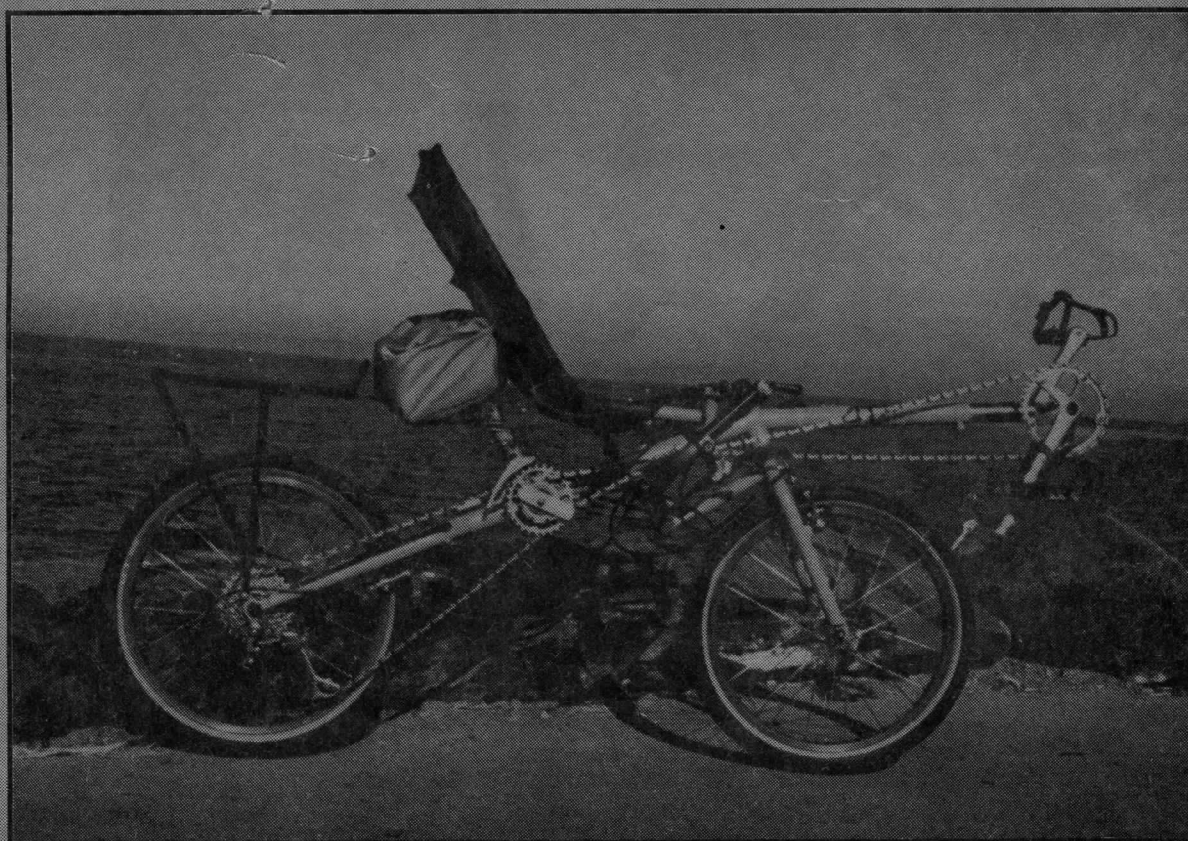


THE RECUMBENT CYCLIST

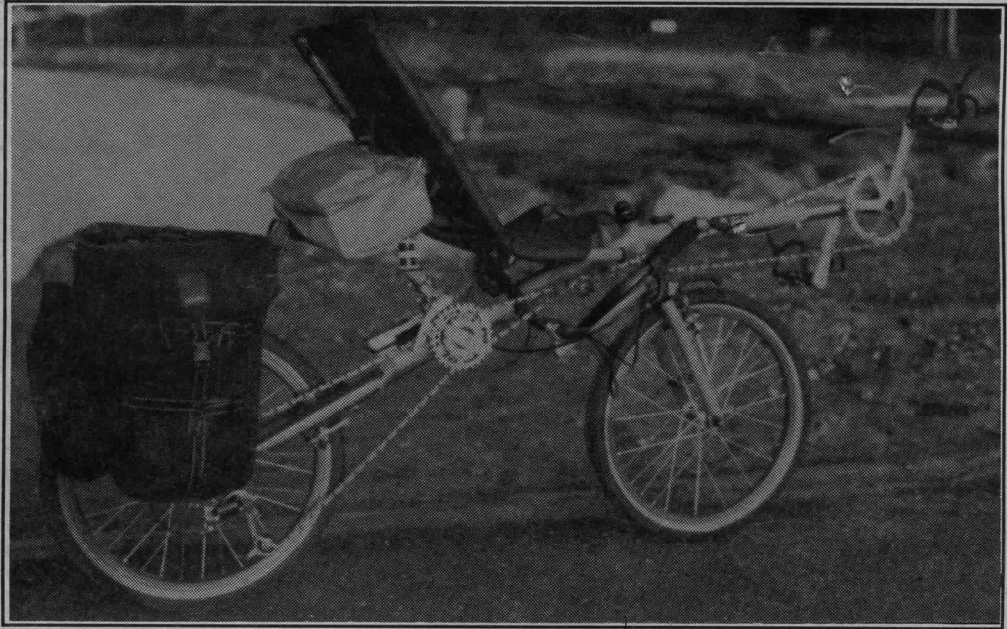
Jan-Feb 1992

The Official Magazine of the
Recumbent Bicycle Club of America

No. 9



Cover Story: ATP R-20 Road Test



A.T.P. "R-20 SWB Recumbent

THE ADVANCED TRANSPORTATION PRODUCTS (A.T.P.) "R-20"

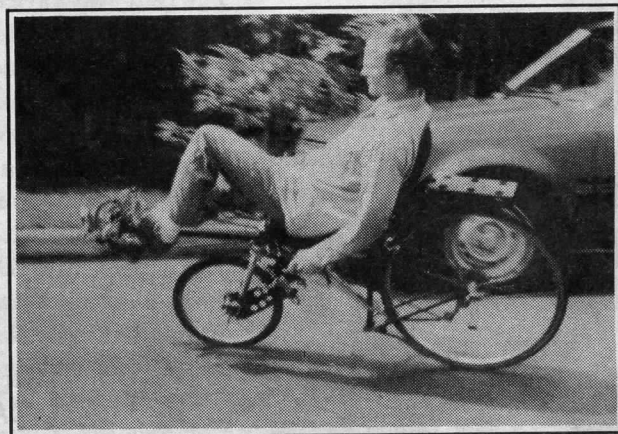
by Robert J. Bryant and the staff of the Recumbent Cyclist

The A.T.P. R-20 is part of a new breed of SWB recumbent bicycles. Why a new breed and what makes it different? This innovative new class of recumbent offers new answers to old problems. First of all, you'll notice two wheels of the same size, 20" wheels. Then you'll see that the bike was designed to offer virtually no heel/front wheel interference. Next you'll notice the innovative CycloPedia "Intermediate Drive" dual chain/intermediate idler drivetrain. The R-20 is the first production recumbent to offer this system. Besides a trick drivetrain, the ATP bike offers some interesting features in the rider comfort department; an elastomer (rubber bumper) sprung seat and an original underseat steering/handlebar set-up. All of these features combine to offer a package that is unlike any other currently available.

A.T.P. HISTORY & DESIGN

The A.T.P. R-20 is a home town bike. It was designed and built by Edmonds Washington HPV enthusiast, Joel Smith. The R-20 production frames are built by a professional frame builder in the Seattle area who specializes in Titanium and builds custom-order bikes. He also has experience building recumbents. When Joel Smith isn't building and riding recumbents he is an Aircraft Structural Engineer for the Boeing Aircraft Company. Joel started to build his first recumbent nine years ago. His first serious endeavor was a recumbent trike built two years ago. It was a lean to steer trike built with three 17" wheels and painted shades of yellow and green. It was a striking vehicle and received much attention at the Portland (OR) International Human Powered Speed Championships in August of

made even more changes in the first few production models. The original prototype has seen 2000+ miles in the last 1-1/2 years. In a discussion about his new bike, Joel mentioned that the two people who influenced him the most in recumbent design were Grant Bower, who is well known in the Northwest and HPV circles for his neat "Bower Bike" SWB recumbents and Jim Weaver, the



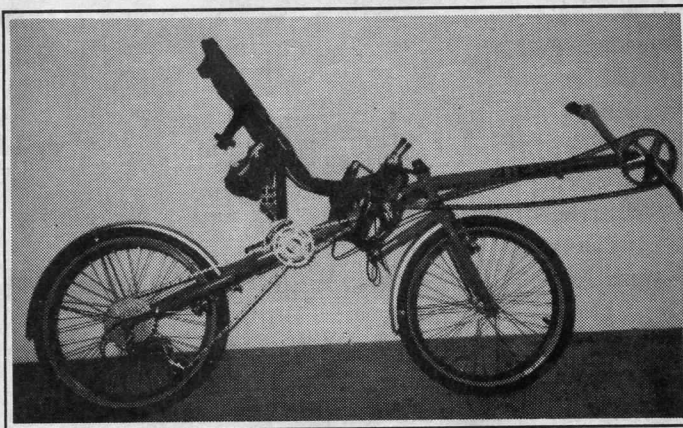
Grant Bower's 1991 Suspended Bower Bike

designer of the Counterpoint Presto SWB recumbent. The Presto is the original "new breed" SWB recumbent and was designed in the mid 1980's (the Presto will be tested later on this year).

We first saw the R-20 at last years Seattle Bike Expo where it received rave reviews. For those of you who have seen that bike, the 1992 production version is even more refined. The changes include: a better custom built fork, slight frame modifications, updated and more comfortable seat, a custom bend handlebar and updated componentry.

FRAMESET: MONOTUBE FRAME DESIGN

The monotube frame is built of .049 1-1/2" diameter chromolly TIG welded steel. The fork, seat frame and handlebars are also of chromolly and is designed and built specifically for the R-20. There are no off-the-shelf BMX forks here. The R-20 frame is built on a custom-crafted frame jig that is built with no expense spared by the frame builder. The front boom is forged stainless steel and slides to accommodate riders from 4'11" to 6' 4" tall. Custom lengths are also available. The bikes are powdercoated a gorgeous Aqua Marine; custom colors are also available. The wheelbase is 38" with a weight distribution of approximately 57% front and 43% rear. The head tube angle is 68 degrees. The R-20 offers a brave new frame design with the monotube frame and stays along with the higher riding position. This well thought out frame design is also strong, Joel Smith does structural analysis in his profession and he



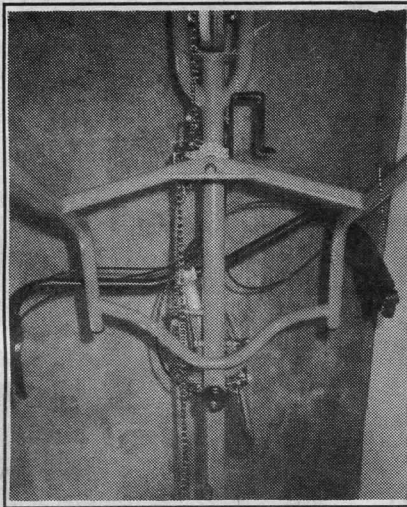
1990. Joel says the design was lots of fun, but not suited for the mass market.

The R-20 was designed in late summer 1990. Joel built just one prototype, but modified it four different times and

designed the R-20 to have a safety factor of 4, with a 200 pound rider. The bike is overbuilt in all respects.

MONOTUBE FRAME; UNSUPPORTED REAR STAYS

Monotube SWB recumbent frames are accepted and even preferred by some enthusiasts. The unsupported stays are fairly new, especially to recumbents. On the R-20, they are a topic of great interest among intrigued recumbent enthusiasts. ATP has supplied us with information on the design theory of the R-20, and the information is as follows.



The rear stays are extra tough MTB fork blades with top quality drop-out. They are TIG welded to both sides of the main frame tube. A cross-brace (1" ahead of the rear wheel) also connects the rear stays and main frame tube for added strength and stiffness. ATP feels that the 1" stays are even stronger than main frame because the two frame

tubes are splitting the load that the 1.5" mainframe does. In other aspects of cycling, bikes with no rear triangle are gaining popularity. Many of the new suspension bikes have unsupported rear stays. In the recumbent scene the Kingcycle uses dual tubes that run the length of the bike. According to the R-20's designer, a conventional bike needs the stiffness of the diamond design to support the side to side twisting from the torque to the pedals. The R-20 does not require the triangulated stiffness of a diamond frame because the pedals are out front on the boom. In technical articles, bicycle stress analysis is not done to check total load (weight) or the road shock, but to check for stiffness related to the pedaling motion.

SLING STYLE SEAT

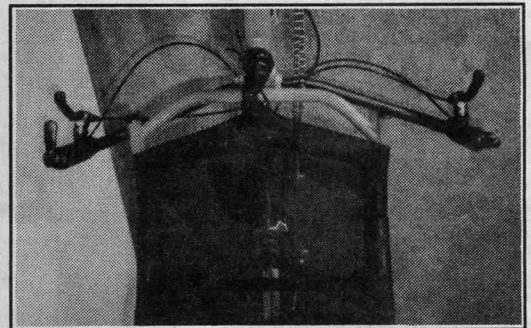
The nylon mesh seat is suspended on an expertly designed and built seat frame, powdercoat painted to match the R-20's frame. The seat is mounted in front at two rod end bearings connecting the seat frame to the main frame tube, to allow a pivoting action. In the rear it is attached via the elastomer suspension unit. This unit rests upon the fully supported front derailleur tube, which due to the intermediate idler that acts as the triple crank, is just behind the seat. The front center section of the nylon seat material is suspended upward from the head tube to keep you from sliding forward in the seat. This "soft seat horn" is virtually unnoticeable and works very effectively. The seat material is

easily removable with four nylon snaps similar to those found on lightweight back and fanny packs. The seat frame itself is removable with three bolts. A rack attachment mounts at the front derailleur tube/ seat suspension connection. You can also add washers here to change the seat recline angle. The whole system is uniquely impressive.

Typically, the use of 20" wheels raises the bike, seat and boom's height. The R-20's frame and seat were designed so that all riders can rest both feet on the ground during stops and starts. How is this achieved? The seat siderails are fairly short and are positioned at a declining-forward angle to keep them as low as possible. The front center of the seat is attached to the head tube and also rests on a rubber doughnut that attaches to the seat cross support, which rises up and over the main frame tube. When looking back at the bike from a forward view, you will notice that the cross support runs from the right rail, drops downward and then back up to and over the main tube then back down and up again to the left rail. The two drops look like a very shallow "W", perfect for your thighs to rest in while at a stop. This makes the front side sections of the seat very low allowing shorter riders to rest with both feet flat on the ground. You also stay snug in the seat and do not slide forward. To check this out, RCM's 5'4" business manager was able to sit on the R-20 flat footed and ride with no problem. This instills confidence for first time SWB recumbent riders.

INNOVATIVE UNDERSEAT STEERING & CONTROLS

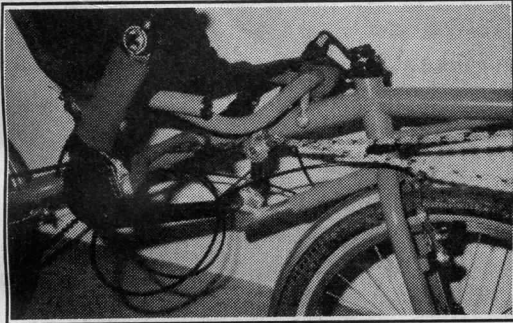
The R-20's steering and controls are very innovative. A very strong custom stem-extension is TIG welded directly to the front fork. A Sakae alloy stem inserts into the extension. The handlebars can be described as a custom shallow "V" (as they come away from the stem) with attached bar ends. There is no other production underseat steering recumbent with bars that are this well thought out. Many recumbent riders have modified their handlebars with aftermarket extensions, but no recumbent manufacturer has ever designed them into the handlebar like this. Similar bars will improve any SWB or LWB with underseat steering. The extension ends on the handlebar offer unbelievable control,



sort of a "dual joy-stick effect". With this type of controls, there is no problem reaching the handlebars as on some underseat steering recumbents. The controls are at your fingertips and unlike any other underseat steering recumbent, you can actually see them. NOTE: Bar extensions can be added to any underseat steering recumbent through the use of "Onza" or "Control Stix" type MTB extensions or custom machined extensions. We have even seen pieces of old lawn chain used for this purpose.

SHORT WHEELBASE DEBATE

Many readers feel that a wheelbase of less than 40" is too short. Some think the medium 40"+ wheelbase is the



answer. Others do not acknowledge the existence of a MWB, and lump all "cranksets in front of the front

tire" recumbents into the SWB category. Again, I will quote my nonscientific opinions. I have ridden many SWB recumbents with less than a 40" wheelbase which are as stable or even more stable than those with 40"+ wheelbases; therefore, I cannot say that more wheelbase means more stability. When asked to comment, Joel Smith had this to say, "Stability is mostly governed by steering geometry and proper trail. Many road bikes designed for high speeds have wheelbases much less than 45", usually around 38", which is the R-20's wheelbase".

COMPONENTRY

The components are upper-line Suntour, hand picked and work very well together. When comparing them to Shimano, I would say that XC-LTD is very close to Deore DX. The derailleurs are front-XC Comp, rear XC-LTD. Shifting is done by tried and true Suntour Bar-Cons. With the special handlebars, the shifters face upward. To shift, you slide your wrist forward and click—21 indexed speeds. The hubs are Suntour XC-LTD with a 12-28 (our test bike had the optional 12-32) 7-speed freehub. Rims are Sun Ultra Hard Anodized hand laced and trued with stainless steel spokes. Another special touch is the two great quality silver Suntour chains. The front single crank is a Suntour Radius; our test bike had a 39 tooth chainring.

BRAKING

No long reach BMX sidepulls here. The Suntour XC Cantilevers and matching levers offer the best braking we have ever experienced on a SWB recumbent, hydraulics

not included. Joel Smith and A.T.P. have designed a pivoting cable mount that allows use of a front cantilever brake. Without this, the front cantilever would not work. It pivots off of the fork and allows each side of the brake to be pulled side to side and together, rather than up and together which would get in the way of the boom. The brake cable housing connects to the pivoting cable mount rather than running to a standard headtube or cantilever bridge mount. This setup works excellent and is a great innovation to SWB recumbent braking.

INTERMEDIATE DRIVE

The Intermediate drive was designed by and originated on Jon Stinson's "Stinson Flyer" faired HPV and is also available to home-builders and manufacturers through CycloPedia in Adrian Michigan. Gaylord Hill also utilized this drivetrain on his kit/plan built bike the Econ-Bent. The modified freewheel is made up of a top quality Regina freewheel body and four repositioned cogs of your choice. This is a basic modification; the pawls are removed and cog positions changed. Our test bike had intermediate (micro-like) cogs of 16-21-28. The shifting performance was very good. Shifting is done by a standard front derailleur. It is smooth and takes less effort to shift than the equivalent large chainrings (60+) needed to get the same 107 gear inch high gear. With slight variations in the intermediate cog sizes, high gears of nearly 130 gear inches are possible without sacrificing your low gear.

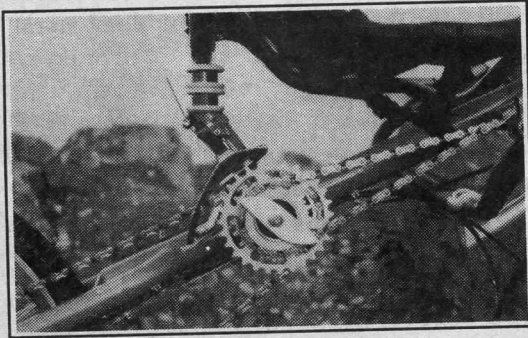
To get similar gearing without the Intermediate Drive, a triple crankset with chainrings of approximately 39-52-64 would be needed. 60+ tooth chainrings are large, expensive and can be difficult to find. When I researched these parts availability, there was some debate among bike dealers as to whether the Regina freewheel parts or the large chainrings were more difficult to find. CycloPedia provided me with a list of freewheel brands and models that will work as Intermediate Drives. Both set ups can be worked on by your local bike shop, however they may be more familiar with large chainrings.

On our test bike the complete Intermediate Drive consists of (from the outside inward) a custom machined chainguard is bolted on the outside, next is a 17 tooth cog that drives the forward chain out to the single crankset. Next in line is the 28 tooth cog, then the 21 tooth cog and finally the 16 tooth cog on the inside. These act as the triple chainring that drive the second (rear) chain back to the rear wheel and standard 7-speed Suntour cassette freehub. Got it?

INTERMEDIATE PRO & CON

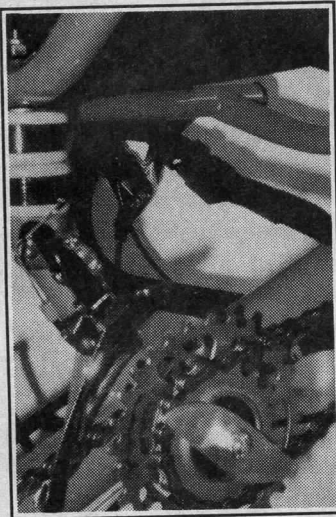
We found a few points worth mentioning. Not being able to see the Intermediate Drive (triple crank) takes some getting used to; you must learn to feel where your three

chainrings are to trim your shifts. Skeptics will argue that



this system adds friction which robs efficiency. Similar drive systems are used on racing HPV's where this does not seem to be a problem. The amount of friction lost (if any) should not be a consideration to most recreational riders. However, the Intermediate Drive is a more complicated system than a standard drivetrain. To decide whether it is adaptable for your specific needs, you should chart the gears that you plan to use. The benefits of Intermediate Drive come when high gears of 100 gear inches and up are called for (most recumbents have high gears of 104-112). Standard drivetrains with large chainrings and 20" wheels usually allow high gears of around 100 gear inches. This may change if someone comes out with an 10 or 11 tooth small cog.

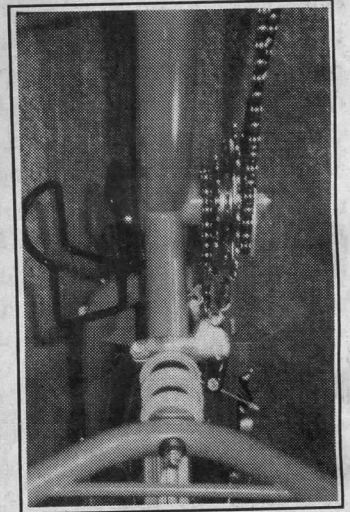
You will notice there is lots of chain on the R-20. It is expertly handled by this drivetrain. The forward chain has one idler (a single derailleur pulley) that is under the seat, it guides the chain out to the crank. The tension on this chain must be correct, not too tight or too loose. This takes the exact amount of chain links along with the proper boom adjustment, otherwise the forward chain can have too much slack.



The Intermediate Drive system also adds some weight, between one and two pounds. Our test bike weighed in at 32 pounds without accessories. The manufacturer's target weight is 30 pounds. A lighter weight fork and other minor changes should bring the weight down. An ultra-light weight machine was not the design intention for the R-20. The goal of it's application on the R-20 is wide range and high gears. If you don't need this, the Intermediate Drive may be over-kill. In this test, we were very pleased with the Intermediate Drive's overall performance.

ACCESSORIES

The R-20 will take many standard bicycle accessories. A Blackburn 24" MTB Rack is offered as an option. Custom fenders are also available through the manufacturer or dealers. A computer mount comes standard and your favorite fanny-pack snaps into place behind the seat frame. With the lack of a rear triangle, hitching up our Burley trailer was tricky. Once the Blackburn rack was mounted, a triangle was formed which solved the problem. With a bike this new, fairings are not yet available but are currently on the design table. A nose and tail section fairing are most probable.



R-20 PRACTICALITY

This bike is extremely practical. It can be transported on a roof rack or standard bumper type car racks. The seat and the two 20" wheels remove quickly providing a compact package. The bike has a great gearing range for all types of terrain. The "RL Edge ACS 20" X 1.75 100 p.s.i. tires are



hard, tough and they roll very fast. During our winter test, it was the rainy season in the Northwest. Every day we faced new weather challenges. On one occasion, while out on a bike trail, the trail was under construction and I was forced to ride for four miles on crushed rock, gravel and uneven pavement. The R-20 was able to handle this with ease and maintain stability all of the time. One morning there was a heavy frost on the trail and a dog jumped out in front of my path. Under hard braking, the bike hit a patch of ice and went into a skid. The R-20 handled it in a very controlled manner. As for touring, A.T.P. told us that

they have taken the R-20 out on the road and it carries a touring load with ease. Our test bike was outfitted with Esge fenders and a Blackburn 24" MTB rack that kept the rain and spray off effectively.

MARKET NICHE

Hopefully, the R-20 will develop it's own market niche. There are only three ready-to-ride SWB recumbents and one sold as a framekit available in the USA. We feel that they are all slightly different and designed for different purposes. If you can decide between performance and recreation, above leg and underseat steering and finally the bottom line, how much do you want to spend, the choice is narrowed. Each of the SWB recumbents has it's own niche.

THE RIDE

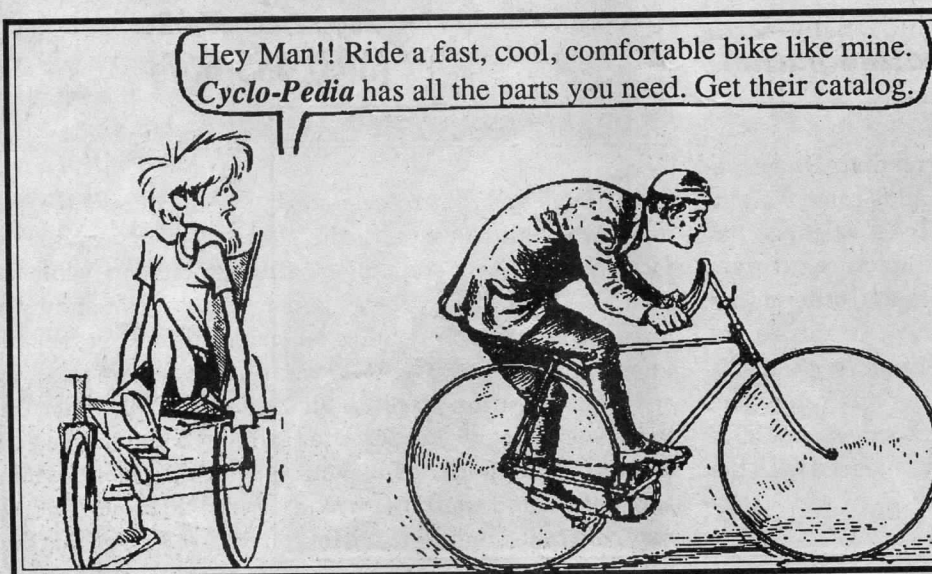
We found the R-20 easy to get used to with no special reflexes needed. The steering is lively, fun and predictable. We feel that this is a compliment to the design. The R-20's handlebars offer the rider excellent control and seem to slow down the bike handling without the use of a dampener. Several production SWB recumbents use headset steering dampeners to slow down the steering; the R-20 does not. The bike is easy to climb on and off of due to the placement of the handlebars/ controls. The seating position is more reclined than some SWB recumbents, but can be easily modified. The placement of the seat gives the illusion of a heavily loaded front wheel, but we can assure you that we tried several times to lift the rear wheel off of the ground under hard front braking and could not. Acceleration and hill climbing are excellent due to the higher boom/ crankset placement. The 1.5" diameter main tube offered a very limited amount of boom flex under heavy loads. Overall, the frame seemed very stiff and what bumps there were, the suspension soaked up nicely. On my first test ride, we found a fairly steep hill and took the R-

20 up to 30 m.p.h. The bike actually gained stability at speed, even on wet pavement. This could be due to the sure-footed feel of the 20" ACS 100 p.s.i. tires. The control I felt on this bike was excellent.

The R-20 is a bike designed more for the average recumbent rider than for racers. It is very comfortable and feels sporty. The theory that underseat steering recumbents have a aerodynamic disadvantage may prove true here also; however, the R-20 is a fairly fast bike. We found it faster than many recumbents that we have tested on the same (basically flat) bike path, but not as fast as the more performance oriented recumbents.

Most any rider can learn to track a LWB recumbent in a straight line. With SWB bikes it is more difficult. This is due to the shorter wheelbase and more weight on the front wheel. The R-20 is the only SWB that we have tested that does not have a headset steering dampener. This is a compliment to the bikes handling; however, a dampener may benefit the bike. At low to medium speeds or when coasting, R-20 tracks very straight. As you gain speed and are exerting force on the pedals, tracking takes more concentration. This is a trait that is common with most SWB recumbents. The more time and miles you spend on them, the easier it gets. The bottom line is that SWB enthusiasts either do not notice this, get used to it or do not mind this quickness in road manners. I have to admit zipping in and out of places that are completely inaccessible with my LWB put a very large grin on my face.

The A.T.P. R-20's base price is \$1350. Framesets are \$850. Our test bike outfitted with fenders and a Blackburn rack retails for \$1455 + shipping. The bike is sold through dealers or direct from the manufacturer. For more information, send \$2 to: A.T.P., 550-3rd Ave. N., Edmonds, WA 98020, or call (206)771-3719.



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WHAT ARE GEAR INCHES?

by Robert Bryant

Bicycle gearing is analyzed in what is called "gear inches." Here's how to figure "gear inches" and determine lows and highs. Your average recumbent has gearing with a triple crank of 28/42/52. The freewheel is a standard 13-30. The rear wheel diameter is a standard 27". Our formula to determine the high gear (for speed) is as follows: 52 divided by 13 equals 4 multiplied by 27" equals our high gear of 108 gear inches. To determine the low gear (for hill climbing) we take 28 divided by 30 equals .933 multiplied by 27" equals 25.19. Our finished gear inch range is 25-108.

Let's see what happens when we change this scenario a bit. We will add a 20" wheel diameter in place of the above 27" and see what happens: high gear, 52 divided by 13 equals 4 multiplied by 20 equals our new high gear of only 80 gear inches. The low gear works out to be 19 gear inches, we get a gear inch range of 19-80. Needless to say this is inadequate. This is why 20" rear wheels are more difficult to use. Proper gearing with 20" wheels is possible. To get gearing equivalent to the R-20, you would need a triple crankset with chainrings of approximately 39-52-64.

See what happens when we figure the ATP R-20's Intermediate Drive system: We have an Intermediate Drive of 16/21/28. The crank has a 39 tooth chainring. The intermediate drive cog (to the front crankset) is a 17 tooth. Divide the number of teeth on the chainring by the number of teeth on the outer cog Intermediate Drive freewheel. 39 tooth chainring divided by 17 equals factor (a) 2.29. The Intermediate Drive has back three cogs of 16/21/28 teeth. Now we multiply the 16, 21 and 28 by factor (a) from above. Results would be (2.29 times 16) 37, (2.29 times 21) 48 and (2.29 times 28) 64. The R-20 has the equivalent of a 37/48/64 triple crank.

To figure the final high gear, we take our large chainring equivalent, 64 divided by the small freewheel cog of 12 multiplied by the 20" diameter drive wheel equals 107. To figure our low gear, take the small chainring equivalent, 37 divided by the large freewheel cog, 32 multiplied by the 20" drive wheel equals 23. The R-20 offers a gear inch range of 23-107.

Special thanks to Gaylord Hill, CycloPedia and CycloPedia's Econ-Bent Plans and Universal Gear Chart in the preparation of the Intermediate Drive gearing information. CycloPedia also supplied us with a list of freewheels that will work in place of the Regina for the Intermediate Drivetrain.

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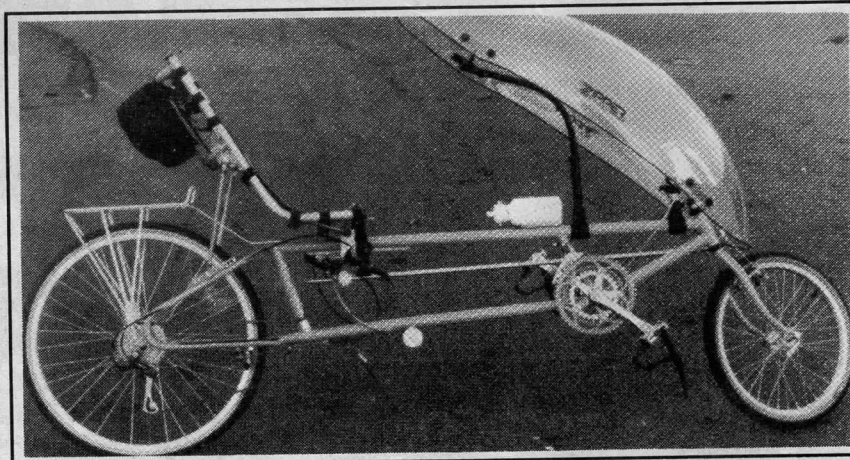
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RCM Mail Bag

MOULTON TIRE UPDATE

DEAR BOB,

RE MAIL BAG, TIM BRUMMER LETTER. Sometime in 1986 Alex Moulton changed the 17X 1-1/4" tire he makes. The casing was improved and is considered a 100 p.s.i. tire. The mold was not changed to reflect this change and the 70 p.s.i. should now be considered a minimum inflation recommendation. The Wolber Pro Tex liner that Tim suggests is excellent in reducing flats without the efficiency robbing effects of a Kevlar belt. By the way, the Moulton Wolber "C-3" 140 p.s.i. rated slick tire is now available here at Angle Lake Cyclery. Latex tubes for 17" are also available.

Sincerely,
Kelvin Clark
Angle Lake Cyclery
Seattle, WA.

Current prices for the standard 17" Moulton tire are \$30.99 and \$15.99 for the tube. The newly available Moulton Speed "C-3" tire is \$78.99 and the tube is \$26.99. Angle Lake Cyclery will ship mail order and is the Moulton Bicycle Distributor for the USA.—Editor

DELAYED REACTION

Dear Recumbent Cyclist,

I disagree with Robert Bryant's comments (in the Future-Tech column regarding the Paradigm CV Posi Drive transmission-RCM#5 Mar/April '91) "it does not look like the derailleur, freewheel and crankset will leave us anytime soon....it is certainly proven, dependable, inexpensive and easy to work on." Derailleurs are not dependable, they are hard to adjust (especially index), you need to buy a freewheel every two years or so, the freewheels are hard to keep clean, they are expensive compared to hub gears and most important of all, they prevent the use of a toothed-belt drive system which will save you money on chains every year. Also, you will save your clothes and hands from oil, and make your bike much closer to being maintenance free.

Yours Sincerely,
Adam Bond
Bristol England

Adam, your points are well taken. However unfortunate, the fact remains that the derailleur, freewheel and crankset currently has the North American market sewn up. Hub

gears are much more popular in Europe than in the USA. Sachs imports only a hand full of the Pentasport hubs although Sturmey Archer does have better availability. Recumbent riders in the USA want, need and use wide range gearing where you need a 18 or 21 speed. One possible solution would be to use a 3 or 5-speed hub with a multiple chainring crankset and one of those U.K. Designed, engineered and sold false rear derailleurs that spring/ tension the chain so that you can use a internal hub gears with a double or triple crankset. Maybe you could send us information on these, as I know there are many riders who feel the way you do. We have considered setting up a recumbent using this system. By the way, do you have the internal gears on your Linear? -Editor

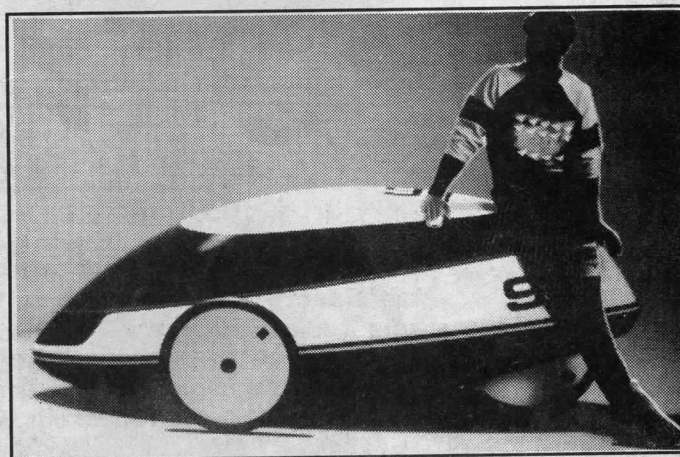
Dear Editor,

Please allow me to enter my subscription in your very interesting publication. As a long time HPV rider and designer I find your publication most informative.

Enclosed is a photo of the Aerocoupe HPV that I am building and soon hope to have for sale.

One comment about your terminology; From historical and automotive as well as motorcycle contexts, a three-wheeler with TWO wheels in front is known as a CYCLECAR. Tricycles or trikes are the more traditional three wheels with one wheel in front. These terms may help people differentiate between the two very distinct layouts.

Sincerely,
Mark E. Murphy
Newbury Park, CA 01320



Mark Murphy's Aerocoupe HPV
(Photo by Mark Murphy)

Dear Cyclists,

Please send us all back issues and a world air mail subscription. The photo enclosed shows Berned Bleckman (member of Zweirad und Zunkunft) on our recumbent bicycle in combination with an electric driven trailer. Also enclosed is our product information in German.

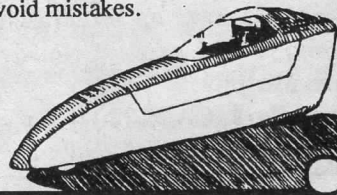


Greetings, Zweirad und Zunkunft
This unique German SWB has a unique suspended Brooks Professional seat, 12 speeds, a Shimano & Suntour Drivetrain, 20" front wheel and a chro-moly frame. The fairing

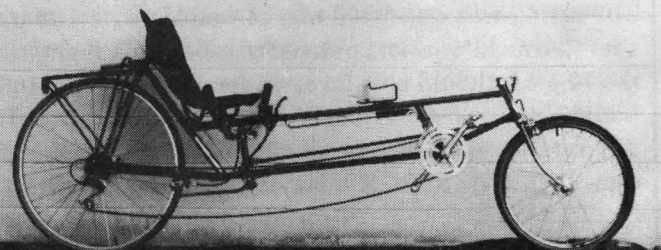
Building a Recumbent? Having trouble finding parts?

The only part of the recumbent that we cannot supply is **you**. We stock wheels and wheel building supplies (both large & small and in-between), cranksets (some with large chainwheels), frame building supplies, plus much more. Send \$1.00 for our 1991 HPV parts catalog describing many (if not all) of those parts that you are looking for. Professional wheel builder on staff, experienced recumbent builder available to answer questions to help you avoid mistakes.

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is an intriguing application of the built in California Super Zipper with custom mounts. The bike sells for 2390. Deutch Marks.

Robert,

I just wanted to compliment you on the latest edition of the Recumbent Cyclist. You seem to be single handedly organizing and promoting the recumbent bicycle.

Many Thanks,
 Dennis Taves

Please send more letters like this one, thanks—Editor.

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RCM INFORMATION

The Recumbent Cyclist Magazine is dedicated to promoting recumbent bicycles and providing and encouraging communications between HPV enthusiasts, dealers and commercial manufacturers of recumbent bicycles.

SUBSCRIPTION INFO: The Recumbent Cyclist is the official newsletter of the Recumbent Bicycle Club of America and is published five to six times per year. To subscribe to the Recumbent Cyclist, please send \$25 to subscribe (First Class Mail-USA), \$20 Bulk Rate (USA) and \$30 world wide & Canada (USA FUNDS). The First class subscription will get you your issue 2+ weeks earlier than the standard rate. The club patch is also available from the RBCA office for \$4.00 each shipped.

SUBSCRIPTION PROBLEMS: Did you receive your RCM#8? We had a few that were lost in the mail. This is the 1992 Buyers Guide, please drop us a line if you did not get yours. It was mailed in early December. Please let us know if you have an address change. The Postal Service does not always forward bulk mail.

NEWSLETTER SUBMISSIONS: We want your photo's, letters, stories and HPV/ recumbent information for this publication. Send a story/ article about your bike and please don't forget a picture. Print your name on the back of anything sent to the RC office so we can credit the source. If you can send your submission on computer disc, we use an Apple Macintosh (Microsoft Works 2.) that will read IBM 3.5" discs in ASCII format only. If you don't have a computer, we will take it in a letter form or whatever. Please send submissions to our new office at:

NEW ADDRESS: (short version)

R.B.C.A./ Recumbent Cyclist • 17650-B6-140th Ave. SE, Ste.341 • Renton, WA 98058

WANTED: More recumbent modification and builders corner stories. Do you have a home-built Tour Easy with custom modifications or updates? Information on the TRC Tandem trike, Cyclodyne, or Land Speeder. Do you own one of these? How about a short story about it? Please limit them to two type written pages and picture(s) are a must.

THE CLUB ROSTER If you have purchased a bike in the last year and would like it listed in the roster or you would like your home phone number listed, please drop us a note ASAP.

RCM #8 MISTAKES: Apologies owed to: 1) Tom Briggs, "Recumbent Builders Corner" the bike pictured was his previous project the "2016" rather than the "2020" as indicated. 2) Charles Brown, writer of probably the most time consuming article in RCM#8, "Rider Position and Speed", we forgot to credit him with the story. 3) Staff of Angle Lake Cyclery in Seattle (WA) We forgot to list A.L.C. under "Recumbent Dealers" and "Home builder Parts." Angle Lake is probably the oldest & largest recumbent/ HPV dealer in the country.

DEVOTED PRODUCTION STAFF: Editor & Publisher: Robert J. Bryant, Business Manager: Marilyn J. McKee-Bryant, Production Assistant: Jeanene Smith, Graphic Services & Printing courtesy of Desktop Publishing & Printing in beautiful downtown Renton, Washington.

COVER: A.T.P. "R-20 SWB Recumbent. Photo courtesy of A.T.P./Joel Smith.

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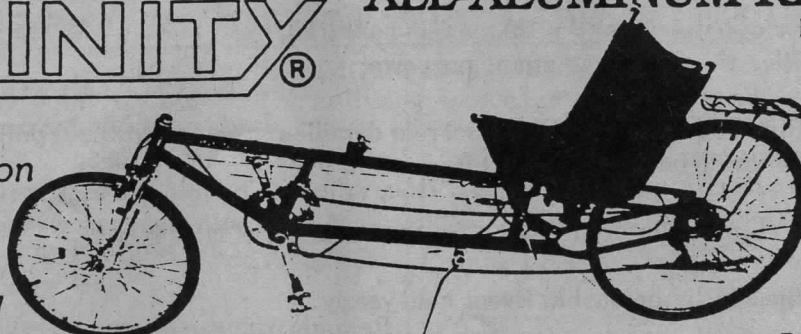
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RECUMBENT BICYCLE GLOSSARY:

ABOVE THE LEG: Recumbent steering set up similar to the Tour Easy, Rans or P-38

BMX: Bicycle Moto Cross: very tough (generally) kids bikes that use very tough (generally) steel components.

CYCLECAR: A three wheeler with two wheels in front and one in back.

FWD: FRONT WHEEL DRIVE

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

FAIRING TERMS:

FAIRING-PARTIAL: A small fairing device such as the one made by Zzipper to shield the upper body. Made for road bikes, the Lightning P-38 or standard Tour Easy fairing.

FAIRING-FULL: This fairing shields both the legs and upper body, such as the Super Zzipper and Ryan Zzipper.

BODY-PARTIA: A front nose cone or fairing used with a soft material such as that Lycra or Nylon that fairs the vehicle, removes easily and is usually open at the bottom.

BODY-FULL or STREAMLINER. This is a fully enclosed body with bottom and top covers, like the Rotator Super-7 or Gold Rush.

FRAME CONSTRUCTION TERMS:

TIG WELDING: Tungsten-Inert-Gas; a proven no-lug process common in mountain bikes. Tubes must be metered perfectly. TIG quality is plainly visible. Common on recumbents: Tour Easy, Ryan, Presto & A.T.P.

LUGGED: External butted joints. A traditional form of building bikes. Very rare on recumbents, Lightning Cycle Dynamics uses some lugs.

FILLET BRAZING: A joint is created by flowing brass around the tubing junctures. Usually brass, most builders then file or sand to create a smooth nice looking joint. This can be the highest quality of all joints, but there is no way to tell the quality by looking. Skilled builders use a minimum of heat and time to braze; others cover mistakes with body putty and paint. Fillet Brazing is used on some recumbents and the favorite of homebuilders.

H.P.V.: Human Powered Vehicle.

HYBRID: a) A popular cross bicycle that is 1/2 road and 1/2 trail,
b) Human/ Electric power. c) human/ gas power.

IDLER-CHAIN: A modified skateboard wheel, partial rear derailleur cage or derailleur pulley on a custom mount used to carry or direct the excess chain on a recumbent bicycle.

I.H.P.V.A.: International Human Powered Vehicle Assoc. Publisher of HPV News.

I.H.P.S.C.: I.H.P.V.A.'s Speed Championship Event held yearly.

INDEX SHIFTING: One click per gear shifting common on most new bicycles

underseat steering. This actually means steering via a rod, linkage or cable that connects the handlebar to the fork.

INTERMEDIATE DRIVE: Having two chain drive system with a means of shifting gears in between the crankset and freewheel. This is traditionally done with a freewheel and a front or rear derailleur to shift the cogs. The bike may then have another rear derailleur at the rear wheel or another front derailleur at the crankset or both. This defines the system used on the ATP R-20 and Econ-Bent plan built bike sold through CycloPedia

LWB: Long wheelbase 56"-71"+

MWB: Medium Wheelbase 40"-56" MWB is sometimes called a SWB

MOULTON: An English full suspension conventional bicycle that utilizes 17" rims and tires (100 and 130 p.s.i.) specially made for it and sometimes used on SWB recumbents. Can be used in place of with 16" wheels.

MIT: Mass. Institute of Technology

SWB: Short wheelbase 33"-40"

R.B.C.A. The Recumbent Bicycle Club of America founded by Dick Ryan

R.C.M. Recumbent Cyclist Magazine founded by Robert Bryant

RWS: Rear Wheel Steering.

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

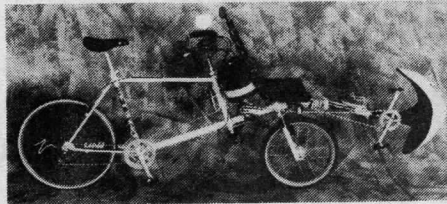
STEM EXTENTION: Mainly used on SWB recumbents with above the leg steering, although sometimes used on LWB recumbents. An extension that rises from the stem, head tube or false head tube to lift the handlebars high enough to clear the legs.

TRIKE OR TRICYCLE: The standard three wheel design having one wheel in front and two in back.

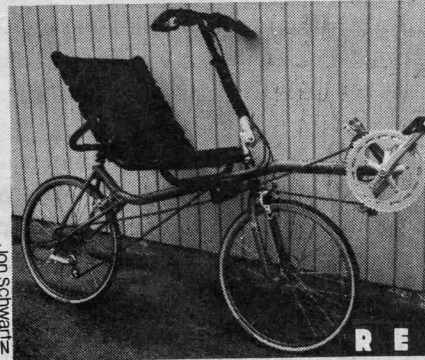
UNDERSEAT STEERING: Steering via handlebars that on a LWB pivot underneath the bikes seat, or on a SWB mount to the fork or extend from the head tube.

ZZIPPER: A Lexan recumbent fairing (also available for conventional bikes) built by Zzip Design.

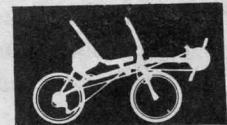
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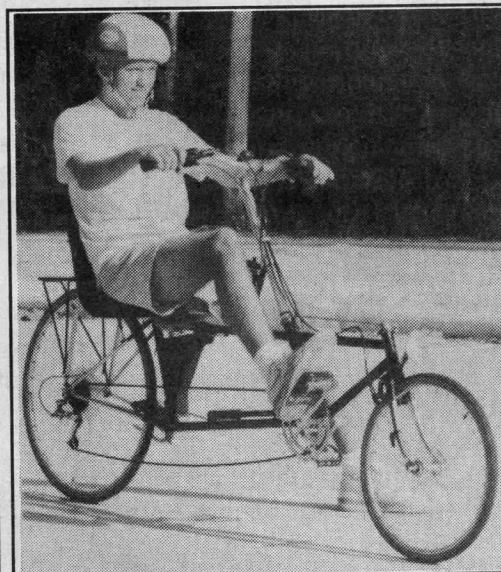
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EDITORIAL LICENSE:

WELCOME RECUMBENT CYCLISTS, This marks the first RCM issue of 1992! Again, I have way more material than I can possibly fit into one issue, such a problem. Please don't be discouraged and keep your articles, pictures and especially letters coming. If you would like a personal reply, include an S.A.S.E. inside your letter. For those of you who've submitted stories and haven't yet seen them in RCM, please be patient. There is a method to our madness and in each issue we actually attempt to balance things.

RECUMBENT HOME FRONT: Many of you who have talked to me recently know that it's been busy here at our world headquarters (the back bedroom/office). My wife Marilyn and I have sold our house in Renton (suburb of Seattle) and bought a new and bigger house a few miles further out, the problem is that we are having to move twice with an apartment in between. This will give us more room to produce RCM, store more bikes and it just happens to be two blocks to the local bike trail, recumbent test ride heaven! We are also expecting child #2 in July of this year! Child #1, daughter Amy, is nearly three and will be taking delivery of her first recumbent in April. It will be state of the art, a composite (plastic), front wheel drive trike ("Li'l Mermaid Big Wheel").

We are always searching out ways to provide our readers with the best, most current recumbent cycling information and stories. If you have ideas or input on anything you read in RCM, please take the time to write. Also, coming up soon will be our 2nd Annual Readers Survey where you will have the chance to give feedback and design your perfect recumbent.

We have been trying to get to the point where we can produce more than five issues. In 1990 we were quarterly and then last year we went to five issues. We are now trying to make the jump to six. One of our problems is bulk mail delivery times, the last issue did not reach many readers until after Christmas and they were mailed in late November, we currently use "Bulk Mail" service.

QUESTION OF THE MONTH: Would you pay \$5 extra per year (\$25 yearly subscription/ USA only) for FIRST CLASS mail service (for six issues) Our last issue was mailed during the Christmas rush. So far, about three copies were lost in the holiday mail.

STATE OF THE ART: We currently have the A.T.P. R-20, Thebis (RWS trike) and are expecting a Rans Stratus-B test bike anyday. Drop us a line or call if you'd like to see these bikes.

1992 SEASON: For those of you sitting on the fence and watching those cool recumbents ride by. Will 1992 be the year for you to buy or build? Just remember to order early. This is the slow time for many manufacturers, but if you wait until May or June you may miss half of the riding season.

Robert J. Bryant
Editor & Publisher

RBCA CALENDAR**FEBRUARY 28 & 29, 1992**

The Seattle Bicycle Expo: Do not miss this one! Steven K. Roberts "Computing Across America," will be in town for the show and guess where his bike, Behemoth will be, in our booth! Along with the 13' of Behemoth and trailer we will have a Custom Ryan Performance with Pro Stop Disc Brake, A.T.P. R-20, and the Green Gear Cycling BIKE FRIDAY (take-apart conventional bike). Come down see us and meet Steven Roberts. Also expect to see Angle Lake Cyclery with the Counterpoints and Thebis down from B.C. Seattle Center Flag Plaza Pavilion.

MARCH 7 & 8, 1992

The Chicago Consumer Bicycle Show: Pheasant Run Convention Center, St. Charles, Illinois. No word yet on whether any recumbent manufacturers will be there.

MARCH 12 & 13, 1992

Portland Bicycle Show: Portland Coliseum, Portland Oregon. We will have a booth at this show, this year in the Portland Coliseum. if you are interested in sharing this booth, please call the Hotline (206)255-9479/ (206)630-7200 after Feb. 21st.

AUGUST 5-9, 1992

International Human Powered Speed Championships: Yreka, CA. Yreka is off of I-5 in the Shasta area of Northern California near the Oregon/ California border.

APRIL 25, 1992

Midwest Streamliner Series: Columbus Indiana. Contact Gaylord Hill at CycloPedia or Don Barry from Infinity.

APRIL 26, 1992

Midwest Streamliner Series: Mooresville Indiana, (see above).

May 30, 1992

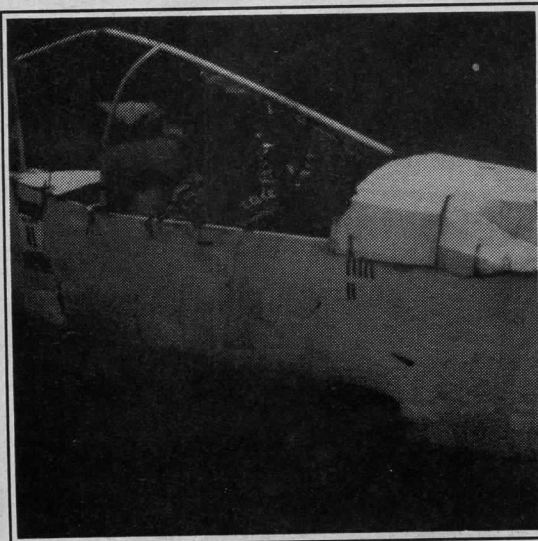
Midwest Streamliner Series: Toronto, Ontario, Canada, (see above).

MAY 31, 1992

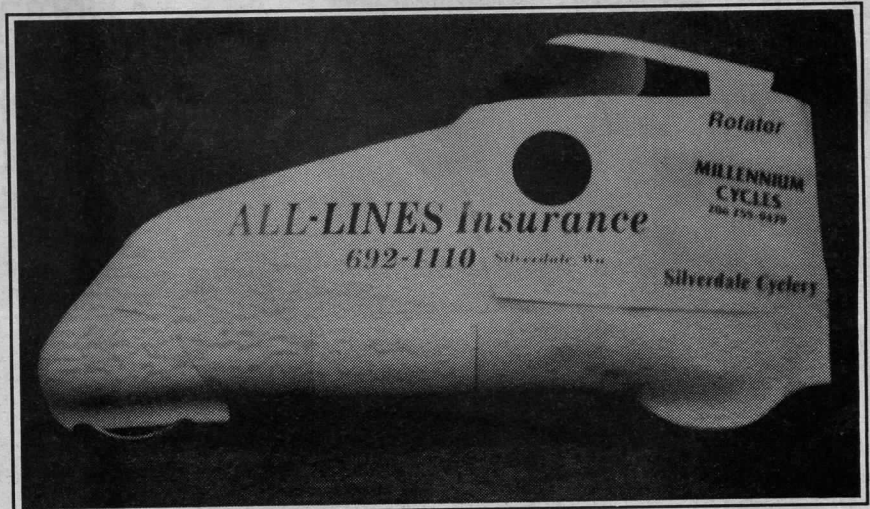
Midwest Streamliner Series: Buffalo, NY, (see above).

SEPTEMBER 20-22, 1992

Interbike Trade Show: Anaheim, CA. We will be at the show, although it is doubtful that we will have a booth.



Joe Kochanowski riding
the X-on Valdez



The Millennium-Rotator Racing Team
(Photo courtesy of Stewart Delaire)

RECUMBENT RIDER GROUPS

(please send an S.A.S.E. with any correspondence)

Washington D.C. Area: W.H.I.R.L. (Washington's Happily Independant Recumbent Lovers) The brotherhood meets at the Viers Mill Rec. Center parking lot on Saturday Mornings around 8am This is a model rider group with No rules, No by-laws and No meetings, "Just a bunch of guys who ride cool bicycles together," says non-club non-organizer Vic Sussman. Word of Warning: No Lycra-Heads allowed. For more info contact: Vic Sussman at (301)897-5959 or Allan Pollock at (202)363-2244.

Southbay Recumbent Riders: (Los Angeles area) Riders meet at Burton Chase Park every third Sunday of the month at 10-11am. Contact :Tom Howe, 10634 Valparaiso #23, Los Angeles, CA 90034. Ph# (213)838-8634 or (213)377-8081.

Oregon Human Powered Vehicles: (Portland area) Meetings, Muster's and a bimonthly newsletter. Contact: Jake Jacobsen (503)644-7038 or Rick Pope (503)244-0908.

Michigan HPV Association: Meetings, race events and a quarterly newsletter .Contact: Gaylord Hill (517)263-5803. or MHPVA, c/o Mike Eliasohn, 2708 Lake Shore Dr. #307, St. Joseph, Mich. 49085.

Human Powered Vehicles of Southern Ontario: c/o Dennis Taves, 14 Croft St., Toronto, Ontario, Canada, M5S 2N8. Phone # (416)964-7857.

Streamliner Racing Association: (Washington/ Oregon areas) Several recumbent race events. Contact: Stewart Delaire (206)692-9738. Membership \$10 @ yr.

Seattle Area Recumbent Riders: (South King County) If you are interested in meeting on an occasional Saturday or Sunday for a ride or want to help organize a Northwest W.H.I.R.L. type group please give me a call: Robert (206)255-9479/(206)630-7200 -after Feb. 21st. We are particuarly interested in hearing from riders who spend time on the Green River Trail from Tukwila southward (this is where most of the RCM Road tests are done).

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BLATANT OPINIONS

by Charles Brown
Ann Arbor, MI

I'd like to thank Robert Bryant for his tests of production recumbents. The average buyer does not always have the opportunity to test ride many models, so test reports are very important if the recumbent market is to grow. Sometimes, my own views differ from Robert's, and I would like to express them.

Favorable reviews of the Counterpoint Presto and Laid Back Recumbent*? How can you properly test a SWB on smooth pavement? Where you really want to test the steering and balance of a SWB is when braking for a turn on a steep downhill, when a patch of gravel jumps in front of you. You want to test ride smoothness on the roughest, most potholed patch of concrete around. You want to test comfort on your next century ride.

(*printed in Robert Bryant's discontinued Recumbent Ramblings column in the IHPVA's HPV News. Upcoming RCM LB & Presto tests are in the works.-ed.)

For these reasons, I prefer the mid to long wheelbase machines. A recumbent with the same wheelbase as an upright bike gives a rougher ride for these reasons: 1) the recumbent has a smaller front wheel, and 2) an upright bike "dances" beneath you on the bumps, while the recumbent rider is more firmly attached to the bike.

Bicycle Guide Magazine did a test on the Ryan Vanguard recently. They stated that all recumbents are slow hill climbers. This is not true! I have built a test bike that climbed as well as a conventional bike, which I attribute to weight and a rigid frame. Another local rider built a recumbent that climbs well. He attributes this to building a small amount of flex into the frame that stores energy for a brief amount of time. The point is, a recumbent CAN be built to climb as well as an upright bike.

I also prefer having the handlebars in front of the chest. This is mainly because: 1) you get better tie-in between the rider and bike, which is important in quick maneuvers, like when some brain-dead motorist opens their car door in front of you; 2) It's more aerodynamic. It is estimated that this alone will make you 5% faster; 3) If your bike breaks

down, it is easy to push and there are no special parts, such as steering linkages. Underseat steering was developed for

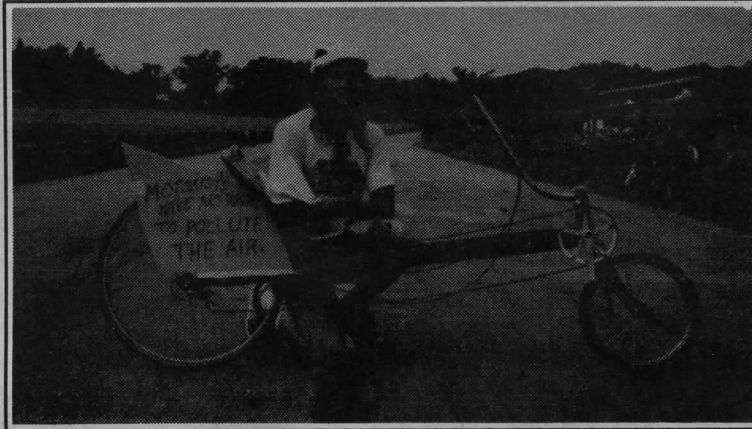
safety, although in accidents LWB machines usually crash on their sides.

Considering all of the production recumbents that I've ridden, my favorite is the Tour Easy by Easy Racers Inc; however, the 29 lb. bike sells for \$1500+, so I expect the competition to catch up soon.

Please keep in mind that all of this is my opinion. If you are happy with your

Hypercycle, I say, "more power to you"! No single bicycle is best for everybody.

Charles Brown designs, builds and tests recumbent bikes and HPV parts. He currently rides a "wood" LWB recumbent. Charles wrote the article in RCM#8 Buyers Guide, called "RIDER POSITION AND SPEED." In our rush to get this issue to press, we inadvertently forgot to credit the author. We would like to offer our apologies to Mr. Brown and offer a word of thanks for his painstaking efforts. — Editor.



Charles Brown's Wood Recumbent
(Photo by Mike Eliasohn)



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INTERBIKE 1991-ATLANTIC CITY

by Ralph Frankel

This was my first visit to a bicycle trade show and I went with no illusions of finding an explosion of interest in recumbent bicycles. Having that expectation, I decided to focus on three areas: 1) innovations that could have utility when incorporated in recumbent designs; 2) the development of suspension systems; and 3) accessories with particular virtue for the recumbent marketplace. To varying degrees, I found items of interest in each category that I had targeted and, as anticipated, only one recumbent exhibitor.

There was a disappointing similarity between the glitz, hype and consumerism of a trade show and the Atlantic City environment. Still, I was like the oft-referenced "kid in a candy store" walking from booth to booth admiring the well engineered, beautifully crafted equipment on display. There is a tremendous attraction that I find in the elegant simplicity of a bicycle and the mobility it provides as a rider's energy is efficiently transformed into forward motion. I felt like I wanted to try every bike that I saw; unfortunately, neither the convention hall rules nor my wallet would allow me this luxury.

With regards to my first category, innovations, there was indeed one new product offering what seems worth following. A company called Legacy has launched a line of bicycles that feature 2-wheel drive (the cyclists version of a four wheel drive automobile). Here is how it works. A flexible shaft runs between the rear and front wheels with a planetary gear mounted at each end. The rear wheel gear is mounted on the side opposite the freewheel and I don't think it matters which side of the front wheel the gear is mounted.

The system seems simple, rugged and in little need of maintenance or adjustment. It appears to have great utility for off road-riding and the marketers argue that it has significant advantage to ride bikes, as well (to compensate for the normal rear wheel slippage that is experienced in everyday riding). The question is whether or not the added weight and friction induced by the system is justified by the extra traction and drive. Intuitively, it would seem so for off road riding, and they claim it is true for street biking as well. For recumbents, the interesting aspect of this innovation would be more from a design flexibility in determining how to deliver power to either wheel than to assure constant power to the wheel with traction. Has anybody seen designs that incorporate this concept?

In keeping with the notion of elegance and simplicity mentioned above, one has to admire the Merlin bicycles. Keeping to the tradition, they have developed a prototype suspension bicycle with a rear suspension system that

struck me as truly remarkable. There is a spring-mounted shock absorber at the top of the seat stays, but no pivot point for the rear triangle. It is the flexibility of the Titanium itself which allows for two inches of motion from an ingenious design that requires few moving parts. Alas, when I asked about recumbents I was told that Titanium probably has too much flex for the long wheelbase designs; they have previously experimented with tandems and found that there is no real virtue in using Titanium in these bicycles.

More conventional suspension systems are now available on many of the better known bikes. Most are fashioned after motorcycle suspension systems. Compressed air shock absorbers on the front fork and some form of swing arm system for the rear wheel were the typical designs. It is easy for me to imagine that this will be a welcome advance for mountain bikers, but the added cost, weight and complexity may not be a worthwhile tradeoff for normal road bikes and in particular recumbents.

In the arena of my third category, accessories, the only thing that caught my eye was the proliferation of bicycle racks for automobiles. Recumbent owners who want to take their bikes with them are faced with the dilemma of jury rigging their own racks, buying an expensive tandem rack, owning a large truck or van or leaving the bikes behind. There may now be the opportunity to find less expensive racks suitable for recumbents (or easily modified). Stay tuned to the "Recumbent Cyclist" for future developments because at least one of the manufacturers has promised to provide some equipment for trial and we will report back on this in a future issue.

True to my prediction, the recumbent sector of the bicycle industry wasn't well represented in terms of exhibitors; however, it was extremely well represented by Steve Hansel and Linear Recumbents, the one recumbent manufacturer present at the show. It was my first opportunity to meet Steve who is a wonderful advocate for recumbent cycling and is just a nice guy. There was a great deal of activity at his boom and well deserved; Linear makes a quality bicycle which is not only unique among recumbents for its folding feature, but is obviously one of the most comfortable bicycles I have ever ridden of any design.

Finally, although there is no way to quantify this sensation, I definitely have the feeling that we are at the brink of a surge of interest in recumbent cycling. Once you remove away from all-terrain bikes and performance riding and focus on the changes which will stimulate the industry and benefit the customer, recumbents are a very exciting choice. It will be interesting to return to the bike shows next year and see if a transition starts to take place.

HOME-BUILDERS CORNER: The Piranha Mark Two

Story and Photography by Kevin C. Haupt & Rick Fowler

Can you build your own recumbent bicycle? This is a factual account of how two occasionally employed photographers overcame the high entry price of recumbent cycling.

I think it was the review of Dick Ryan's Vanguard in *Bicycling Guide* that got us going on this project. We did not have the extra thousand bucks to spend on Ryan's beautiful bike so we decided to build our own. Our first attempt was a long wheelbase design, but we knew that the tight tolerances in the steering linkage were beyond our limited metal working skills. We chose to simplify things by using tiller steering but the resulting vehicle was too unstable for any serious riding. We decided to cut the thing apart and start over again.

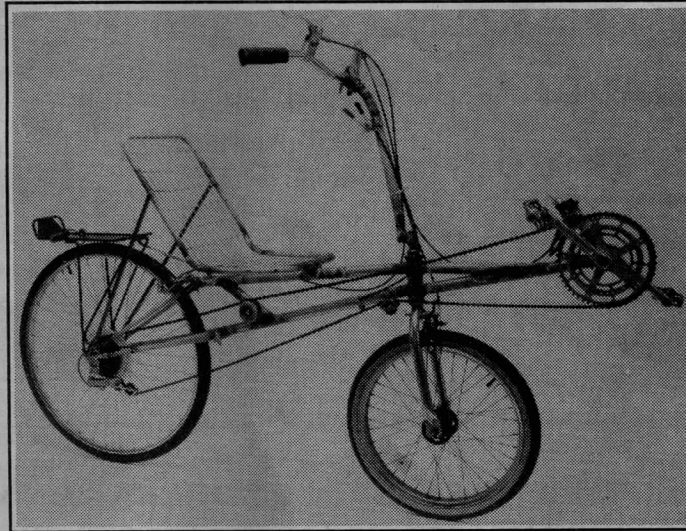
We next found a picture of the Presto short wheelbase recumbent. This time only the aluminum TIG welded seat looked beyond our production capabilities. We called Presto to see if they would sell us a seat but our request was rejected because of "product liability" fears. I wonder where we would be if the Wright Brothers had to worry about "product liability." We went garage sale shopping one day and located an old ten speed and a funky BMX bike. We now had most of the materials required for the Piranha Mark Two.

We fitted our Taiwanese table saw with a carbide chop saw blade and went to work. On the way to the local bike shop to purchase a few missing nuts and bolts we spied a rusting lawn chair sticking out of a trash can. Our seat problem had been solved! The lawn chair was about six inches too wide so we cut it down and welded it back together. A piece of thick shag carpeting has served well as a seat pad. We intended to eventually make our own seat but the lawn chair usually gets a laugh out of those who see the Piranha so we kept it in place. We also needed additional tubing for some of the longer frame members. A trip to the local hardware store resulted in the purchase of twenty feet of one inch inside diameter "Allied Easy Pull" thin wall electrical conduit. We were aware that the galvanizing would have to be burned off carefully before we could weld it but the price was right, twenty cents a foot.

Since photography used to be taught under the industrial arts department in the local state university, we both had some experience with welding. The 220 volt "buzz box" electric welder that we had in the garage, proved to be too powerful for this welding job. We ended up using oxygen acetylene gas welding for the final assembly. We also used some brazing when changing the angle of the seat stays and attaching the lawn chair, I mean seat! We coped the tubing with a bench grinder and fine tuned it with a rat tail file.

There were many hours of cut and try.

We built a crude jig for aligning the frame out of a small I beam and lots of old wood working clamps. The most challenging part proved to be the gooseneck. We must have welded that sucker fifty times before we got the geometry right. An old plastic roller skate wheel was chucked into a drill press and grooved for a chain idler wheel. Our local bicycle shop proved to be a great source of information and free junk



The Piranha Mark II

parts. We would like to acknowledge Main Bikes in Alhambra, California for their help and support. Upon viewing and riding the completed recumbent, the manager of Main Bikes remarked, "you have rekindled my belief in Yankee ingenuity!" We decided on the name Piranha because the teeth are out in front.

With the exception of a few flat tires and the gradual deterioration of the lawn chair, the Piranha has proved to be very stable and reliable. No major frame components have failed and the bicycle seems to have no radical handling characteristics. Our total cost for this project was about seventy five dollars. This includes having to get welding gas and rod. No plans were drawn for this vehicle and none will ever be available product liability fears!

We are now working on a much more refined recumbent using chrome moly tubing and a seat of our own design, but then, that's another story....

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"Danny Ray
Burdick pictured
at the helm of
"Sasquatch," his
Zzipper Fairing
equiped Ryan
Vanguard
Recumbent"

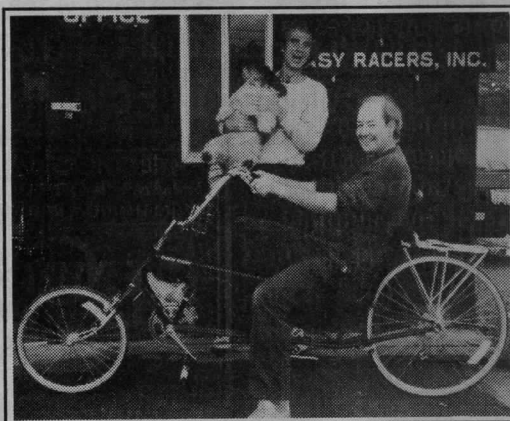


RECUMBENT SAFETY CONSIDERATIONS

by Peter A. Sharp Oakland, CA.

The most important issue I am concerned with is visibility of recumbents. My experience is that their visability must be considered from two different prospectives. These comments refer to your point #2 under "Commonly asked Questions..." It is true that recumbents get noticed in the sense of their being novel vehicles. Indeed folks yell at me every few blocks when I'm riding in a working class neighborhood. In middle class neighborhoods, folks act much more blaise', and I can even take it into a bike ship without staff or customers saying anything. Besides "novelty noticed", there is "safety noticed". In my experience, and I am 52 years old and have ridden bicycles and motorcycles as my principle vehicles all of my life, recumbents are even less safety noticeable than standard upright bicycles. The reasons are: that the recumbent riders head is below the tops of parked cars, whereas the upright bicycle rider's head is above the top of parked cars; that the recumbent rider does not have a familiar silhouette for drivers to recognize in a split second; and that recumbents tend to travel at speeds faster than drivers tend to estimate, even when

they can see them coming. Consequently, I wear and use a police whistle during the day, and use an extreme intensity light when I ride at night. I am also in the process of submitting the light to various manufacturers since it is extremely effective, especially for recumbents. Some manufacturers make that claim that recumbents get noticed. But when were talking about "safety noticed, I must disagree with them. The correct answer should be "yes and no" and then we need to explain. I used to be a professional truck driver and received awards for my safety record. One of the lessons I learned as part of a defensive driving course, was that bicycles and motorcycles are almost invisible on the road. So when I ride a bike, I always assume that I am invisible until a driver has made direct eye contact long enough for me to be sure that he or she has seen me.



Peter Sharp and Gardner Martin at the
Easy Racer shop in Watsonville California

a stationary horizontal back". My head doesn't move. Nor is there any reason for other recumbent riders to move their

With all due respect, I do not accept your argument about the "vertical moving head is more noticeable than

heads vertically. From the rear, a recumbent is less noticeable because the driver cannot see the leg motion as on a conventional bicycle, along with the above mentioned lack of a recognizable silhouette. For this reason, it is very important that recumbents use bicycle safety flags. From the front, it is the drivers pulling into the road from the right that present the greatest hazard. They cannot see through the parked cars, and they also have the expectation that a bicycle rider's head will be visible from above. This is why I carry my whistle, and it has saved me a number of times.

The point is that recumbents are less visible than uprights, and it is important to not reduce the vigilance of recumbent riders, and especially not prospective recumbent riders. They do need to take extra care in high traffic areas. If they don't do that, accidents will create a prejudice against recumbent bicycles.

There is also the issue how much one recumbent differs from another in terms of visibility—at least until we get some sort of standard safety features to make them highly visible. The lower recumbents due to reduced drag, tend to be faster as well, and this can increase the problem. Some will be next to invisible on city streets and riders need to know that. Tell it like it is. I think that the trade-offs favor recumbents, and we can only do that by telling the whole truth.

On a related note, your brochure claims that recumbents have a better range of vision. I think that claim is not one that should be made. Here again, it's a matter of considering "range of vision" as having more than one category. Yes, a recumbent allows a beautiful view of the scenery. But we all know that the lean-back position makes it harder to glance back to the rear. The solution is simple, of course, just use mirrors. I use a helmet mirror and a handlebar mirror, and use them both. When I first started riding my Tour Easy, glancing back made me feel like I was starring in the exorcist, and I had to refasten my neck to my shoulders. Now, I have much better vision than an upright cyclist.

Peter makes some very important recommendations here. Any recumbent cyclist who rides in high traffic areas or commutes should take every possible precau-

tion to RIDE SAFELY. We invite readers to comment on these safety considerations and make even more recommendations for products to help recumbent riders be more apparent on the road.

My own personal experience is that I am treated much better by motorists while on my recumbent, but I do not ride much in high traffic urban centers. A Recumbent Cyclist friend who once lived in San Francisco determined that recumbent visibility was a MAJOR factor and actually designed two different bikes for a higher rider position. If this is important to you, consider only the recumbents with a higher seating position or prepare your bike for visibility. --Editor

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SAFETY PRODUCT INFORMATION

The Recumbent Cyclist staff has created a list of safety products that can be used with on your recumbent bicycle.

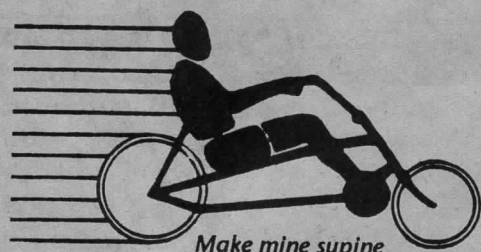
LIGHTING: Many headlight systems are available to cyclists. Some only costing a few dollars on up to hundreds of dollars for the fanciest of systems. The first problem that comes up is where to mount lights. For SWB recumbents a little creativity is in order. Mounting on or under the front boom or from the front derailleur tube may work. Helmet mounted lights will work for sure. For LWB underseat steering bikes the problem can get tough. Don Hariss from the Bay Area uses a short road stem that rises above the headtube and he made a short handlebar-like aluminum tube that fits into this stem and holds his **NIGHTSUN** Lighting system. Lighting on upright steering recumbents can be easier since you have handlebars to mount your lights on. The problem can get more complex with light reflections when you add a fairing to your bike. We need more input from riders on this. I know of several riders who have gone to helmet mounted light systems. This also helps with overall visibility of recumbents to drivers of automobiles. The **VISTALIGHT** pulsating reflector type light offers a super-luminescent LED flash 6-8 times a second. This little battery operated light will run 500 hours on two AA alkaline batteries. There is a red-

reflector mount rear light, a clear front mount and clip-on versions. One RCM reader uses a Auto-Part Store type generator light set up on his \$2000 recumbent and raves about it's inexpensive & excellent performance. Highly recommended is the **February '92 Bicycling Magazine**, "Buyers Guide to Portable Lights" and the February '92 issue of Mountain Bike Action, "Night Riders: Daylight Savings All Year Long". These two valuable resources should be available on your newstands now.

PROTECTIVE CLOTHING: Always wear a helmet and eye protection! Bright Lycra helmet design covers are available to add to your visibility. Sporting Supply stores have bright clothing and protective vests etc. for outdoorsman.

HORN OR SOUND DEVICE: A Police whistle is not a bad idea. Bicycle thumb operated bell's are readily available but not very effective. **PERFORMANCE** Bicycle Mail Order has a product called the Megahorn listed in their catalog. They advertise a 105 decibel sound blast. The horn sells for \$29.95 Performance 1-800-PBS-BIKE.

FLAGS: Some manufacturers offer these standard on their bikes. They are inexpensive and can be purchased at



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most bicycle shops. I have also seen horizontally mounted flags on commuter's cycles that stick out toward the traffic.

MIRRORS: First of all, mirrors are a necessity for all recumbent bicyclists. With underseat steering recumbents you are almost forced to use a helmet-mounted mirror or fabricate an adapter for your handlebars. For upright handlebar steered recumbents, mirror mounting is easy, just attach to your handlebars. When using a fairing on your LWB recumbent, mounting a mirror becomes easier. Our favorite mirror is the **MIRRYCLE** "Road" model. Through slight modifications, you can use this mirror and

mounting hardware to replace the upper left hand nylon bolt on your Zzipper Fairing. You may have to call around for these mirrors, but they are worth it. The cost is under \$20. Avocet makes a nice mirror that attaches via velcro to the handlebar ends/ handlebar grips.

Compiled by Robert J. Bryant

Please send any safety tips or product ideas to RCM c/o the Editor, 17650-B6-140th Ave. SE Suite 341, Renton WA 98058.

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The high-performance foldable you've been waiting for. Fast road tires (racing model), nimble city companion (commuter) or back roads bomber (rough stuff), sleek, Lightweight, (22 pounds). Multiple frame sizes, adjustable stem for proper fit. 20" first rate wheels and tires. Fits into a suitcase for travel-avoid airline charges. Exciting to ride! A real bicycle! For literature and pricing: A.T.P. 4065-W 11th #14-Z, Eugene, OR. 97402 (OR)

FOR SALE OR TRADE?: 1991-1/2 IBIS COUSIN IT! Hybrid tandem, triple fade pink, purple, blue Imron paint, 19"/16" frame, King Headset, Grease guard BB's, Scott AT-4 bars, Hydra Post (suspended seat post), Blackburn Rack and 4 waterbottle cages, Cartridge sealed bearing hubs and Specialized Fat Boy 1.25 100 psi. The ultimate conventional bike! Set up to be extremely fast and with special care taken to make the seating position comfortable. This bike was new in September and has less than 30 miles on it. Full retail is over \$4000, sell for \$3200 + shipping. Optional items include: SPD pedals and Zzipper ATB Fairing. May accept partial trade for commercially built recumbent(s). 1991-1/2 **Specialized Stumpjumper** 20" frame, like new 100 city miles, fenders, Blackburn rack & water bottle cage, Onza "L" bar ends, Custom "GT" upright handlebar stem, Shimano Deore DX components with thumbshifters and new Avocet 1.5 Crossroads (inverted tread) tires. This is the ultimate upright urban assault vehicle. New last August, \$650 or trade for used Tour Easy, Ryan or what have you. (commercially built only). Optional items: Cateye Computer, Zzipper ATB Fairing. Please respond to: Millennium Cycle, Recumbent Sales Dept., 17650-B6-140th Ave. SE. Suite 341, Renton, WA 98058, (206)255-9479

BOOKS AND MISC.

All new **Cycle America Regional Directory for the Central Coast of California** featuring 8 pages of color fold out bike road maps and places to eat, sleep, shop and recreate from San Jose to Santa Barbara. **Special section on recumbents!** Help build a TransAmerica Bicycle Greenbelt. Pocket size. Excellent gift idea. Only \$7.95 to Cycle America, 147-River Street South, Suite 222, Santa Cruz, CA 95060. 1-800-745-7502.

RECUMBENT PARTS:

FOR SALE: SUPER ZZIPPER FAIRING with mounts. Excellent condition. Adapts to most recumbents. Disassembles and rolls up for transport. \$195. OBO Ph# (415)665-1520 CA

FOR SALE: Breeze Cheater Fairing, cost new \$229, make offer. Original Patheon front suspension kit, never used, back in production after a 17 year absence. Cost new \$100, make offer. Mike Eliasohn, 2708 Lake Shore Dr., #307, St. Joseph, MI 49085 PH#(616)982-4058.

HYBRID PARTS:

AMAZING! 8-pound, 1 HP, Permanent Magnet Electric Motor. 2500 R.P.M., 4" X 5", 1/2 shaft. Perfect for converting bikes/ trikes, etc. \$225. Call (707)468-0878, or write: Solar Mind, 759 S. State St. #87, Ukiah, CA 95482

FOR SALE: Breeze Cheater Fairing, cost new \$229, make offer. Original Patheon front suspension kit, never used, back in production after 17 year absence. Cost new \$100, make offer. Mike Eliasohn, 2708 Lake Shore Dr., #307, St. Joseph, MI 49085 (616) 982-4058

RECUMBENT DEALERS

FOR SALE: Rotator, "handcrafted human powered transportation" The Companion Tandem, designed for fun, it can be built with underseat or overseat steering. The gear systems can be built with a standard timing chain or the more efficient individual cadence option. Seats adjust for rider height. 20" wheels front and rear. Seat height 25", overall height 48" and overall length 86". Base price \$3000. The Super-7, designed for racing with a streamlined body. Points series Winner for 1989, 90 and 91. Works great around town too. 20" wheels, seat height 15", height 36", length 88" Base price \$1500. Custom fabrication also available. Rotator, 915 Middle Rincon Rd., Santa Rosa, CA 95409, Phone # (707)539-4203.

****MILLENNIUM**MILLENNIUM**MILLENNIUM****

FOR SALE: Rans Stratus-"B", excellent condition \$599. **DeFelice Custom, Fillet Brazed, Size #2.** One of the finest examples of LWB design. No longer in production. \$999. **VINTAGE METAL!** Hypercycle frames (2) low-tech/ low price, \$50 each., no forks. 1-4130 chro-molly, <rare!> chrome plated frame \$150, no fork. We also carry recumbent mixed fender sets and 17" wheels and tires; 17" front wheel built with 20 hole M17 rim, Bullseye hub with reverse flanges, \$174.99 Dealers for Ryan, Linear and Counterpoint Recumbents. Angle Lake Cyclery, 20840-Pacific Hwy. So., Seattle, WA. Ph#(206)878-7457.

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PRESEASON RECUMBENT SALE: 1)1991 **Linear Recumbent** Available for immediate delivery: (folding aluminum) 45" frame, 18 speeds with index shifting, rack and bottle cage **BRAND NEW \$659.** 2) '91 demo, 42" frame 18 speed, **SUPER SALE PRICE \$599.** 3)1991 **Tour Easy: New!** Composite Cobra seat, black in color, medium size, 21 speed with Shimano triple crank and available now **BRAND NEW \$1399.** 1992 Tour Easy's now available with Specialized Sealed Hubs. 4)1992 **Ryan Vanguard**, Special price on all orders taken in thru Mar.31 \$949. 5) **Rans Stratus-B** RCM test bike available soon, call for discount price. 6) **Advanced Transportation Products "R-20"** RCM Test Bike SWB recumbent, full SunTour XC-LTD group two 20" wheels \$1350. 7)1992 **Gold Rush Replica "feel the need for speed?"** 8.)**Come and see the "THEBIS".** Call for pricing and delivery dates. Order our new 1992 18+ page Recumbent Catalog, our best one EVER! \$2 + \$1 postage and handling (\$3 total). If you have ordered the Millennium Catalog in the past send the back page in for \$1 off! Millennium Recumbent Bicycles, 17650-B6-140th Ave. Suite 341-B, SE, Renton WA 98058 Recumbent Hotline 206-255-9479

RECUMBENT PERSONALS

RBCA's only Russian member who is an HPV designer seeks investor for HPV project. Write: Tikhy Gregory, PO Box 41, Stakhanov, Lugansk, 349700, Ukraine, USSR.

MATS NILSSON, Recumbent Cyclist Magazine's European Correspondent. Mats is 28 years old, male and single. (single recumbent interested female correspondence encouraged). Write: Mats Nilsson, Hermelinsv. 151, S-906 42 Umea, Sweden.

Classified Ads are free to subscribers, non-subscribers rates are \$15 per insertion and commercial classifieds start at \$30 per insertion. **Display ads** are as follows: 1/8-page \$55, 1/4-page \$90, 1/3-page \$120, 1/2-page \$145, 2/3-page \$195 and full page \$245.

RECUMBENT NEWS

BIG NEWS! SPEEDY WINDCHEETAH UPDATE! Mike Burrow's Windcheetah Speedy Recumbent Tricycle is going back into full production. Yes, it's true. Besides being able to purchase the castings kit, ready to ride Speedy's will be available soon. A Limited Edition of 10 trikes will be available as a "relaunch Special." The price

will be £1645 (Pounds) for the riding chassis (no body). Mr. Burrows again mentioned that shipping his trikes is a problem and the best way to overcome it is to pick up your new Speedy in England. With inquiries, please send a couple dollars or two international reply coupons and request the new leaflet (when it becomes available) to:

Burrows Engineering, 11 Basey Rd., Rackheath Ind. Estate, Norwich, Norfolk, NR13 6PZ. Mr Burrows also mentioned that he plans to attend the 1992 IHPSC in Yreka, CA.

Speaking of Trikes, Ken Trueba's **TRICE RECUMBENT TRIKE** is the first production recumbent to offer the **POWER TREADS** Sachs 2 stroke motor as a hybrid power option on new Trice Trikes. Ken has been commuting with one daily. For more info, give Ken a call at: (503)753-5178.

LINEAR GOES HOLLYWOOD: The very active marketing department at Linear Recumbents, Inc. in Guttenberg, Iowa are at it again. This year, Linear Bicycles will be given away as promotional prizes on the popular TV game shows, "The Price is Right" and "Wheel of Fortune." Does this mean Vanna will ride one? Linear Recumbents also represented recumbent bicycles in fine fashion at both the Anaheim and Atlantic City Interbike Shows this year.

THEBIS -201: Have you seen that wild tricycle that everyone is talking about? Rear wheel steering with dual rear wheel drive, but the crankset goes through the front wheel's hub. This is the BMW of recumbents with that incredible warranty! Anyway, the story is that a Robert Setrakian, who is the Chairman of the Board of Governors for the US Postal Service, tracked down Thebis at the Interbike Show last year. He recently took delivery of a new Thebis-201 Magnesium Tricycle for testing.....Thebis Info-line 1-800-667-6801. Look for a Thebis test in RCM#10!

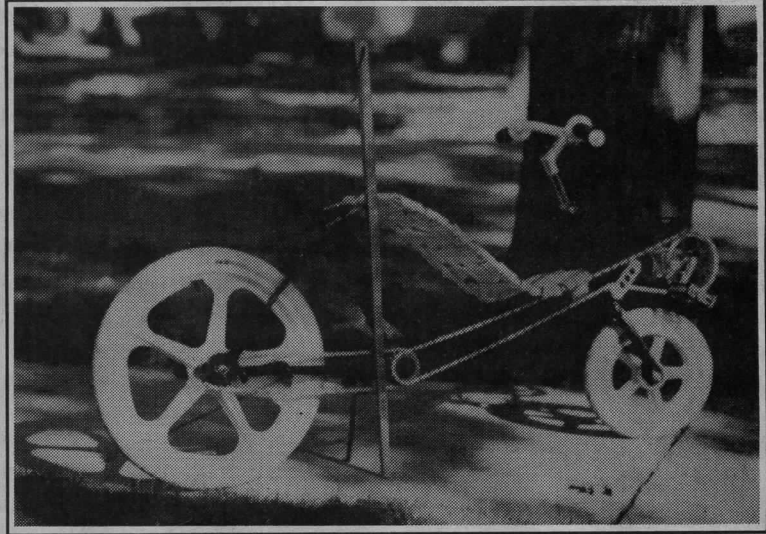
ALTERNATIVE BIKESTYLES: Ed Roeter's recumbent philosophy is: keep it simple, rugged, reliable and inexpensive! These could be most affordable recumbents in the USA. LWB recumbents in adult and child sizes can be purchased ready to ride for \$395. or \$150 for an unpainted frameset. (send S.A.S.E.) A.B., PO Box 1344, Bonita, CA 91908. RCM readers seem to be keeping Ed Roeters very busy this winter.....

EASY RACERS: Prices will increase in early 1992 for the Tour Easy. The price increase will be \$100 due to an upgrade in quality on the seat. Formerly built of fiberglass, it will now be built of a Kevlar/ Carbon Fiber/ Fiberglass combination which is also lighter weight. The hubs will also be upgraded to Specialized Cartridge Sealed units.

THE SPORTS CYCLE: This new SWB recumbent was pictured and mentioned in RCM#8. We even had the prototype here to test for a few hours in November. Production plans have fallen through as of this writing. The

original idea for this bike was a simple and affordable SWB that would sell for around \$795 and ship in one UPS'able box. If you would like to know more about this SWB project (-on-hold), drop us a line here at RCM-S.A.S.E. only.

CYCLOPEDIA Gaylord Hill has a new version of his home-built SWB recumbent, The Min-E-Bent. Plans are due out in a month. This little recumbent is designed for a child rider 100 pounds or less.



Gaylord Hill's Cyclopedia Min-E-Bent
(Photo courtesy of Cyclopedia)

ELLIPTIC is a new dealer for Lightning Cycle Dynamics located in San Carlos (CA). They also offer recumbent modifications, custom designs and engineering assistance. Elliptic, 26 Club Dr., San Carlos, CA 94070. Ph#(415)591-3737. Contact: Stephen Des Jardins.

ANGLE LAKE CYCLERY in Seattle, Washington is the exclusive distributor for Counterpoint Bicycles including the Presto SWB Recumbent and the Opus Semi-Recumbent tandem. For 1992 Counterpoint is offering the new "PRESTO CL" lower priced version of the very popular Northwest recumbent. The CL will have Shimano 400 LX components and sell for \$1399. Angle Lake Cyclery are also dealers for Ryan Vanguard and Linear Recumbents Angle Lake offers a complete line of recumbent/ HPV products and services. Including 24" Blackburn racks for recumbents that use a 20" or 24" rear wheel> as well as HPV wheels, tires, chainrings and fendersets. Angle Lake offers Esge custom fender sets available for recumbents that use different wheel combinations. For more information contact, Angle Lake Cyclery, 20840 Pacific Hwy. So., Seattle, WA, 98198. Ph#(206)878-7457.

A DREAM COME TRUE

by Chuck Vickers
Maple Valley, WA

To most people, just owning a recumbent is enough, but to me ownership was not enough. I wanted to ride in the Pacific Northwest, particularly in the great state of Washington. The dream had been planted in 1973, when I was shipped overseas by the Air Force. I was scheduled to leave from McChord AFB and being a dedicated young sergeant, I didn't want to miss my flight, so I left three days early. I arrived at SeaTac Airport and took a bus to McChord, it was dark and I was tired, so when I checked into my room, I immediately hit the sack. When I awoke the next morning, I looked out of my window and staring me in the face is the trademark of Washington, Mt. Rainier, that's when the dream began. Admittedly, the dream was just of living in Washington at first, but later the dream included a recumbent. That part of the dream was made possible after an acquaintance pointed me to Gardner Martin and Easy Racers. I purchased my first and, so far only, recumbent from Gardner and will be forever grateful to him for his help and patience in getting me set up with my Tour Easy. but, back to the dream, it has finally come true. My family

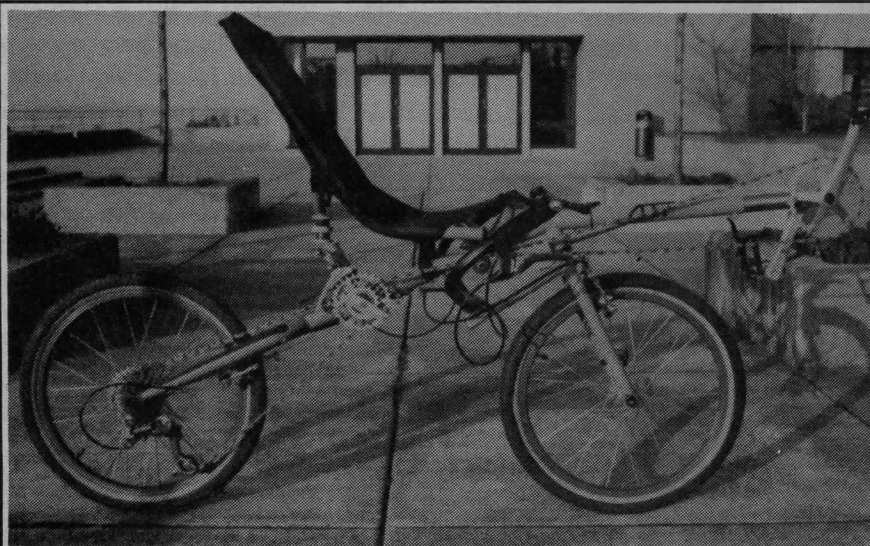
and I moved here to Maple Valley in August and we are in love with Washington and will never leave.

For those of you who are not familiar with the Maple Valley area of southeast part King County, it is about 40 minutes outside of the Seattle. The difference between where I used to ride and here is like night and day. The area I used to ride had a very bad problem with trash along side the road and the traffic was terrible, also the drivers didn't seem to think that bike riders had any rights to the shoulder. Yesterday was like going to bike riders heaven, no trash, no traffic and the drivers that did pass me treated me like I had as much right to ride on the road as they did, it was the most enjoyable ride I have ever had on my bike and I hope to have many more. I would like to hear from as many recumbent riders in the Seattle/ Tacoma/ King County area as possible, maybe we can organize a recumbent ride-in or something like that to get to know each other better. My address is: Chuck Vickers, 21735 SE 238th St., Maple Valley, WA 98038.

ATP - R20

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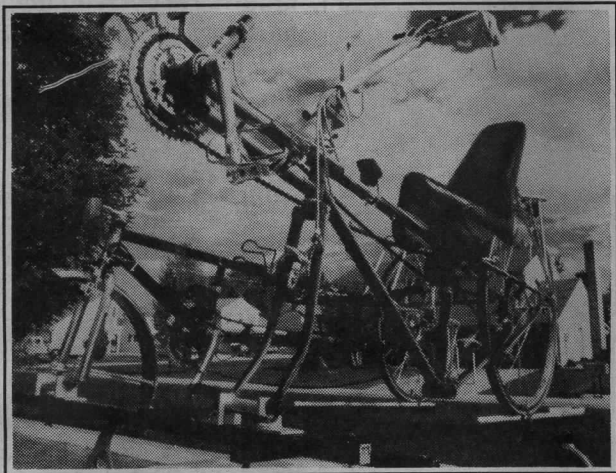
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BUILDING A RECUMBENT BIKE RACK

by Chet Rideout
Ft. Collins, CO

Frequently I hear that recumbent riders are worried about transporting their bicycles on small cars. If you construct the right kind of rack, car transporting should not be a



Chet's homebuilt rack on his Sunbird
(Photo by Chet Rideout)

problem. Following the advice of another cyclist, last year I built a rack that can transport both a LWB recumbent (Infinity) and a tandem bike. It is constructed of 1" square aluminum tubing with a 1/8" wall. Aluminum angle brackets are fastened by pop rivets onto the front rail to hold the front fork, an aluminum tube was used as a spacer around the skewer. I sawed a 1" PVC pipe in half lengthwise to make a trough for the wheel and the plastic pipe is held to the square tubing with 3/16" pop rivets. A strap around the bar holds the rear tire in place.

My car is a 1991 Pontiac Sunbird two-door Coupe and it has

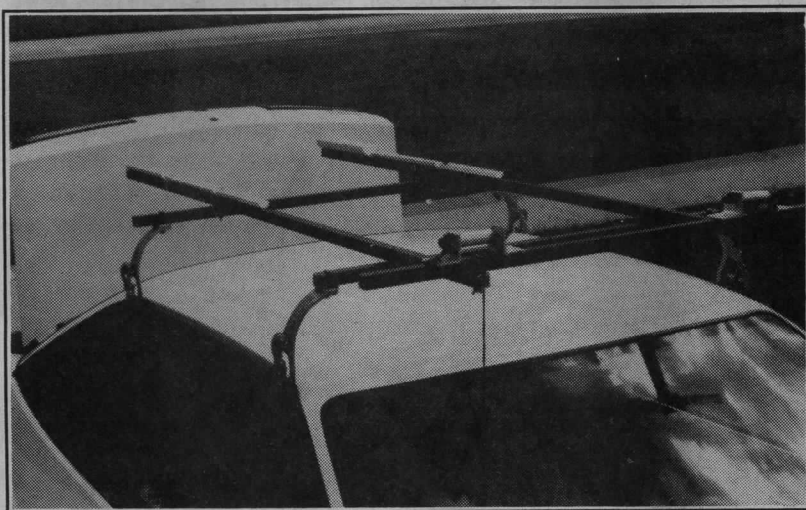


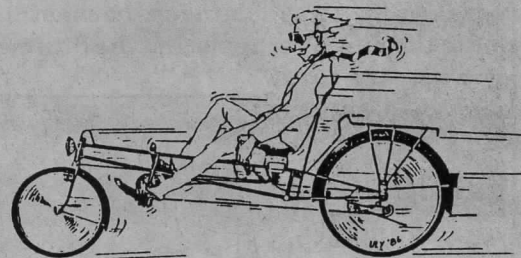
Photo by Chet Rideout

a very short roof. The rack still fits without interfering with the opening of the hood or the trunk (see photo). The Sunbird rain gutters—something I looked for when I purchased the car. This allowed me to use Seda rack mounts which I also used to transport a canoe.

You can purchase a commercial rack by Yakima or others and buy a couple of tandem mounts (expensive!). However, if you are like me, you would rather buy something else with the money. I probably spent \$80 on this rack, whereas a Yakima rack would cost \$400 or more.

I do not know the best solution if you lack rain gutters on your car, except to say that a LWB recumbent with rear wheel removed many times can be carried on a trunk mounted rack, but be careful, it will be wider than the car in many cases. Pickup trucks can be equipped with racks inexpensively, holding a LWB in the bed.

Hopefully this gives you some idea you can use in making your own bike rack. I find my roof rack easy to use, loading or unloading takes only 5-10 minutes. The negatives are that the wind resistance is greater with the bikes up top and they can collect more bugs. On the plus side, the bikes are much safer on the roof if you get in a minor accident. In any case, work out some method of getting both you and your recumbent out of town for a change of scenery.



COLLITON "FLATBLACK BMX-SWB RECUMBENT CONVERSION"

Let me start by saying thanks to Bob Bryant for all his great work with the Recumbent Cyclist and for his words of encouragement over the past eight months. Bob, more than anyone, is responsible for getting me into riding and building recumbents. He has asked me to write a little about the SWB bikes that I started building this summer.

After pricing the few manufactured SWB bikes offered, I knew that if I was ever going to own one I would have to build it myself. Although I had no background in frame building, I decided to go ahead and give it a try anyway. Fortunately, I've had good luck and what I think are some real successes. I've named my bikes FlatBlacks for their easy primer black finish. One nice thing about designing and building your own bikes is naming them whatever you like. There are now four bikes in the FlatBlack series. The FB-1 was built last spring and later made the trip to the speed championships this summer where it turned more than a few heads.

When I was checking into the hotel before the races I had the good fortune to meet Gardner Martin. He gave the bike a nod of approval after a quick inspection. Needless to say, I came home with recumbent building fever. The FB-1 was later modified with some of the suggestions I got from Bob and others, but was later stripped for parts when the FB-2 frame was completed. The FB-1 is pictured with its original set-up. I was able to run the chain directly from the front to the rear after replacing the Sturmey-Archer rear cog with one that would accept thinner chain.

Both the FB-1 and FB-2 were built using standard BMX frame sets with a boom tube and bottom bracket added to the front of the head tube. I took a rough guess at what

the length of the boom tube should be - knowing I had 6"-8" of adjustment in the seat I was using. 18" turned out to be just the right length. The big difference between the two bikes is the frame geometry achieved in the FB-2 by inverting the frame. This gave the bike a more relaxed head tube

angle and an overall lower profile. I'm 6'1" and did not have any problems with the taller FB-1 but shorter riders found it a bit awkward starting and stopping. The FB-2 was built with a shorter person in mind but I can ride it as well with no problem.

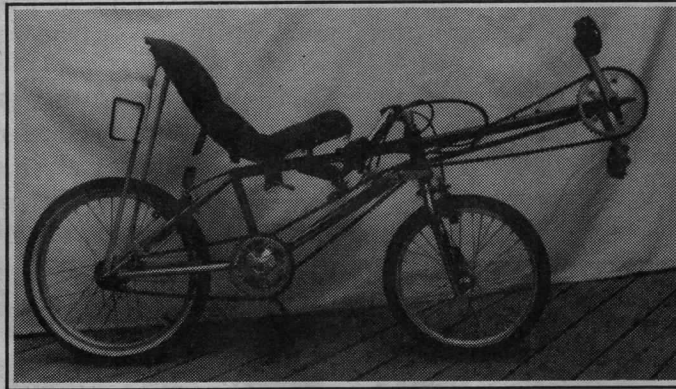
One other change was made to the FB-2 to make it easier to build. Instead of cutting the seat tube and bottom bracket out of an old frame I

used a 1.5" muffler tube and an Econ-Bent sleeved bottom bracket. This required just one weld and gives you the ability to adjust both seat and bottom bracket for a perfect fit. On the FB-1, I found that the seat tube from the old frame set wasn't strong enough on its own and needed additional bracing. Even so, three welds is not a lot of welding.

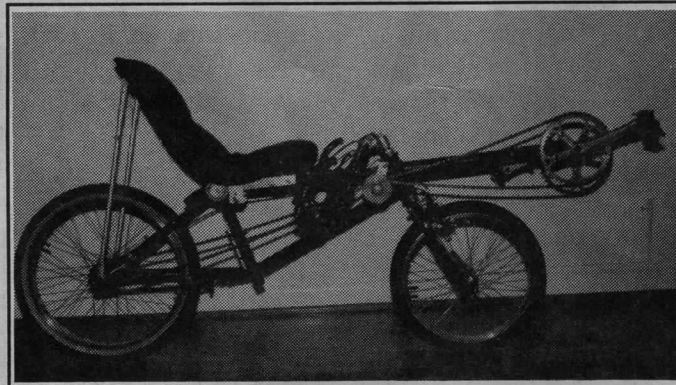
Both bikes use a 16" front wheel and fork from Cyclo-Pedia. A 20" front wheel will push the bottom bracket (and your feet) well above your hips. I found this to be a very uncomfortable riding position. The FB-1 had no heel interference with the 16" wheel but with the new head tube angle the FB-2 does.

Both bikes use a custom built 20" rear wheel, also from Cyclo-Pedia, with a Sturmey-Archer 5 speed internal hub. This was necessary because

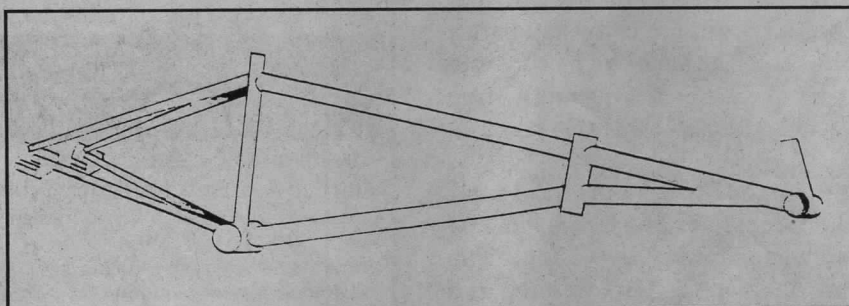
there is not enough room for a free wheel in the rear end of a BMX. My friends at the bike shop assured me that the rear stays could be spread enough to accommodate conventional gearing but I didn't want to take the chance of screw-



FB-1
(Photo by Mark Colliton)



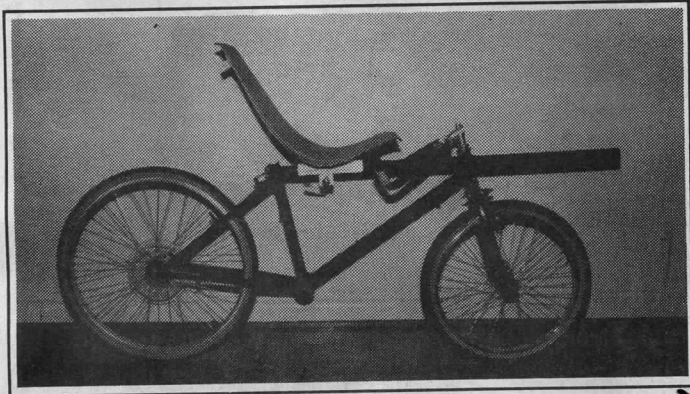
FB-2
(Photo by Mark Colliton)



BMX Frame with a boom and front derailleur post added.
(Drawing by Mark Colliton)

ing up my first frame. I'm glad I decided not to do this because I like the uncluttered look I got with the SA-5. The bad thing is that with only five gears, hill climbing on this bike is a real workout. Unless your willing to add a derailleur post and another chain ring it's really best suited for parking lot racing.

For steering I used the original stem and handlebars that came with the BMX frame set. I simply turned the stem around backwards, cut out the brace tube that most BMX



FB-3
(Photo by Mark Colliton)

bars have and pushed the bars under the seat. I added bar end extenders later which greatly improved the handling. You can get the bars a little bit further back, and under the seat, if you can find a .833 road stem (see picture of FB-3). I picked up this stem in a local bike shop but I think it was a lucky find.

The one thing I would recommend spending your money on is a commercially built seat. The RANS "Nimbus" seat that I use on my bikes easily adapts to all kinds of frames and comes with all the mounting extras you'll need for just under \$100. The seat is very light and gives the bike a nice finished look. I have to admit that I've sat on nicer seats but for the price and ease of installation you can't go wrong with a RANS.

The idler I use on these bikes is also a stock item from RANS. At \$25. I feel it's a bit over priced but it's easy to modify and I've used it in several different configurations. The exact positioning of the idler is a little tricky. It must carry the return chain over the front fork and still not interfere with the drive chain. I positioned it by hand after the chain was installed, marking the spot and bolting it to the frame later. You get very good at removing and adding chain links the first time you go through this little exercise.

All in all I spent about \$350. on the FB-1. Most of that went for the seat, wheels, tires and front fork. The frame was TIG welded in a welding class I was taking (Thanks Ted). The FB-2 frame cost \$30. plus \$20. for the MIG welding at a local muffler shop. The sleeved bottom bracket was \$27. All the other parts came from the first bike (FB-1). The FB-

3 started with a 24" Mongoose mountain bike frame that I retrieved from the trash. The wheel set up is 24" rear, 20" front. The finished bike will feature a modified Econ-Bent bottom bracket and use conventional gearing (18 speeds). It too has been MIG welded at the muffler shop. The FB-4 started life as a HUTCH SuperBike and has the perfect geometry for this kind of conversion. It has 20" wheels front and rear. If you have a chance to get your hands on one, grab it.

That's about all I can tell you for now. I have plans to build a REBEL CYCLE so I'll write and let you know how it turns out.

Have some fun,
Mark M. Colliton

Besides assuming the title of the "RBCA's Resident BMX-Conversion Expert", Mark also owns a custom built Alternative Bikesstyles LWB (pictured on page 10 of RCM#8) and a Rans Stratus-B. —Editor

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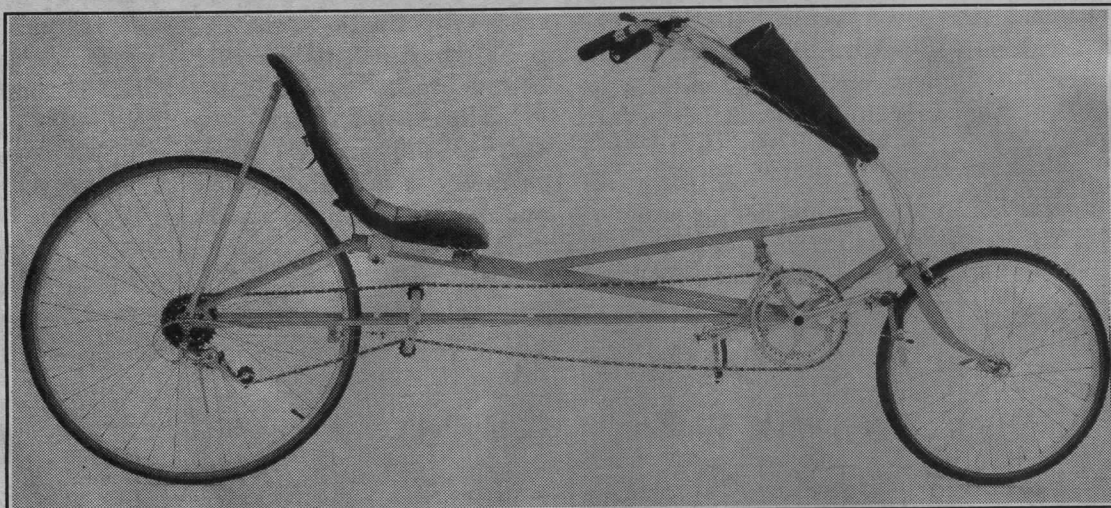
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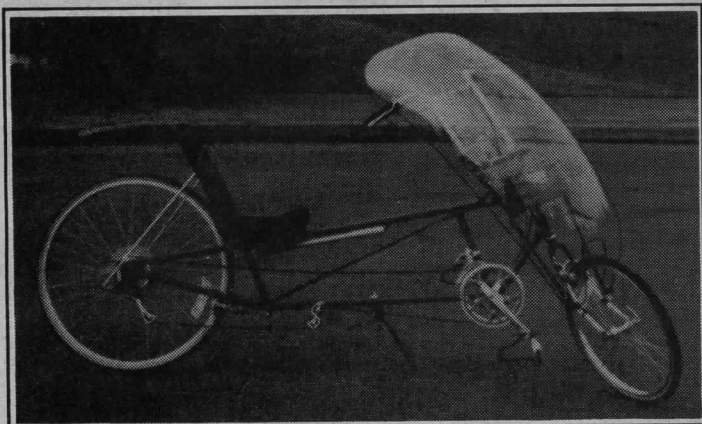
EASY RACER'S WINS "BEST BUY RECUMBENT 1992"

by Robert Bryant

Congratulations are in order for Gardner Martin and his staff at Easy Racers Inc. in Watsonville, California. In this late breaking story, the Tour Easy Recumbent was awarded the Best Buy Recumbent in the March 1992 Bicycling Magazine Buyers Guide. The story was done by Jim Langley and is 1-1/2 pages with specs and a beautiful full color photo of a candy apple red Tour Easy.

Mr. Langley leads that article by writing that the Tour Easy a "Cessna for the Pavement." He goes on to say, "I've

never flown a plane, but I'll bet it's similar to piloting the Tour Easy.....this road-rocket seems to accelerate endlessly." The article is full of praise and very few, if any negatives or recumbent-cliche's. The downside to this years Buyers Guide is that the recumbent section is small, only the Counterpoint Presto and Lightning are listed. Our hats are still off to Bicycling Magazine for this fine article. Hopefully, the "Best Buy Recumbent" will be an annual award.

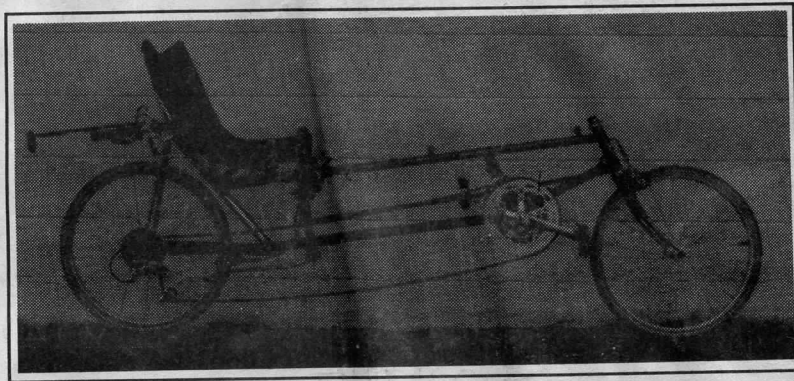


1992 Best Buy Recumbent
(Staff Photo)



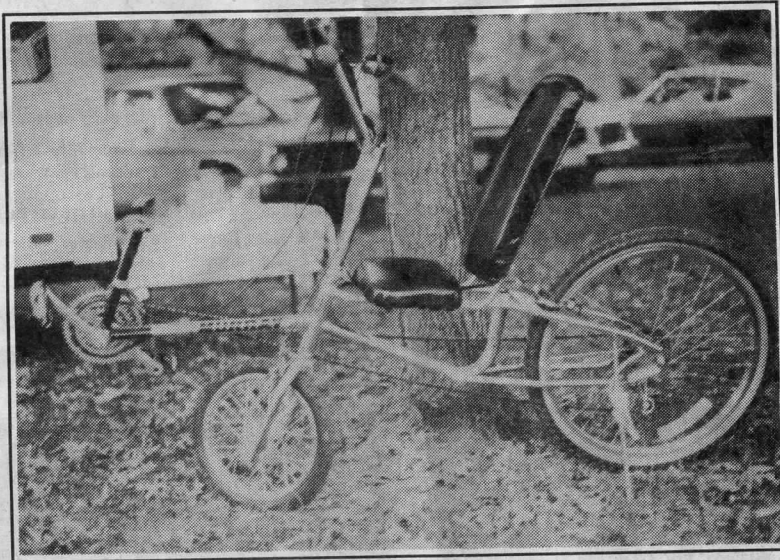
The Mod Squad
(Photo courtesy of Easy Racers Inc.)

Photo Gallery



Gene Lemle's Tailwind Micro

The Lightning Cycle Inc. "Tailwind Micro" built in Swanton, Ohio by Gene Lemle. The Micro is outfitted with front and rear 20" wheels and is available with CycloPedia's Intermediate Drive. Lightning Recumbents are hand built to order. For more information write to: Lightning Cycle, Inc., 3819 Rt. 295, Swanton, Ohio, 43558. The phone number is (419)826-4056. (Photo courtesy of Lightning Cycle, Inc.)



Murray SWB

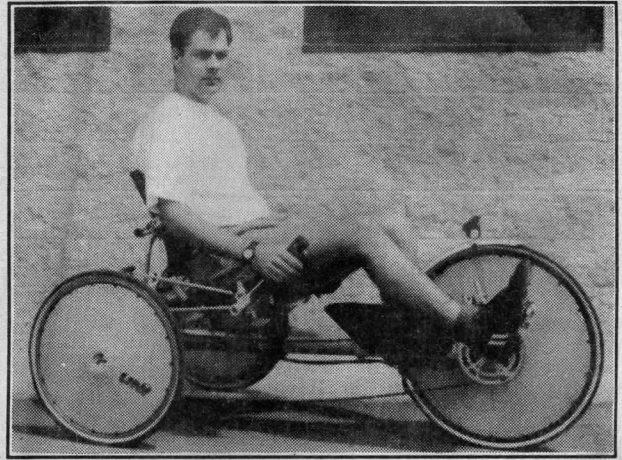
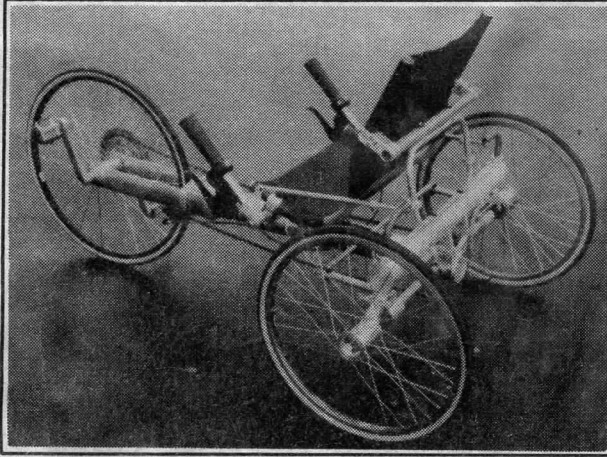
(Photo by Michael Eliasohn)

Here is one of the two bikes that the Murray Bicycle Co. brought to an early 1980's IHPS. The bike shown is a SWB, the other was a LWB similar to a Tour Easy. Neither ever made it to production. (Vintage recumbent photo by Michael Eliasohn.)

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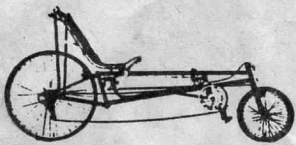
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