

# The recumbent bicycle — a different way to get around

Just settle in the seat, push; you're moving

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You sink back into the seat, your arms at your side, fingers lightly touching the handlebars below. One foot rests up against the crank out front, the other foot on the road.

Then, with one firm thrust on the pedal, you are off, the wind in your face, riding what some say is the first piece of innovative bicycle engineering since the Wright brothers

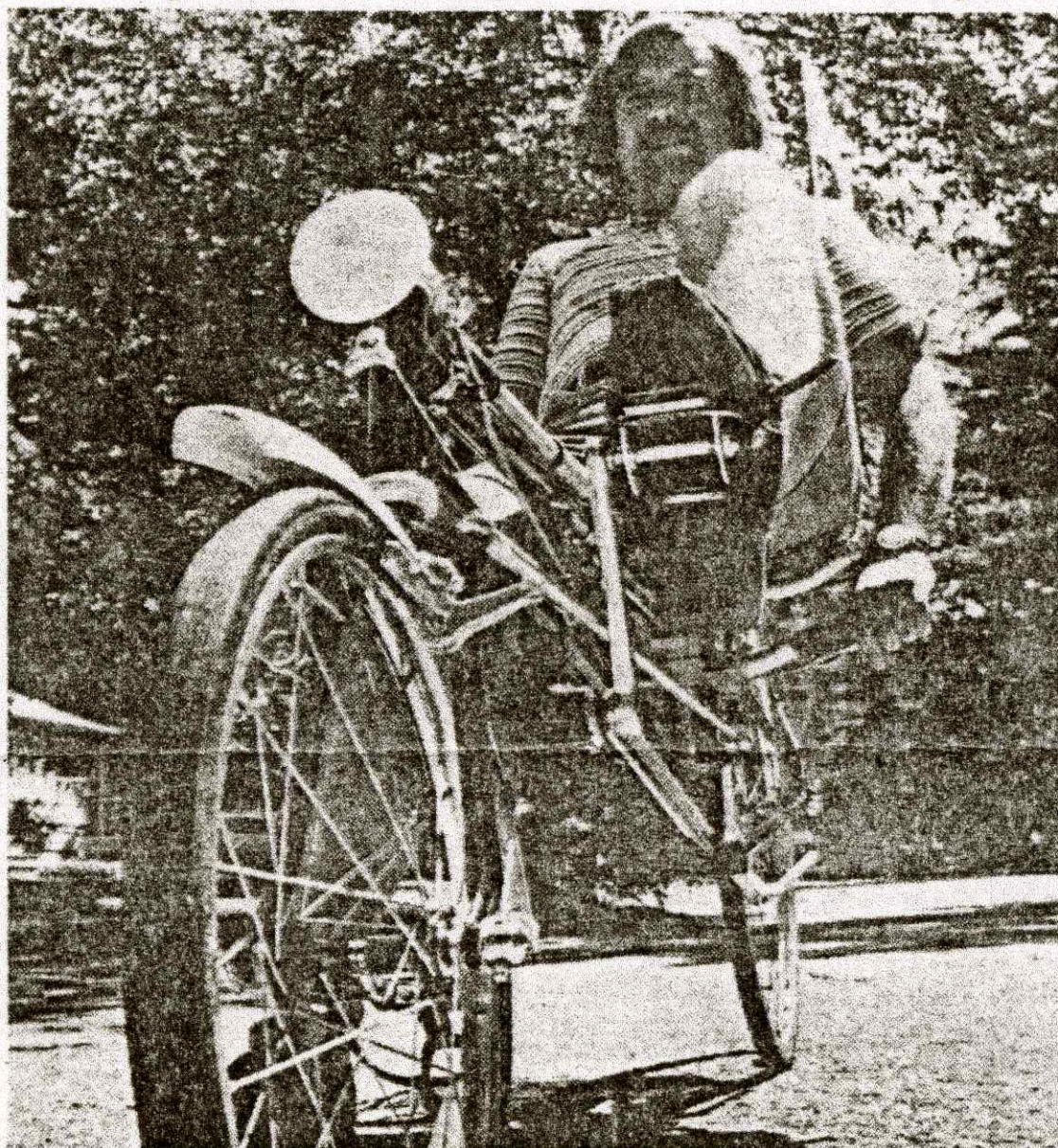


closed up shop to found the aviation industry so many years ago.

The exaggeration is only slight. The multigear bicycle arrived in the 1920s and modern materials have made the lightweight bicycle possible in recent years. But little else has come along to excite the cyclist. Now, in a backyard garage filled with lathes and other precision instruments, two Massachusetts men are handcrafting a recumbent bike (you sit in a seat, auto style, rather than on a saddle) to provide the general public with the first radically different cycling option in decades.

Recumbent bicycles are not totally new. Some designs attracted comment around the turn of the century. In 1932 a French version did so well in road races with a relatively unknown rider in the seat that a frightened International Bicycling Federation banned it from further competition, thus removing a major reason for its manufacture. Had the federation not reacted so precipitously and created, instead, a separate class for the new machine, it might have been commonplace on the roads and bicycle paths of today.

The chief advantage of the recumbent bike is that all the cyclist's strength and energy is channeled directly into propelling the machine forward. This is immediately obvious to the first-time rider of the Avatar 2000, as the new bike is called.



Co-owner Harald Maciejewski aboard the Avatar 2000

Avatar is a Hindi word meaning "new beginning," which is precisely what the manufacturers, Dick Forrestall and Harald Maciejewski, expect the new recumbent bike will provide for cycling.

To exert maximum pressure on the crank of a conventional bike, the cyclist has to exert counter pressure with his arms and back by pulling up on the handlebars. In other words, because the cyclist's legs tend to lift him off a conventional bike, his arms are used to hold him in the saddle.

Not so with the recumbent bike where the seat provides all the bracing needed for the legs to exert full pressure on the cranks.

The arms, meanwhile, rest fully relaxed on the handlebars. The torso, too, is equally relaxed. Indeed, one-handed cycling (while you hold an apple or a lemonade in the other) is possible on the recumbent machine the way it isn't on any other bike.

David Gordon Wilson, a professor of mechanical engineering at the Massachusetts In-

stitute of Technology and co-designer of the Avatar, has long ridden recumbent cycles which he designed and had specially built for himself.

On these bikes, the professor says matter of factly, "I have never been beaten up a hill by any other cyclist." Nor, for that matter, has he had much difficulty leaving behind those cyclists with a competitive urge from a standing start at a traffic light.

In a scientifically crude but nevertheless graphic experiment, the Avatar's ability to push against a bathroom scale mounted vertically on a wall was tested against a conventional 10-speed bike. Several cyclists were invited to use both bikes. The Avatar scored an average of 70 pounds against the conventional bike's 40 pounds, which tends to explain why Professor Wilson has yet to be beaten uphill.

Here, then, are some additional plusses for the recumbent cycle:

- The seat provides a far more comfortable ride than a saddle, an advantage that becomes more noticeable the longer the ride.

- Arms and torso are more relaxed in the auto-style sitting position which leaves the lungs free to expand to their fullest.

- Because of the low sitting position, wind resistance is lessened.

- The low center of gravity greatly reduces the chance of "over the handlebar" spills.

- Because of the relatively high position of the cranks, the Avatar can be pedaled around sharp corners with no danger of a pedal catching the ground.

- One size bike fits all as the adjustment is made by moving the seat nearer to or farther from the cranks.

But there are some disadvantages as well:

- The low center of gravity means the cyclist has less time to correct a skid before the bike slides from under him than is the case on the higher conventional bike.

- Some riders find balancing at slow speeds a little tricky until they get used to the bike.

- The low profile of the bike means that it will be less noticeable to motorists.

This latter criticism might be valid if the recumbent bike becomes commonplace on the roads but right now its very difference makes it stand out.

Dick Forrestall says he feels like the Pied Piper whenever he takes a spin on the Avatar, such is the attention he gets. John Schubert, who road-tested the bike for Bicycling magazine, put it this way: "There's no blending with the wallpaper when you ride a recumbent." In any event, the bike comes with an attachment for holding an orange visibility flag in the daytime and a flashing strobe light indicates the Avatar's presence at night.

For many years Professor Wilson had tried fruitlessly to get the manufacturers of conventional bicycles to add a recumbent model to their lines. They were performing profitably enough as it was, thank you very much, so why be innovative, was their implied response.

As Professor Wilson puts it tersely: "The trouble with the bicycle industry is that the executives don't ride bicycles to work."

Then one day Professor Wilson sent his latest design for a recumbent machine to Dick Forrestall, known for the quality hand-crafted bicycles he turned out. How much will it cost to build this, he asked. Mr. Forrestall began making the necessary calculations but, in the process, became so intrigued by the practicality of the design that he came back with a counterproposal: "Let me build them on a commercial basis," he said.

Now, three years and four prototypes later, during which several modifications to the original Wilson concept were made, the Avatar has arrived.

Its price: \$1,500 f.o.b. Wilmington, Mass., is hardly inexpensive. But then, a whole range of conventional hand-crafted bikes cost that much — and more.

Both photos by Mark Spain