Aid for the Visually Impaired

Sandra Raven is legally blind. She suffers from Stargardts disease, a condition that involves gradual degeneration of the retina and is not correctible although, as in Sandra's case, it may become stabilized. Sandra has lost 98 percent of her central vision but she can see some things with peripheral vision.

Despite her vision impairment, "Sandy" Raven can read, type and hold down a job as clerk typist with the U.S. Coast Guard Training Center, Yorktown, Virginia. The secret is a video system that magnifies and focuses words so that partially sighted people can read and even type from printed copy or handwritten notes. Called the Viewstar, it was invented by Sandy's stepfather, Dr. Leonard Weinstein. "A gift of love," she calls the machine. Above, Sandra is setting up her Viewstar while Weinstein looks on. At right, one of Weinstein's clients, a retired vision-impaired shipbuilder, studies biblical scripture with the aid of his specially-tailored Viewstar; he writes his interpretations with the aid of his Viewstar.

The Viewstar is an example of a personnel-type spinoff, wherein an aerospace engineer or scientist transfers to non-aerospace applications technologies and skills he acquired in his aerospace occupation. Leonard Weinstein is a NASA research engineer, a group leader in the Fluid Mechanics Division, winner of more than 20 awards for innovative research. With degrees in physics, aerospace engineering, fluid mechanics and thermal science, Dr. Weinstein is a man with an exceptional range of expertise; in developing the Viewstar, he combined a number of electronic, optical and mechanical technologies.

Sandra Raven did not lose her sight until

she graduated from Warwick High School, Newport News, Virginia. When her vision deteriorated, she sought help from the Virginia Department of the Visually Handicapped, which loaned her a closed circuit TV visual aid system for magnification. Weinstein, however, was not impressed with the system's performance and it was very expensive; he felt that he could employ his scientific/technological expertise to develop a system of at least comparable performance that would be considerably less costly.

He succeeded. In 1982, he produced the first version of a dual field Viewstar, which offered lower cost principally because it employed only one TV camera where commercially available systems used two. The camera focused on the copy to be typed and presented it in magnified form on the upper half of a split screen monitor; material on the typewriter was shown on the lower half, similarly magnified. The two views could be independently magnified and focused, and a movable mirror allowed use of the system with a moving ball typewriter. Weinstein also produced alternative systems for single view reading, writing or examining small objects.

The original system was about one-third cheaper than available commercial counterparts but Weinstein undertook a second phase development to produce a Viewstar Economy Model, a low vision closed circuit TV system that includes a TV camera, zoom lens, a stand with a lamp for viewing and a 12-inch monitor. It sells for $1,150.

Weinstein also developed other systems to meet individual needs — different magnification ranges, positioning stages, black and white image reversal and larger monitors.

The products are marketed by Viewstar, Newport News, Virginia, a small business owned by Weinstein's wife; he serves as technical director. The company has sold systems to several U.S. universities, state and federal government agencies, private corporations and individuals.

Production is limited, however, because Weinstein still works full time at Langley Research Center and can devote only 10–12 hours a week to producing Viewstars and other specialty items he has invented. "I'm not interested in building a big business," he says, "I just want to help the visually impaired."