BUILT WITH YOUR SEAT IN MIND

Cleveland, Ohio—Comfort Cycles, Inc., a new manufacturer of human-powered vehicles has designed an innovative three wheeled recumbent bicycle. The Chaise-3 offers high-tech construction for strength, reliability, and a smooth ride. But most important, the Chaise-3 is built for comfort!

Recumbent cycling means the rider generates more power for every stroke of the pedal, and moves faster compared to a traditional bicycle. Through aerodynamic design and ergonomic riding position, there's no stress on the rider's back, neck, or arms—riding the Chaise-3 is like "riding an easy chair on wheels." The 36-gear system lets riders pedal at their own pace, through flat or hilly terrain. Additionally, cycling in an upright position gives the rider a superior 180-degree view, ideal for both safety and for enhancing riding enjoyment.

The Chaise-3 is the ideal cycle for people of many different ages and abilities—even people who thought they could never cycle

again. The standard cycle adjusts to riders from 5'2", up to 6' 5." Each rider determines the correct pedal position for a customized ride, and the pedals adjust for another rider using just one hex wrench. The three-wheel base offers a secure and stable ride, perfect for people who have difficulty with balance or need to maintain control of their speed. The cycle can also be customized for riders who need single-hand controls, arm-powered pedaling, or other modifications.

In addition to an adult rider, the Chaise-3 has a 150-pound storage capacity, making the vehicle convenient for everything from riding to the corner store to riding along trails during a camping trip. CCI offers an optional soft pack, which doubles as a "trunk" and back pack. An optional windshield will keep out wind, cold and bugs, as well as further increasing aerodynamic efficiency. A windshield also extends the comfortable use of the cycle through colder months.

The Chaise-3 is easy to maintain, transport and store. Comfort Cycle provides prompt, direct shipping and offers easy assembly. The cycle uses standard parts and can easily be maintained and repaired by any bike shop or at home by a knowledgeable consumer. The Chaise-3 is easy to transport, since it fits most roof and rear bike racks.

Comfort Cycles, Inc. designs, manufactures, assembles, customizes and maintains more three-wheeled recumbent cycles than any other company in the USA. CCI's goal is to offer the most comfortable, most enjoyable ride possible, whether the trip is down the street, across town or across the country!

Comfort Cycles recumbent trikes start at \$1995. The company is based in Cleveland, Ohio and can be reached on the internet at www.comfortcycle.com; ph#216/475-6100; fax#216/475-1033.

MAKE ROOM FOR LIGHTMAN!

Fairfield, CT—Visibility Systems Company introduces two new Lightman models designed for bicyclists. Lightman is a compact high-intensity xenon strobe that makes you think of a miniature spaceship. Its design and extraordinary bright flash provide outstanding side visibility. Lightman is intended as a supplementary light for use on cyclists in high-risk traffic, at dusk and dawn, and in less than ideal conditions, such as in rain, snow or fog. Bicycle commuters will find Lightman of special interest.

Lightman was developed by Wade Halabit, a research scientist, former competitive cyclist, and an active recreational cyclist and bicycle commuter to this day.

A slightly different model of Lightman was introduced at the International Association of Chiefs of Police convention in October 1993. That model was designed for highway emergency and public safety uses, such as marking Medevac helicopter landing zones, tagging broken down vehicles until they can be towed, and for officers' personal visibility at accident scenes. Police bicycle patrols then began to use Lightman on their bikes on the top of saddle bags; because of its remarkable side visibility, the strobe does not have to face traffic.

Two Lightman models will be offered to the bicycle market: a stand-alone unit and a wired unit with a remote switch. A simple attachment called the "Anywhere Bolt™" permits riders to mount Lightman practically anywhere—panniers, reflector brackets, saddle bags or any size frames. The wired model, called "The Commuter™", places the switch wherever it is most convenient. This allows a cyclist to turn the strobe on or off without reaching back or stopping (upright bikes). Both models weigh just 3.5 ounces

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with batteries and provide 8-15 hours of service from a pair of AA alkalines.

- Lightman's distinctive shape earned it a spot in the Museum of Modern Art Design store.

- Lightman was included in several survival packs of Mt. Everest expeditions in 1995 and 1996.

- U.S. Navy Seals use Lightman during maneuvers.

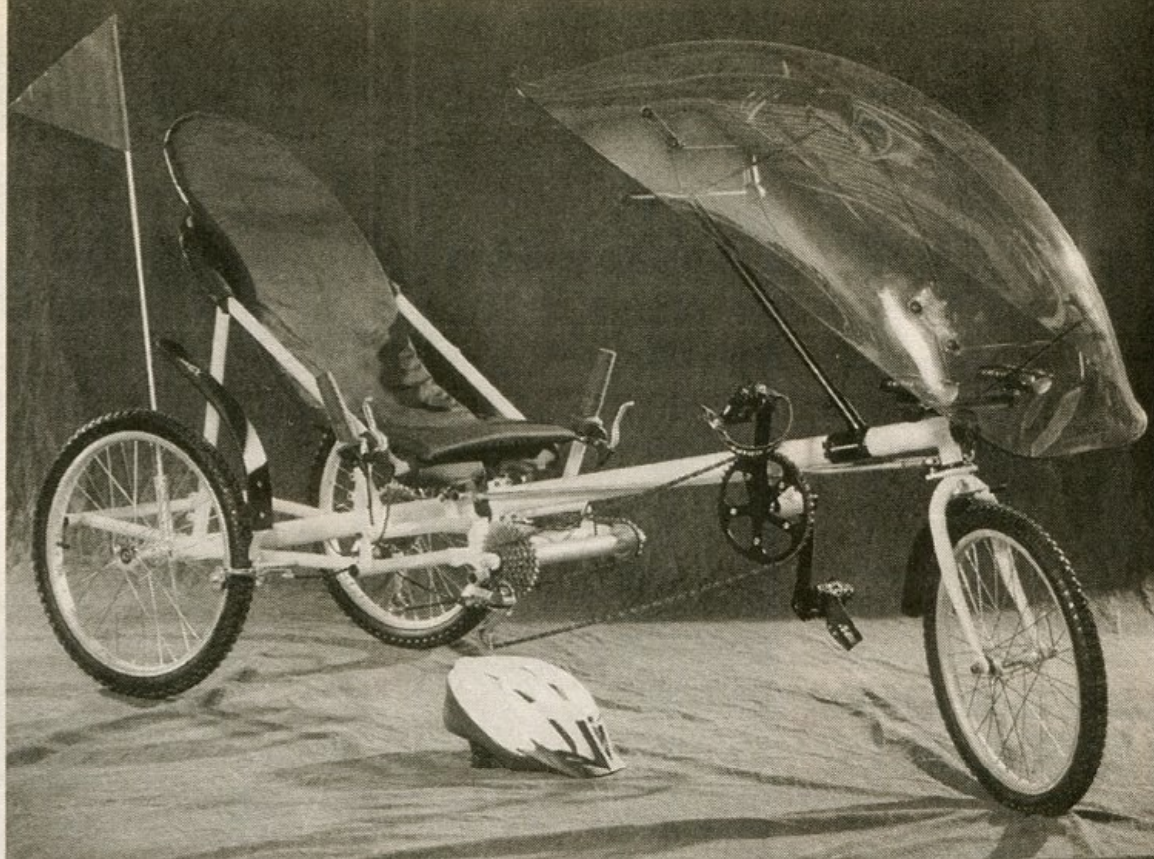
- LIGHTMAN is used by over 50,000 public safety professionals worldwide.

- Lightman was chosen as the "All Around Best New Bike Product" during the 1996 Whitney Classic, a grueling 136 mile ride from Death Valley to Mt. Whitney with 14,000 feet of climbing.

- The U.S. Secret Service uses Lightman while jogging with the President and Vice President.

- Police and EMT bike patrols in local communities put Lightman on bikes patrolling the streets, beaches and parks.

Contact: Lightman 203/254-2222, WWW.car-trek.com/lightman, email: lightman@nai.net



The Comfort Cycle Chaise 3 trike with optional Zipper fairing—Comfort Cycle

NEW PRIMO TIRE UNVEILED

The new Primo Comet is a 20" x 1.35" 406mm 100 psi. The tire is designed by Primo, USA and made

in Taiwan. Primo has truly become the recumbent tire company. The tire is an aesthetic match to the smaller

Primo 16" x 1-3/8" 349mm and Primo 20" x 1-3/8" 451mm tires that have been on the market for a few

years now. RCN was able to test out the new tire on a 1997 Rans Rocker Saturn-V on the Slumgullian Tour i

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Colorado this past June and they performed flawlessly.

NEW SPORTFLITE BY DRAFTMASTER MOUNTS WITHOUT A HITCH

Portland, OR—Draftmaster Sport Racks introduces the first rack in their line that attaches to a vehicle without the need for a hitch receiver. The new SportFlite mounts to the trunk or hatch of a vehicle with four straps and carries two upright bikes or SWB recumbents with fork mounts. This rack is an improved version of the now extinct Enflite Pro-Sport. It is similar to the Rhoadegear Euroshuttle only much simpler to attach to a vehicle and it uses solid aluminum fork-mounts. Available now from Draftmaster. The retail price is \$149. Call 1-800-659-5569 or <http://www.draftmaster.com>

LOAD LLAMA INTRODUCES NEW RACKS

Vail, CO—Nett Designs, a computer-conscious bicycle accessory company in Vail, Colorado is offering a newly patented rear bicycle rack designed for versatility, convenience, and safety. Sold either as a complete rack or as an accessory that fits on existing racks, Load Llama™. --The Ultimate Bike Rack™ features



The SportFlite from Draftmaster. We have successfully carried a Rans Rocket SWB on one of these on the back of a Mazda Miata

expandable, rotating arms that form a sturdy frame basket or stable flat platform to accommodate objects of

almost any size and shape. When not in use, the arms neatly retract.

Load Llama™ designer Ted

Simonett commented, "You know how often you see a kid riding with a basketball under his arm. This rack is ideal for him. It's so much safer." Simonett pointed out his rack is most useful to students and the growing number of exercise-conscious and energy aware commuters who rely on the bicycle for their primary transportation.

In addition to basketballs, briefcases, pizza boxes, coolers, and sizable boxes of groceries are among the objects that can be transported securely. Simonett has placed much greater demands on the ingenious system, testing it with a trombone, a cinder block and even champagne in an ice bucket (on a smooth road!).

San Francisco bike messengers started using the Load Llama™ extensively last summer. Aero delivery has attached more than three dozen of the racks to their bikes. The couriers find them extremely useful and durable.

The principle components of the Load Llama™ are a T-6061 aluminum base rack, the flexible delrin 100R arms and a unique triple bungee strap. Suggested retail price for the entire system is \$44.95.

For more information, contact your local recumbent shop or call 1-800-84LLAMA (845-5262). □

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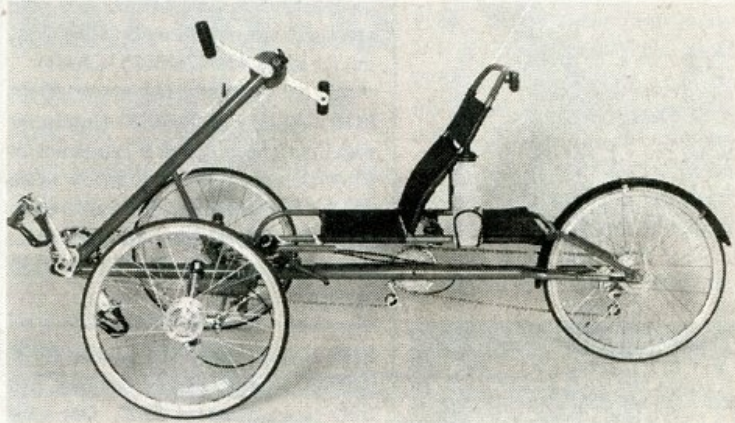


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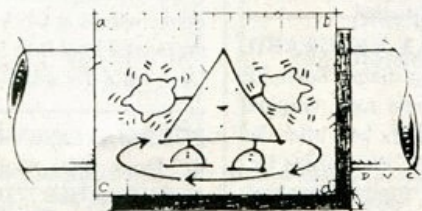
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If you are not currently an RCN advertiser and you are interested in getting our 1998 ad rates/media kit and Buyers' Guide info pack, please contact

RCN: at
206/631-5728

Classified Info

See page 40 for classified ad order form
RCN#42 ad deadline is:
October 1, 1997.

USED 'BENTS

FOR SALE: 1994 COUNTERPOINT PRESTO TI Loaded! Titanium frame and fork. XTR front and back. 23" to 103" gearing. Backpack for commuting, fender, mirror, computer, lockjaw bottlecage, 20" X 1 1/8" wheels, Zzipper front fairsing with body stocking, Speedplay pedals and cleats. \$3500 OBO. Call Bruce at 707/252 2785 (CA/41)

FOR SALE: 1993 EASY RACER Touring Bike. 800 miles, computer, fairsing, tools, etc. Excellent condition. Tom Edmonds, ph#615/670-4926 (TN/41)

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FOR SALE: EASY RACER EZ-1, large, black, Super Zzipper, Grip Shift, 21-spd., mirror, dual bottle cages, like new condition, only 50 miles. \$1300 new, sell for \$800. 408/426-3125 (CA/41)

FOR SALE: S & B SWB Aluminum with Spin wheels & S & B Tandem with hub brakes and ESP 9.0. Both low miles and lots of extras/upgrades. \$1275 each. Gary Lockhart, 900 Smokey Rd., LaGrange, GA 30241; Ph#706/884-7183 (41/GA)

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FOR SALE: 1996 Trek 1220 road bike, 56cm, Shimano RSX STI, blue/purple fade, 50 miles \$399. Trade for MTB/'bent? Ph#206/631-5728 (WA)

FOR SALE: RYAN VANGUARD, 1994 model, custom paint, Scott SE brakes, Blackburn rear rack, Original \$1600. For sale \$900 or best offer. Joseph Marzucco, 3628 SW Hillside Dr., Portland, OR 97221. Joseph@involved.com, Ph#503/227-4044. (OR/42)

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FOR SALE: INFINITY LWB 18-spd. S.I.S., red with several extras. \$450. Beautiful black homebuilt "Easy Racer" 21-spd. Zzipper fairsing, rack, trunk, computer, \$800. Call Charles Griffith at 910/567-5058 (41/NC).

FOR SALE: 1996 V-Rex 24/20 37" frame, blue, 24 spd. LX rear der., Suntour XC Pro Cranks, Sachs twist grip shift, Greaseguard Headset/BB, Sun rims. Excellent condition. Located in Florida. \$1250 + shipping. Ph#407/846-2758. Email:i14sail2magicnet.net (FL/41)

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FOR SALE: LIGHTNING P-38, 1992, Large size, Blue, Shimano Deore equipped, 16" and 17" front wheels. \$1450 OBO. Ph#303/933-4527 (CO/42)

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See page 40 for classified order form
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FOR SALE: VISION R-42, Under-seat steering. Includes SPD pedals, Vision seat bag, Lexan chain guard, extra bottle cage mount (behind the seat). Outstanding condition. 250 miles. \$850 + shipping. Phone Carole@315/682-5213 (day); Email: Jezzio@juno.com (NY/41)

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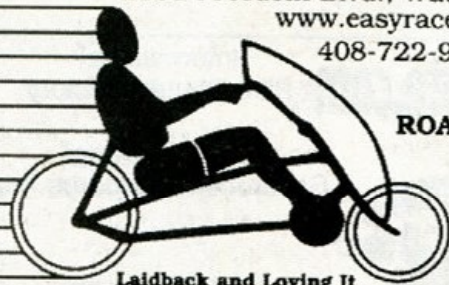


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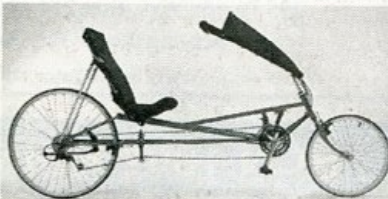
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RCN is printed bimonthly on a six issue per year schedule. We have added one issue to our line-up this year by making the '97 Buyers' Guide a single issue instead of a double:

- RCN#40—July/Aug '97
- RCN#41—Sept/Oct '97
- RCN#42—Nov/Dec '97
- RCN#37—Jan/Feb '97
- RCN#38—Mar/Apr '97
- RCN#39—May/June '97

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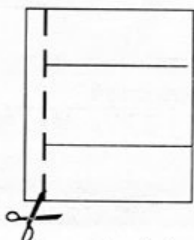


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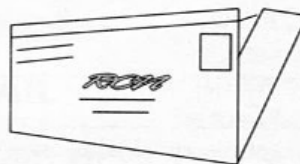
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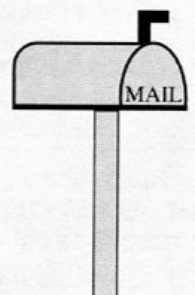


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Congratulations to Joyce Thompson of Milwaukee, Wisconsin. She submitted the correct solution to last month's puzzle: "Ride To The Beach." Her entry was selected from several correct answers. She will get a \$50 People Movers Gift Certificate.

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Recumbent Bob is in a strange land where everyone rides a bike. Recumbent riders always tell the truth and diamond frame riders always lie. He meets three riders at the rest stop but cannot tell what kind of bike they ride so he asks them.

The first rider replies but Bob doesn't hear the answer. The second rider makes the following 3 statements: 1) "The first rider said 'I am a recumbent rider.'" 2) "The first rider is a diamond frame rider." 3) "I am a recumbent rider." The third rider makes these two statements: 1) "The second rider is a diamond frame rider." And 2) "I am a recumbent rider." Which are recumbent riders and which are diamond frame riders?

Winning entry gets a \$75 People Movers gift certificate. In case of multiple correct entries, the winner will be chosen by random drawing. One entry per person. Answers may be submitted by either regular mail or email. Contest ends November 15, 1997.

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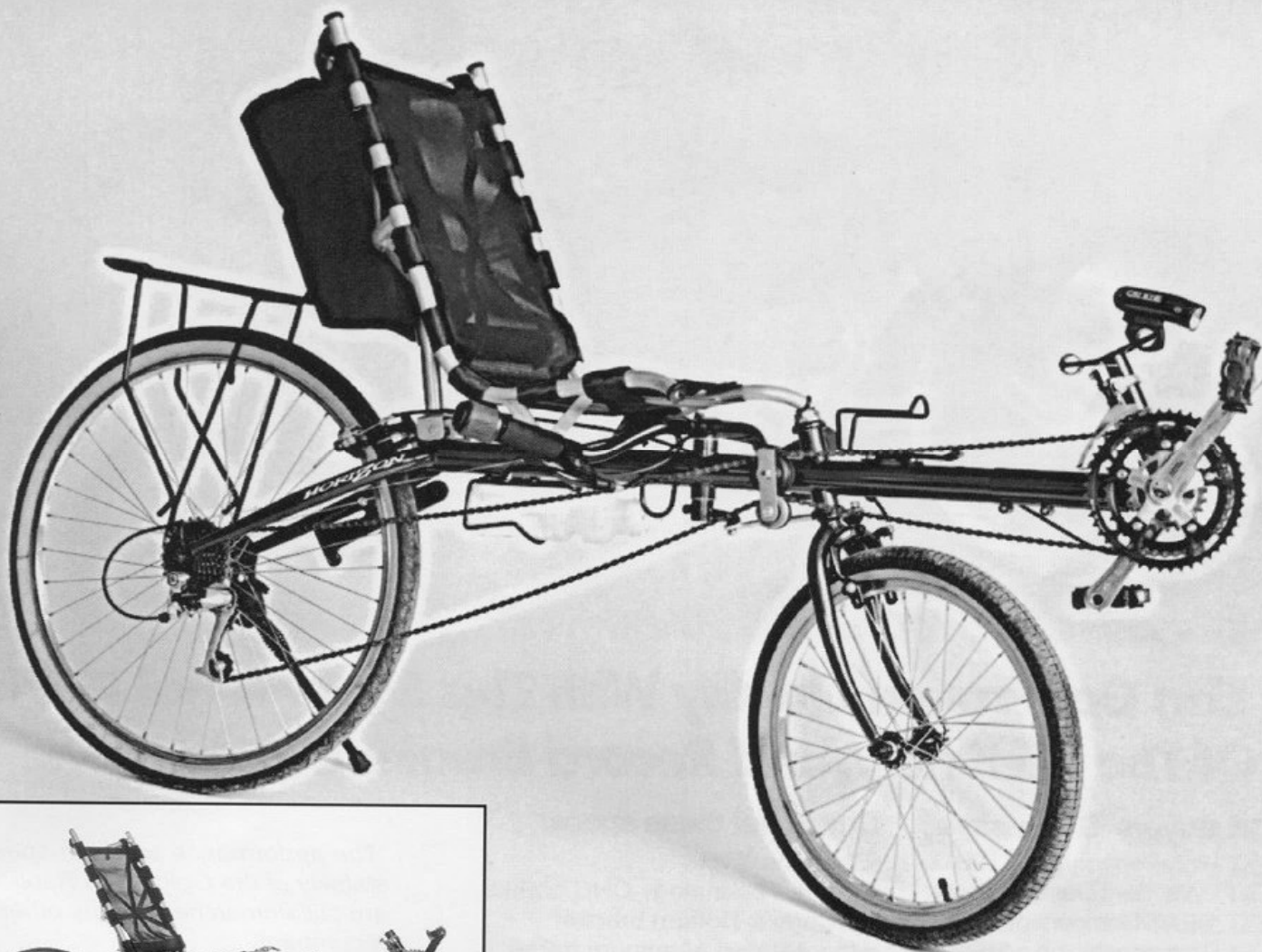
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