

# WORCESTER BUSINESS JOURNAL

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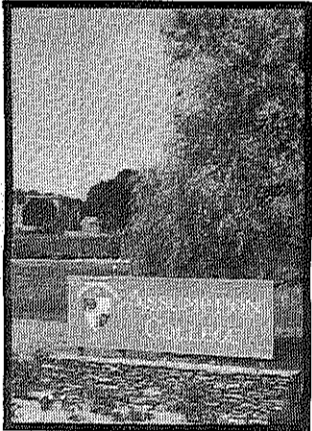
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# A real light industry

## The high-tech heart of the Tri-area economy

By Gregory Sandler

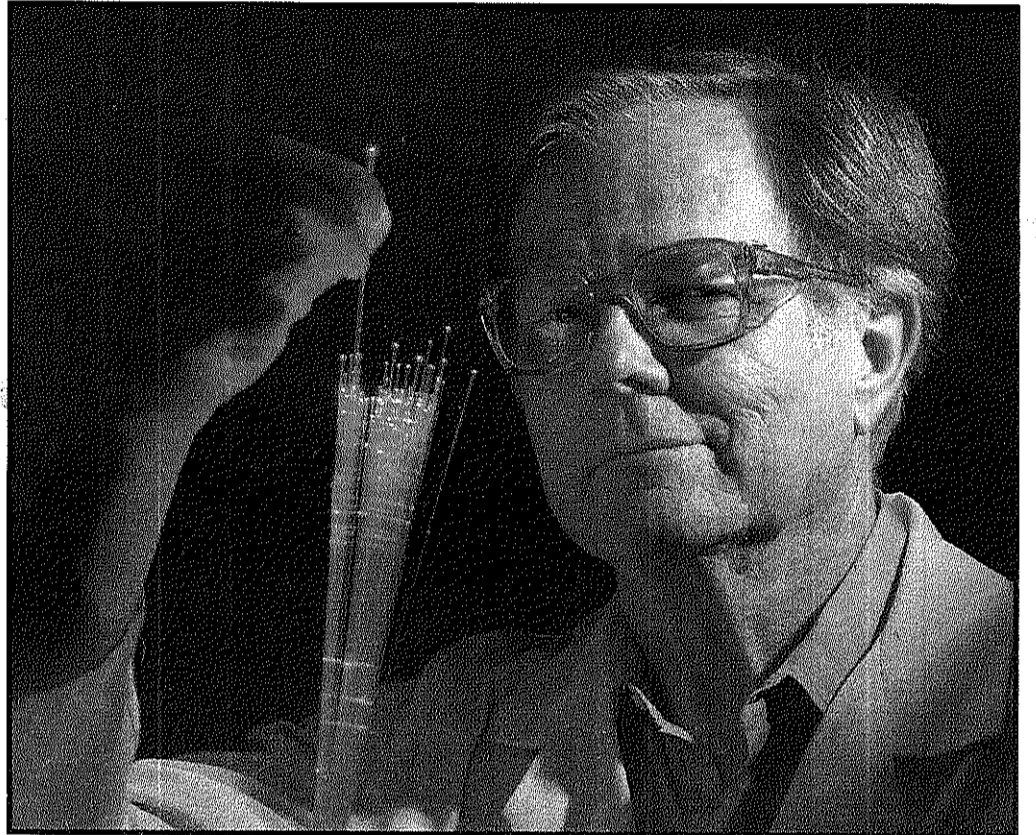
It's an inbred little community of companies, out there in western Worcester County. It might be anyway, seeing how the cutting edge of any new technology tends to be handled by small communities of scientists and money people. The Tri-area fiber optics industry, though, is a special case. "This is the most incestuous industry I have ever seen," says Nancy Jackson, director of the Worcester-based Central Region office of the Massachusetts Office of Business Development.

Consider that four of the smaller local firms — SpecTran Corporation and Luxtec Corporation of Sturbridge, Charlton-based Incom Inc. and Southbridge-based American MicroOptical Inc. — all have roots with the two big players in the field: Sturbridge-based Galileo Electro-Optics Corporation and Schott Fiber Optics Inc. of Southbridge. Top officials at both Galileo and SpecTran are Corning Glass Works veterans. And both companies rely on Corning for their overall well-being.

The mix of players often results in a love/hate relationship between — and sometimes within — some of these companies.

Central Massachusetts relies on a high fiber diet to keep the economy on track. Nowhere is that more evident than in the Tri-community towns of Southbridge, Sturbridge and Charlton. All six of the Tri-area's major fiber optics firms are on the region's list of the top 25 employers. That makes the industry a key player in the local economy; its health is reflected in the overall economic well-being of the area.

Despite the recent fame of home-grown night vision technology in the Persian Gulf war, the past year has had



Wilbur "Will" Hicks, owner of American MicroOptical in Southbridge. Hicks is known as the father of fiber optics, and is still working on the cutting edge of the industry's technology.

PHOTOGRAPHER: CHRISTOPHER MANN

### Special Report on The Tri-Area

mixed results for the region's fiber optics firms. Robert Chartier, executive vice president of the Southbridge-based TriCommunity Area Chamber of Commerce, attributes the industry's woes primarily to the state's shaky economy and to the nationwide recession. "Once the recession bottoms out," he says, "we're going to see a much stronger fiber optics industry because of the new applications now being developed."

Jackson agrees that continued diversification will help the industry. In fact, she says, the diverse mix of companies in the Tri-community area has already proven resilient. For example, she notes that while Galileo "got clobbered" last year, Schott was expanding.

Overall, Jackson says she believes the region has built

*Continued on page 11*

# Top of the second third

## The leaders in the Worcester Business Journal/A.G. Edwards Central Massachusetts Stock Contest

We're two thirds of the way through this year's Stock Contest, and the Luxtec phenomenon continues. All of the top three leaders invested heavily in the Sturbridge-based firm. All three plunked down \$80,000 of their imaginary \$100,000 investment in this small maker of fiber-optic products for the medical field.

Robert Szymanski of Alphatronics in Worcester, Jim O'Leary of O'Leary Communications in Worcester, and Edward J. Overs of Hopedale are, in that order, our top

three leaders. They were our top three leaders, in that same order, at the end of the first third.

Szymanski's investments, made as of last December 2, were worth \$536,040 as of this July 31, an increase of 436 percent.

O'Leary's portfolio is now worth \$531,066, up 431 percent.

Overs has a portfolio currently worth \$523,413, an increase of 423 percent.

There are 22 other identified leaders. They are local investors who sunk their imaginary portfolios into the businesses of our area. For a complete listing of them all, and how well they did, please turn to page 29. You'll find timely commentary by A.G. Edwards on where our local index has come from, and where it may be going.

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# Light industry

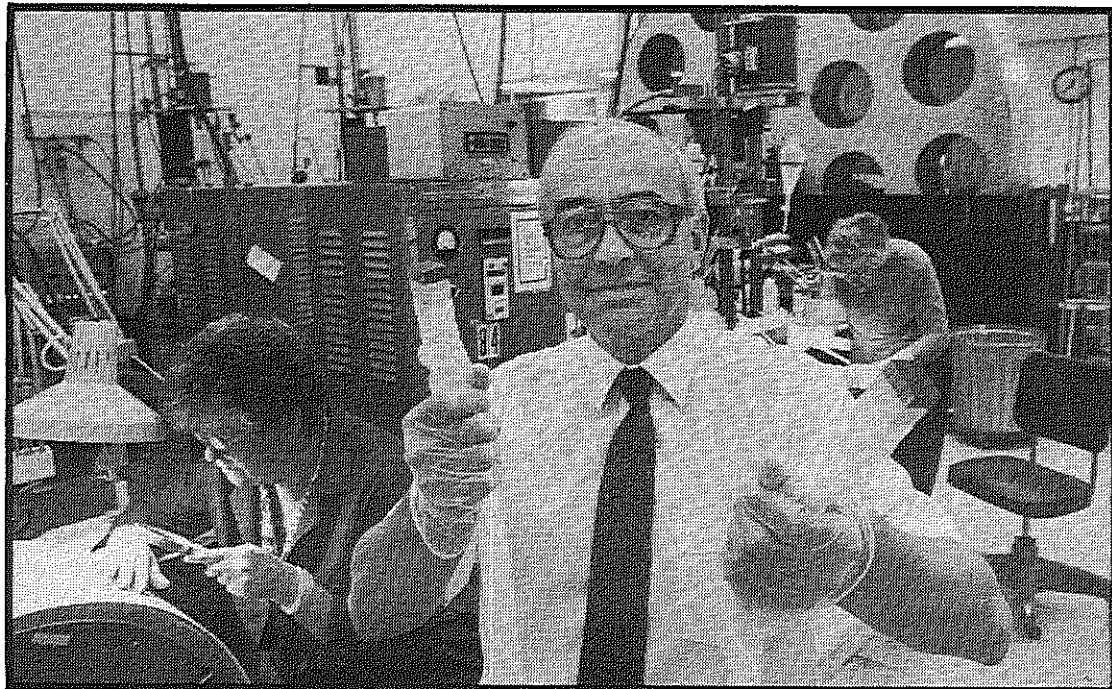
*Continued from cover*

a reputation as a world leader in the fiber optics industry. "Central Mass.," she says, "is definitely a center for fiber-optic development and technology."

### Schott

There are two primary types of fiber optics: fused and flexible. Fused fiber optics, which typically look like thick lenses, are bundles of short glass fibers that are combined together into rigid, vacuum-tight assemblies and used to transfer images. In contrast, flexible fiber optics are long, cable-like fiber bundles typically used to transfer both images and light pulses. Single-strand flexible fiber-optic cables, sometimes made of plastic, are used for telecommunications applications.

Two thirds of the business done by Schott Fiber Optics, a descendant of Southbridge-based American Optical Corporation's fiber optics division, comes from fused fiber-optic components, according to company President Brian Edney. Despite recent reductions in military spending, the company's technology for use in night vision equipment continues to be a major part of its business. Still, Edney acknowledges, "We need to expand in



Give it your best Schott: Brian Edney, president of Schott Fiber Optics, says his company needs to expand in the commercial markets to make up for expected declines in military contracts.

PHOTO:CHRISTOPHER NAYN

the commercial markets in order to balance off the expected long-term decline in military contracts."

Schott's markets include medical, industrial and military applications. The company also has developed a number of cold light sources that produce intense, heat-free illumination. These fiber-optic lights are used for

microscopy as well as low-light photography. And Schott has developed fiber-optic faceplates for use in electro-optical image intensifiers used in night vision equipment. This is the technology showcased during the Persian Gulf war.

The company also makes flexible fiber-optic imaging systems, boreo-

scopes and other medical and industrial diagnostic equipment. Schott's boreoscopes are used for everything from inspecting jet engines to examining air frames and hydraulic systems. Other devices monitor welding and measure internal corrosion. One of Schott's medical applications can

*Continued on page 12*

## Fiber financials

A recent *Worcester Business Journal* survey of the fiber optics industry provides a snapshot of just how the Super Six fiber optics firms in the Tri-community area are faring:

### American MicroOptical Inc., Sturbridge

AM, the holding company for Applied Fiber Optics Inc., is primarily an R&D company which has been funded, in part, by several research-related contracts. Sales last year were less than \$500,000 and company President John Wilbur "Will" Hicks says any significant sales growth is at least a year away. Meanwhile, 85 percent of Applied Fiber Optics' approximately \$2 million in sales last year was from products used for surgical illumination. Business has reportedly improved this year, and the company is expecting to at least break even.

### Galileo Electro-Optics Corporation, Sturbridge

Despite a rough year, publicly-traded Galileo managed to post higher sales last year, but net earnings suffered. Sales for fiscal 1990 were \$41.3 million with net earnings of \$984,000, or 5 cents per share. That compares to \$37.6 million in sales the previous year, with net earnings of \$2.1 million, or 33 cents per share.

The first half of '91 was not great for Galileo. Sales were \$17.2 million with a net loss of \$3.5 million, or 54 cents per share. That compares with \$20.9 million in sales for the first six months of 1990 with net income of \$746,000, or 12 cents per share.

Recently-released third-quarter numbers show some improvement. Sales were \$9.7 million with net income of \$417,000, or 7 cents per share. That compares to \$9.6 million in sales for the third quarter of 1990 with a net loss of \$1.47 million, or 23 cents per share.

Catherine Carr is an analyst with Needham & Company in Boston, which participated in two secondary public offerings for Galileo. She says the recent earnings report is a positive sign. But she thinks investors will want to see more than one strong quarter before believing that a turnaround is in sight. Nevertheless, Carr is bullish on Galileo. She says the company's commercial business has picked up and it is leaning less on Xerox for the total percentage of its commercial business. On the military side, things are more in balance. "I'm heartened by the fact that they still have some military business," she says.

While investors may want to see more than one strong quarter, Carr thinks Galileo is a good buy. The stock, she notes, is selling for about \$5.50 per share, but has a book value of \$8 per share. The key to continued improvement is building up that commercial business, she says. If that happens, she thinks Galileo will finish the year with "a solidly profitable fourth quarter."

### Incom Inc., Charlton

The privately-held company has rebounded and anticipates moderate growth of about 10 percent over last year's sales of approximately \$5 million. Because Incom is a relatively specialized company, Anthony Detarando, president of the company, says he believes it is insulated from some of the vacillations affecting the fiber optics industry. While he is not forecasting much growth for the market in general, Detarando says he believes Incom will sustain moderate growth for at least the next five years.

### Luxtec Corporation, Sturbridge

Last year, Luxtec, a public company, managed to eke out a profit of less than a penny per share. Total sales were \$4 million with net income of

\$112,000. That compares to sales of \$4.6 million in 1989, with a loss of \$910,000, or 7 cents per share.

For the first nine months of this year, Luxtec posted net income of \$305,000, or 2.18 cents per share, on sales of \$4 million. This compares to net income of \$108,000, or 0.77 cents per share, on sales of \$2.9 million for the same period last year.

For its most recent third quarter, Luxtec reports net income of \$115,000, or 0.82 cents per share, on sales of \$1.4 million. For the same period in 1990, net income was \$58,000, or 0.41 cents per share, on sales of \$1 million.

Bernard Clark, Luxtec's CEO, reportedly credits the increased sales and net income to demand for his company's headlight systems, as well as the company's ability to control expenses.

### Schott Fiber Optics Inc., Southbridge

As part of the \$3 billion German company Carl-Zeiss-Stiftung, Schott has deep pockets and a worldwide network of sales and support. Sales for the local fiber optics division were between \$30 million and \$40 million last year. Company President Brian Edney says that being part of the multinational German "foundation" enables the company to focus on long-term market development. "In a private entity," he says, "you can target markets and wait for them to become profitable."

Schott may soon get a boost in the highly competitive fiber optics industry. Carl-Zeiss is in the process of forming a separate fiber optics group consisting of operations in Southbridge and Germany along with a joint venture in Japan. While he is optimistic about continued growth in Southbridge, Edney says, "We're a global company subject to global competition."

### SpecTran Corporation, Sturbridge

This is another public company that looks to be on the mend. Sales in 1990 totaled \$10.5 million, with net income of \$984,000, or 21 cents per share. That compares to sales of \$8 million in 1989, with loss of \$347,000, or 8 cents per share. In the first quarter of 1990, the company began to outpace last year's performance and that trend has continued. For the first six months, SpecTran's total sales were \$7.2 million with net income of \$1.2 million, or 21 cents per share. That compares to total sales of \$4.2 million for the first six months of 1990 with net income of \$155,000, or 3 cents per share.

SpecTran currently has back orders of about \$24 million, and half of that is expected to show up in the company's sales totals this year, says Bruce Cannon, Spectran's senior vice president and CFO. If that is the case, SpecTran should be looking at more than \$15 million in total sales for fiscal '91.

Charlie Palmer is a senior vice president with Advest Inc. in Boston, which participated in underwriting SpecTran's initial public offering. He says the company's second quarter numbers were "better than the Street was anticipating." Palmer says the company has shown strong improvement in the past year and "the near-term outlook is strong."

In addition to increased demand, Palmer says a 40 percent increase in capacity this June, combined with the winning of several additional contracts, has helped boost SpecTran's performance. Overall, he thinks the company is following a strengthening trend in the industry. "The fiber optics industry went into its own recession about three years ago and now it's coming out of that recession," he says.

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## FEATURE

### Light industry

*Continued from page 11*

provide visual access inside the human body and carry a laser charge. So, for example, a surgeon can use the same device to both search out and destroy a kidney stone.

In the wake of recent layoffs at Galileo, Schott has assumed the position of top employer in the region's industry. The firm employs about 375 workers at its 97,000-square-foot Southbridge facility.

#### Galileo

Galileo, another company in the fused fiber optics arena, has grappled with a host of troubles during the past year. The company lost a major contract to a Dutch military contractor when Uncle Sam pulled the plug because Galileo's night vision equipment was being resold to the Iraqis. And Concord Partners, a 9 percent shareholder in the company, began pushing for the company's sale after being denied a seat on the board of directors.

"With a high-tech business like this, patience is required," says William Hanley, Galileo's CEO. "I think '91 is going to be a turnaround year for us and in '92, we'll begin to generate real, live productivity."

Military cutbacks affecting sales of the company's night vision equipment were the biggest problem faced by Galileo in the past year. In 1990, more than half of Galileo's business was with domestic or foreign military con-

tractors. Earlier this year, the company laid off about 200 workers at its 197,000-square-foot Sturbridge facility and shifted some work to a 61,000-square-foot plant in Forest, Virginia. Galileo now employs about 276 people in Sturbridge and 84 in Virginia.

Hanley acknowledges that the company has had to go through "painful changes" in the process of diversifying its product base and trying to increase productivity. The changes are working, he maintains. In 1982, only about 10 percent of the company's business was commercial. That figure has risen to 74 percent today. Hanley says that diversification into the production of scientific detectors used in analytical instruments and office products has helped Galileo move away from its military dependence.

Galileo currently is sole supplier of the corona discharge devices used in Xerox Corporation's high volume copiers. The company also is working on medical applications of its technology. And Hanley says Galileo is developing a proprietary system that will allow doctors to see through very small incisions. Plus, researchers are working on process control applications that can be used to monitor quality control in the manufacture of everything from food to petroleum-based resins.

Management is also hoping that the \$1.4 million purchase last year of Acton-based Iris Fiber Optics — a company specializing in infrared transmitting fiber — will help boost sales. As a whole, Galileo has targeted its growth in four major areas: electronic imaging, scientific detection, infrared technology and military applications.

#### SpecTran

SpecTran in Sturbridge has carved its niche in the communication fiber optics arena. The company manufactures flexible glass fibers in its 50,000-square-foot facility for use as optical waveguide carriers. Its primary focus is making products for local computer networks and data communications. SpecTran also is working on developing specially coated fibers for military, aerospace and medical uses.

Company Chairman Raymond Jaeger is a former researcher for Galileo and other members of his management team are former employees of Corning, a leader in fiber optics applications. Both Corning and AT&T are extremely important to SpecTran. The Sturbridge-based company relies on the two industry giants for the

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lion's share of its sales. Last year, 76 percent of SpecTran's sales came as a result of products developed using technology licensed from Corning and AT&T.

According to Bruce Cannon, SpecTran's senior vice president and CFO, the company signed an expanded patent license agreement with Corning earlier this year that "significantly increases" the amount of sales the company can make using Corning technology. SpecTran agreed to pay \$2 million as part of the agreement, which covers the manufacture of optical fiber using a process called "chemical vapor deposition."

Cannon attributes the company's positive outlook to strong growth in the data communications market combined with added sales as a result of the Corning deal. The increased demand has meant some additional hiring, and the company has increased its work force from 82 at the end of the year to 110. "From our perspective," Cannon says, "things are looking pretty good."

SpecTran did make some important strides in 1990. The company settled a class-action lawsuit charging that there were material misrepresentations and nondisclosures of fact in the company's 1985 prospectus, went through a corporate restructuring and reported its first profit in three years.

**Incom**

Incom's fused fiber optics products are primarily made for night vision applications for military, medical and scientific uses. The company makes components for products that transfer and modify images, such as portable X-ray devices, low light level cameras, largescreen projection systems and dental curing lights.

Like Galileo, Incom was hit hard by the loss of a government-related contract. Anthony Detarando, president of Incom, said that losing its biggest customer for night vision equipment last year — an undisclosed defense contractor — was a setback. Now, Detarando says, diversification is the key to future growth.

But Detarando is confident. He notes that the company had to rebuild during the past decade after the phototypesetting industry gave way to laser printers. Most of Incom's business in the late 1970s and early '80s was in producing fiber-optic faceplates used in phototypesetters. Now the company is focusing on building market share in its key markets while introducing

new products to work the niches. After laying off an undisclosed number of workers last year, Incom now has about 75 employees at its 37,000-square-foot facility in Charlton.

Detarando says Incom's ability to produce high-end fiber optics has paid off. For example, the company recently won an important contract by being able to meet new, tighter specs for night vision goggles worn by military helicopter pilots. In the medical arena, Incom has developed a component for a portable X-ray device used for mammograms.

**American MicroOptical**

Perhaps one of the most interesting fiber optics firms in the Tri-area is American MicroOptical (AM) in Southbridge. This privately-held company is now under the ownership of John Wilbur "Will" Hicks, considered to be the "father of fiber optics." AM is also the parent company of Applied Fiber Optics Inc., which Hicks and a group of investors bought in 1987 from Codman and Shurtleiff, a subsidiary of Johnson & Johnson (employees of Applied have been really hopping to correct an erroneous newspaper report that another firm had purchased Applied).

Hicks describes AM as "a real back-room shop." The company's approximately 25 employees are almost exclusively focused on developing commercial applications for communication fiber optics. "Our ambition is to bring communication fiber to the home," says Hicks. "The technology is very doable; it's not that difficult."

The biggest battle for AM is political.  
*Continued on page 14*

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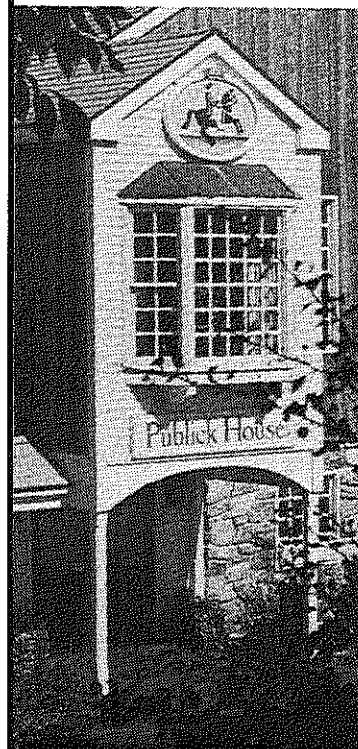
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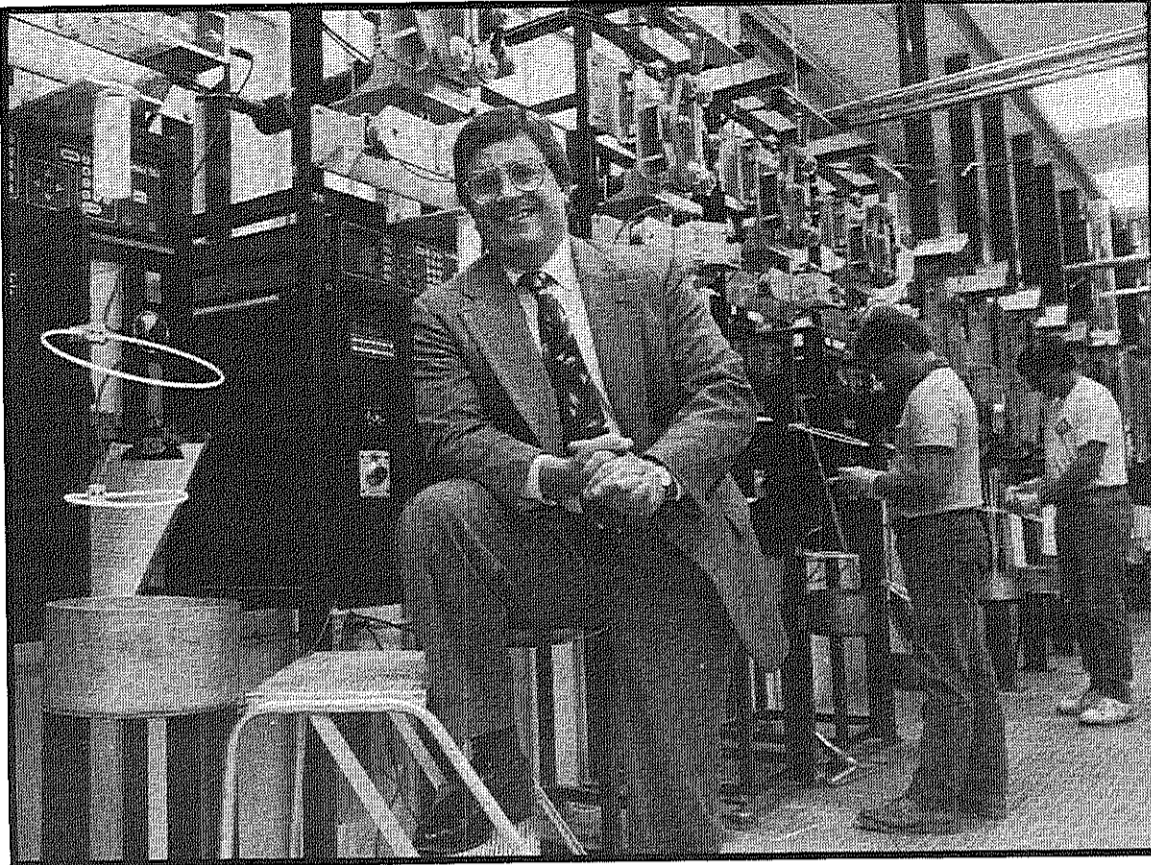
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ical. Despite the recent easing of federal restrictions, the so-called Baby Bells are wary of fiber-optic systems usurping their markets, and regulatory hurdles make it difficult to put new systems in place. But Hicks is optimistic that his company can "sneak in the back door" by putting a test system in place within the next year or two. His goal is to overbuild a small cable network and then switch over to the new technology. "We're shooting for a total allocated cost of \$3,000," he says.

Communication fiber optics has great potential. Hicks estimates that the market could grow to between \$5 billion and \$10 billion. "If this happens, it would be the biggest thing that ever hit Massachusetts," he says. And it would mean a breakthrough in communications, giving individuals access to a staggering array of information. Hicks says he believes that communication fiber optics has the potential to totally transform the way people live and work.

In the meantime, Hicks is counting on Applied Fiber Optics to keep the cash flowing. In fact, he is hoping the sale of a new microendoscope developed by Applied will raise cash for the telecommunications research effort.

Applied's focus is on the development of industrial imaging products, primarily flexible fiber optics. The company's products include applica-



No pain, no gain: William Hanley, CEO of Galileo Electro-Optics, says that with a high-tech business like fiber optics, patience is required.

PHOTO: CHRISTOPHER NAYN

tions for surgical and industrial uses. Medical products account for about 85 percent of the company's sales. The balance comes from fiber-optic light sources and industrial-inspection tools. Applied employs about two dozen people at its 22,000-square-foot facility.

Hicks, who worked on earlier fiber optics developments for American Optical before going on to launch Mosaic

Fabrications (now Galileo) in 1958, and later Incom in 1971, agrees that Applied will have a pretty good year. But his focus is really on AM. That company, he says, is on the "cutting edge."

### Luxtec

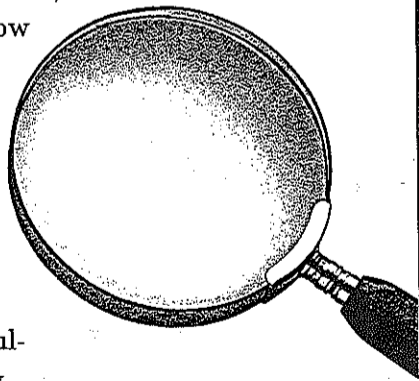
Luxtec in Sturbridge is the smallest of the region's fiber optics companies, with about 30 employees and a 20,000-square-foot plant. Luxtec

has gone through some tumultuous changes since it was founded in 1981 by Jacobus "Jack" Kloots. Industry watchers will remember Kloots as founder of Applied Fiber Optics and a veteran of both Galileo and American Optical.

The battle between Kloots and management for control of the company came to a head in 1987. After protracted litigation, the two parties

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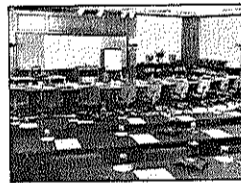
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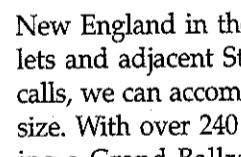
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finally settled and Kloots ceded control of the company. But as of the end of fiscal '90, Kloots' former wife, Rita, still owned 11.7 percent of the company's 14 million outstanding shares.

Luxtec management, perhaps still reeling from past controversy, prefers to stay out of the spotlight. Bernard Clark, president, did not return numerous phone calls. Joseph D. Campbell, treasurer of the company, had no comment other than to say that Luxtec will only release the information it is required by the federal Securities and Exchange Commission to disclose.

Luxtec's claim to fame is a fiber-optic headlight system worn by surgeons and used to illuminate the area of surgical procedure. But the company also makes fiber-optic light sources, cables and a video fiber-optic camera system. Luxtec's niche is operating-room applications, and the company spent more than \$100,000 on research and development last year.

**Looking forward to a modest boom**

The basic theory behind fiber optics — which relies on the total internal reflection of light — was first articulated in 1870. But it wasn't until the early 1950s that significant advances were made.

Despite great technological strides during the past three decades, the region's fiber optics industry has not realized the rapid growth that many observers had hoped for. The state's Jackson notes that during the past 20 years, some of the region's high-tech companies have been on a "commodities roller coaster." Speculation was

rampant, but short-sighted investors also wanted faster returns than the nascent industry could deliver. On top of that, local companies have tended to be niche players focusing on relatively narrow markets with limited growth potential.

Now, however, particularly in the telecommunications arena, the fiber optics industry seems destined for explosive growth. "Generally, the mood is right for fiber to become a full-grown industry," says John Kessler, a fiber optics analyst with KMI Corporation in Newport, Rhode Island.

Although Jackson considers the fiber optics industry basically healthy, she does not expect to see any rapid growth in the coming years. The local fiber optics companies may expand their markets, but they are not likely to step into the big leagues. Still, Jackson says she believes that continued specialization is the best way for the local high-tech firms to grow and flourish.

While fiber optics may not create a tidal wave of high-tech development, the industry is poised for new growth. In an age where information is king, telecommunications fiber optics promises to create vast new networks capable of transmitting a wide spectrum of data. At the same time, other fiber optics developments are steadily improving everything from the quality of health care to the safety of airplanes. If the fiber optics industry lives up to its potential, the Tri-community area should be able to look forward to a modest boom in the local economy. ■



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