

by Bill Warner
Collegian Science Writer

First they snuck them into my telephone line, then they stuck them inside of me to take a peek at my innards, now they want to put them in my television set! I am talking (of course) about fiber optics.

Optical fibers are thin strands of high quality glass which act as pipelines for light and prevent light leakage through the principles of refraction (light deflection) and total

Eye On Science

Collegian Science Column

Illustration by Mark Weber, Contributing Artist

internal reflection. These fibers are made from two types of glass. Glass with a high refractive index (the ratio of the speed of light in a vacuum to the speed of light through a medium) is used for the core glass. Another layer of glass or plastic with a lower refractive index, called the *clad glass*, is wrapped around the core. If the two layers are sealed with a minimal amount of imperfections, and the ratio of refractive indices is correct, tens of millions of internal reflections are possible and light can travel over many miles of fiber, emerging from the far end with only a moderate loss of brightness or intensity.

The information passed through a fiber optic system may be in the form of coded light pulses or in completely coherent images. Light

pulse systems are used in light wave telecommunications such as long distance phone systems. Long distance telephone companies have hit the airwaves with commercials extolling the wonderful quality of their fiber optic systems. In fact, fiber optic telephony has been on the drawing board since the early 70's, and has been in use in some cities since 1976. The typical fiber optic telephone cable consists of twelve fibers, which are imbedded between two strips of plastic, forming a flat ribbon. As many as twelve ribbons are stacked in a cable that can carry more than 40,000 voice channels. A copper coaxial cable (the pre-fiber optic standard) capable of carrying the same information is nearly ten times the size of the fiber optic cable.

Fiber optic applications are also gaining wide popularity within the field of medicine. Those amazing film clips of the interior of a beating heart, the fetus in the womb, and the peristaltic undulations of an intestine are all made with fiber optic instruments like the endoscope.

One of the newest applications of fiber optic technology has been developed right here on the Penn State Behrend campus. A fiber optic television screen,



invented by Michael Reidinger of Tru-Lyte Systems Inc. and developed by Dr. Robert Marande, is nearing readiness for commercial production. Marande, along with six Behrend students, has been working on the project since 1985.

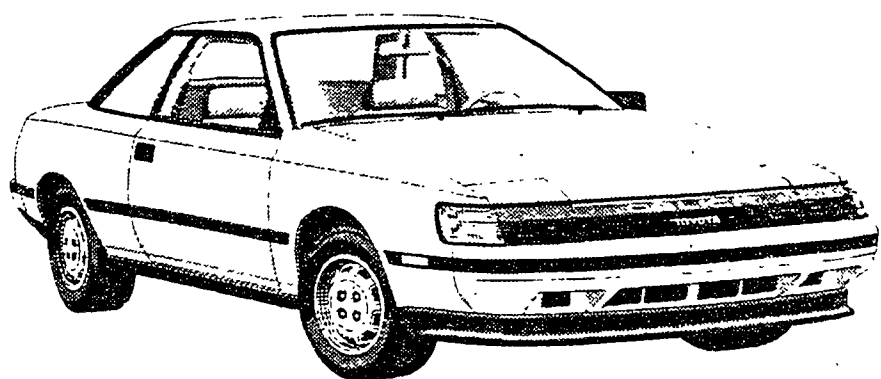
Originally based in Erie, Tru-Lyte Systems of Beaver Pa created a television screen which uses a liquid crystal display in conjunction with fiber optics, a combination never before used. Liquid crystals, similar to those in digital watches, produce the initial image. Special crystals that create color images are linked to a microcomputer that controls intensity and hue. Optic fibers transfer the crystalline image to a compact light-weight screen. A partial prototype is here on campus and a working prototype is on display at Tru-Lyte Systems.

Funded in part by the Ben Franklin Partnership Program, the screen may go into commercial production before the year is out. The target area for early sales will be the big screen market, due to ease of manufacturing and the higher quality of the image compared to currently available big screens.

Eventually the screens will be available for home use. Dr. Marande feels the home screen should be very popular because of very low maintenance costs and the fact that the screen is so light-weight that "...you can hang it on the wall, you can put it on the table or on the floor and (they) can probably produce these at any size you want." Several projects have developed as spin-offs of the screen research and the physics department is usually in need of student research assistants.

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Violla G. Liuzzo

A Forgotten Heroine

by Marlynn Tomlin
Contributing Writer

Viola Gregg Liuzzo - that name haunts me. You probably don't know who she was. You should. It should be familiar to all Americans. Her name should rank right up along side Martin Luther King, Jr., and Lyndon Baines Johnson and Rosa Parks. Those people left their mark on our land by making their stand for what they believed in. Martin Luther King and Rosa Parks will always be remembered for their stand on the civil rights issues in this century. Lyndon Johnson will be remembered for his War On Poverty program that tried to educate all of our Children in America. Viola Liuzzo made her stand and paid for it with her life. She was murdered on a lonely stretch of Lowndes County Road, between Selma and Montgomery, down south in Alabama, back in 1965.

I know her family still mourns her loss. She left a husband, Anthony, and five children behind in Detroit when she said she had to go and help win the civil rights for the ones who were being denied them in Alabama. I think her death contrasts with Christy McAuliffe in their doing something about their beliefs. They should be compared for many reasons. To start with, they were magnificent representatives of the women of this century. They both lived their ideals every day, not just showing a facade in front of cameras or when someone was looking. Each in their own way make this world a better atmosphere for the proliferation of high ideals. We can do what needs to be done to make our world a better place for the next generations.

Sometimes I feel as though the majority of us have become mired in a cesspool of bigotry and blinding slime. But then I think of our children, Viola's, Christy's and even my own. Can we raise children who have no strong inner commitments to the kind of ideals that still bring a tightness to my chest, and a wetness to my eyes. They, Viola and Christy, didn't talk but do nothing. They took their young feet, and put them to work. They worked on trying to make advances to help mankind. Even if the work was different the need to help was the same. The need to put human ideals to work.

I was standing in front of the ironing board twenty-three years ago on March 25th when the news came over the TV that Mrs. Liuzzo had been found murdered. She was just a few years older than me. She was a mother with five children; I was pregnant with my first boy. She had a blue-collared husband (working for the Teamster's Union), and so did I. I had been following the civil rights movement from my safe home since the earliest days. Not just apathetically watching, but with a strong desire to help. But my responsibility had to be to stay home and care for me, because my desire to get involved. That made the news of Viola's death hit me as though she had been my sister, and indeed in many ways she was there as my representative (as she was to many women I was to find out later). I felt guilty. I felt anger. Justice had to be done for her sake.

Four men, ranging in age from nineteen to forty-three, were arrested and charged by federal authorities with violating Viola's civil rights. They were never tried for murder. And, yes, they were members of the KKK. But the saddest fact of all to me was the fact that there was a total of seventeen children whose lives were crushed, beaten, and stained in such a way that nothing would ever give them back their innocence and carefree children.

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