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A different vision

Published: Monday, April 24, 2006
By Adele Holoch
Correspondent

Karen Keeney was raised by her legally blind grandfather, and she remembers riding with him in a car when he drove illegally.

Now, as president of Chadwick Optical, an ophthalmic lens laboratory in White River Junction specializing in creating moderately priced custom eyeglass lenses, Keeney is working to help individuals with low vision find safer ways to live with visual impairment.

Among lenses the company has created is the EP-Horizontal, or expansion prism lens. This is a pioneering lens that helps increase the scope of sight for individuals who have suffered a visual field loss -- called hemianopia -- after a stroke, brain trauma or tumor.

"We're hearing back from people whose lives we've changed," Keeney said.



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THIS WEEK IN PHOTOS

Anthony Funari, an optical technician at Chadwick Optical in White River Junction, prepares a set of glasses Friday for a person with hemianopsia, a condition where a person loses one side of their field of vision.

GLENN RUSSELL, Free Press



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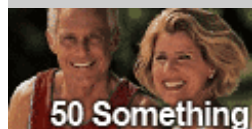
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Keeney bought the business -- an old, bankrupt Bausch & Lomb factory -- from a venture capital firm in 1980.

"It was dead. All we bought was used equipment and no customer base," she said.

From those meager roots, Keeney and her then-husband created Chadwick Optical, a traditional ophthalmic lens laboratory. For the couple, who were initially focused on creating volume, getting the business up and thriving was a long struggle, particularly because of the location.

White River Junction is not an optimal area for developing a high-volume optical business, she said.

"You can do that in metropolitan areas, but not in rural areas," Keeney said. "We weren't in the black for seven years."

Shifting focus

In 2000, Keeney obtained sole ownership of the business. She saw it as an opportunity to shift the company's direction.

"I got to carry on my dreams and put my thoughts into practice, and what I had seen as the future of the business. I wanted to bring meaning into the whole thing, instead of high volume," Keeney said.

Specifically, Keeney wanted to focus more on providing lenses and services for low-vision professionals and their patients. She wanted the change to be rewarding, but did not expect it to be lucrative.

Sales for the business now "hover around three quarters of a million dollars per year," Keeney said.

She has also been successful in finding other sources of funding for the business. In 2003, the company was awarded a grant from the National Institutes of Health's National Eye Institute to develop the EP-Horizontal lens. The grant was a two-year award for nearly half a million dollars, for which Keeney applied at the urging of Dr. Eli Peli, a professor of ophthalmology at Harvard Medical School and senior scientist and Moakley scholar in aging eye research at Schepens Eye Research Institute.

Peli and Keeney had met at a conference in Florida.

"We had the opportunity to talk about what she was interested in, and it was very much in line with what I was interested in," said Peli, who was developing a prism that would increase the visual fields of patients with hemianopia.

"I knew I could do a temporary fit to try this technique, but temporary prisms are made from soft plastic

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that deteriorates, and it was not a good solution," Peli explained. "I thought she could possibly make for me something that could be a permanent prescription."

Finding local talent

After Keeney won the grant, Peli and Chadwick Optical worked together to develop the lens. Work required such a high degree of precision that Chadwick Optical had to invest in machine tool equipment and hire a second-shift staff from a local machine shop.

"She was able to find some really talented mechanical people there in the area, and with their help, we developed a really usable device," Peli said.

Released in April 2005, the EP lens -- which stands for expansion prism (and also named for Eli Peli) -- adds 20 degrees to its users' peripheral field of vision. A woman with normal vision usually has about 170 degrees of peripheral vision, and a man usually sees 160 degrees. For individuals suffering from hemianopia, those fields of vision are reduced to 85 and 80 degrees.

The added 20 degrees help patients "walk a whole lot better without bumping into things and being afraid of crowds," Keeney said.

In many states, she said, with rehabilitation, training and approval by the Department of Motor Vehicles, individuals using the lenses may be able to drive again.

At the MaryAnn Keverline Walls Low Vision Center in the Southern California College of Optometry's Eye Care Center, assistant professor Rebecca Kammer had a patient who participated in a clinical trial of the EP-Horizontal Lens who, with rehabilitation and training, was able to drive with the lenses.


"He was just so happy," Kammer said.

In addition to the EP lenses, Chadwick Optical develops variable-tint lenses for glare reduction for individuals with macular degeneration, glaucoma and photophobia, as well as other prism and diopeter lenses. The company does not work directly with patients, but serves them through practitioners at low-vision optometry schools and state- and privately run services for the blind and visually impaired.

For Keeney, who followed her heart in a reconfiguration of goals for the eight-person business, the work has been tremendously rewarding.

"We all love what we do," she said. "There is hope for many of the legally blind, if they just know where to go."

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