

Menlo Park's Almanac

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SRI

*at 50:
what next?*

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**Fifty years later,
one of the nation's
first 'think tanks' is
still busy inventing
the future in the
heart of Menlo Park**

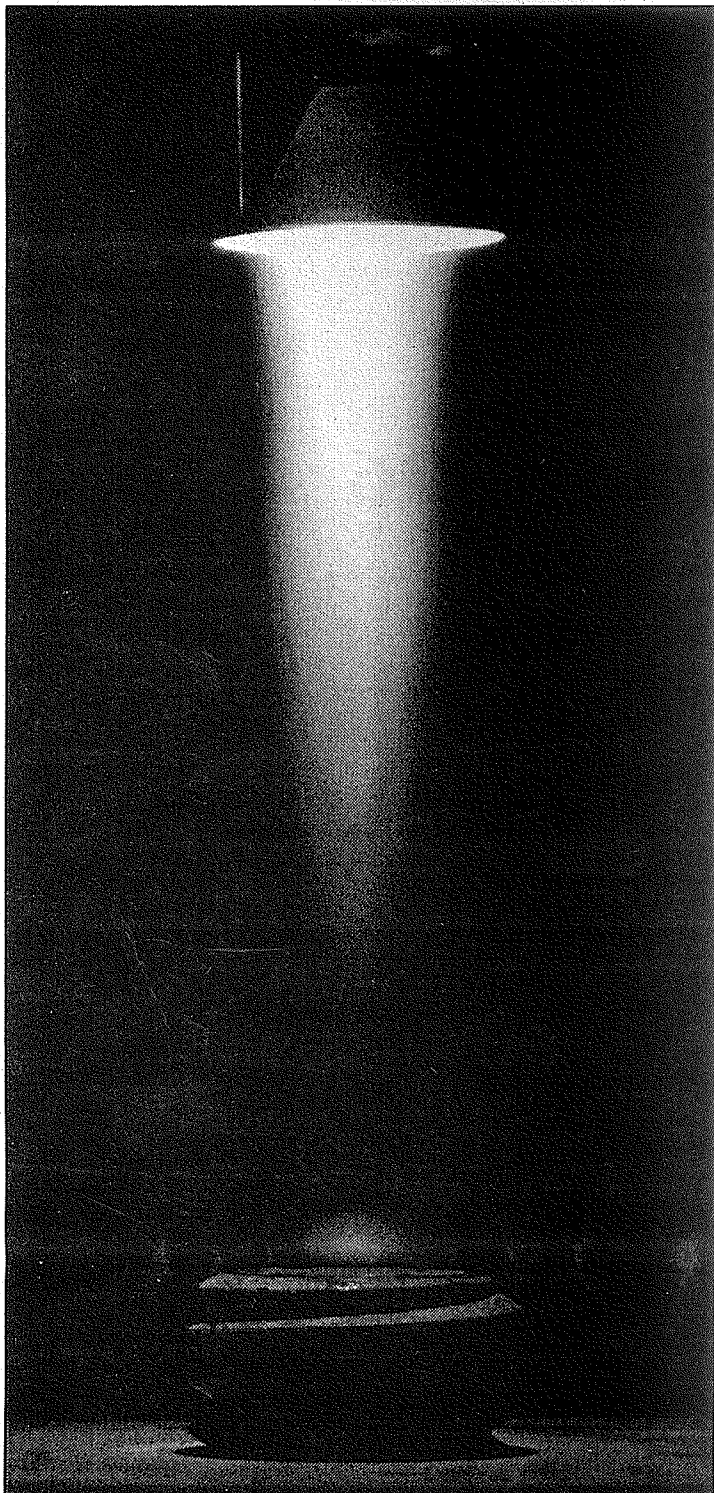


Photo courtesy SRI International

Purple-glowing discharge of hydrogen atoms at SRI International in Menlo Park is used to deposit films of pure diamond on the disk at the bottom. The rugged material can be used for applications in science, industry, and the military.

By MARION SOFTKY

Deep in a basement of SRI International, Jorge Luque and Wolfgang Jachman watch a beam of hydrogen glow purple inside a shiny steel vacuum chamber. When they introduce methane — which contains carbon — the discharge turns blue. Diamond is born.

The young scientists are studying the processes of converting carbon atoms into thin films of diamond that can be used for hard coatings on machine tools, layers that can conduct heat away from electronic components, or sturdy, heat-resistant windows to conduct infra-red radiation.

Their research is sponsored by the federal Department of Defense, which sees many uses for a material that is so durable and can conduct heat and some wavelengths of light. "They want to spur industry to make films better and faster," says Dr. David Crosley, director of the Molecular Physics Laboratory at SRI in Menlo Park.

On this experiment, and hundreds like it, ride SRI's hopes for a future of scientific research to match the successes of the past 50 years.

Founded in 1946 as one of the nation's first think tanks, SRI has grown to be one of its largest research, technology and consulting organizations. It has given birth to a host of technologies, including the computer mouse

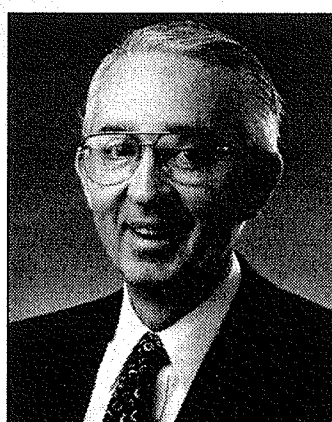
— invented by Doug Engelbart of Atherton — the first mobile robot, and the magnetic ink character system on bank checks.

But like a lot of people turning 50, SRI International has been facing a mid-life crisis.

After several years of red ink



Left: Paul Cook of Woodside, founder of Raychem, is leading the turnaround of SRI International as chairman of the board of directors. Right: Dr. William Sommers is the new president and CEO of SRI International.



prompted by cuts in defense spending and the recession, SRI appears to be turning around. It's smaller, leaner, more focused — and making a small profit. "All we need to do now is get the place growing again," says Paul Cook, chairman of the board of directors, who has led

and a \$7.1 million loss.

By 1995 revenues were up to \$320 million, following Mr. Cook's forceful intervention. Preliminary figures for 1996 show SRI in the black with revenues of \$327 million.

Major changes started three years ago. Dr. William F. Sommers, a

the turnaround.

When Mr. Cook, a resident of Woodside and founder of Raychem Corp., took over as chairman of the board and CEO on Dec. 2, 1993, Menlo Park's second largest employer had been posting losses. It lost \$16 million on \$300 million in revenues in 1991; 1992 was somewhat better with \$305 million revenues

member of top management at the international consulting and technology consulting firm of Booz-Allen & Hamilton, came on as SRI's new president and CEO.

SRI, which is non-profit, also began spinning off new for-profit companies that could build on its technologies and benefit the parent organization.

The first, in January 1994, was SRI Consulting (SRIC), which employs top management consultants who tap SRI's expertise to help commercial clients. It recently received a contract from a large financial corporation. "We're now on our feet and doing very, very well," says Mr. Cook.

Since then, more than 10 for-profit spinouts based on SRI technology have been established in fields such as health care, speech recognition, telecommunications, and advanced materials.

With offices in England, Switzerland, Japan and Korea, SRI has

(Continued on next page)

(Continued from previous page) projects in dozens of countries around the world. "SRI knows more about the economics and statistics of the chemical industry than any other organization in the world," says Mr. Cook.

Meanwhile, SRI has shrunk. There was a time in the 1980s when it employed 3,500 people around the world, with 2,500 in Menlo Park alone. Now there are 2,700 employees worldwide and 1,600 in Menlo Park — and it's easy to park in front of the big headquarters building on Ravenswood Avenue.

"Our whole focus is to concentrate where we're world class and phase out those things we're not best at," Mr. Cook says. "The undone job is to make this place grow. We have to have a critical mass to solve the problems we're addressing."

Paul Cook's own example lends weight to his efforts to renew SRI at

the half-century mark.

Mr. Cook came to SRI in 1948 as its 48th employee. There he developed technology to strengthen materials by irradiating them with high-energy electrons, and created SRI's most famous spinoff in 1957. Raychem, now Menlo Park's largest employer, grew to join the Fortune 500 in 25 years. Mr. Cook retired as CEO in 1990 after the company he founded posted its first year with \$1 billion in annual sales of space-age materials.

Years of innovation

When SRI was founded in 1946, the world was very different. World War II was over, the electronic computer was invented, the first United Nations meeting was held, the bikini made its debut in Paris, Santa Clara County's annual crop of prunes, apricots and cherries

brought in \$65 million, and Bill Clinton was born.

The handful of business executives who banded together with Stanford to create the non-profit Stanford Research Institute envisioned a center for technological innovation that could help boost business and industry in the West. SRI's original charter — "to promote and foster the application of science in the development of commerce, trade and industry (for the) prosperity of mankind" — remains its mission.

"SRI founders did 50 years ago what has become synonymous with Silicon Valley — they recognized an opportunity, recruited talented management and staff, and got down to the business of research, discovery and innovation," says Dr. Sommers. "SRI has contributed at the ground level in helping to push forward major advances that are at the foundation of Silicon Valley's leadership."

Like the mouse, e-mail, networks, computer graphics, word-processing, collaborative computing, the predecessor to Internet. Much of this grew out of work at SRI by Doug Engelbart, of Atherton. His demonstration of some of these techniques at 1968 computer show in San Francisco drew a standing ovation. A true visionary, Dr. Engelbart led the way in converting computing from bunches of punched cards fed to a mainframe computer to today's computer-on-every-desktop business.

The list of accomplishments of SRI over the years is dizzying. It has developed new drugs and treatments for malaria, perfected methods of ink-jet printing, studied pollutants in the high atmosphere, developed new ways to understand what motivates consumers to buy, and worked on numerous military technologies such as over-the-horizon radar.

SRI also drew a winner in 1987 when General Electric gave it the David Sarnoff Research Center in Princeton, N.J., which had developed color television when it belonged to RCA. Now it is a leader in the race to high-definition television. "The quality of the picture and the sound are a different world from what you see today," says Mr. Cook. "It's like being in a movie theater."

All has not been easy at SRI. In the 1960s the Vietnam War brought anti-war demonstrators to its gates protesting its defense work. In 1970 it separated from Stanford and later took its present name, SRI International. It now wholly owns its 66-acre campus, but is still making payments to Stanford, Mr. Cook says.

Whither SRI?

Fifty years of advanced research have given SRI vast wells of experience to apply to current problems in fields as diverse as health care and new drugs, computer communication with the deaf, analyzing the ozone hole, scenario planning for Royal Dutch Shell, management strategies, and consumer behavior.

Nevertheless, the plunge in military spending associated with the end of the Cold War, a recession, and general tightening of government spending hit it in the balance sheet.

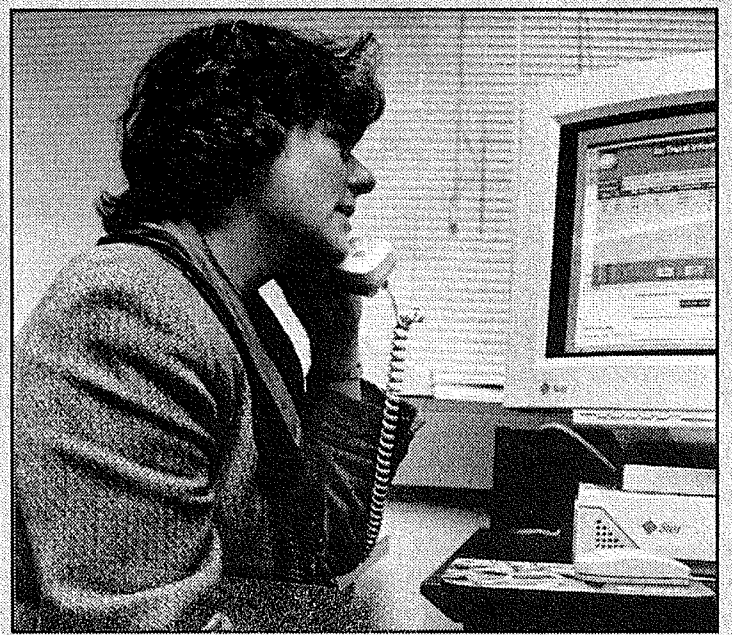


Photo by Eva Soos

"I'd like flights from San Francisco to Boston on Tuesday," says Dr. Patti Price of Menlo Park, director of SRI's Speech Technology and Research Laboratory, as she demonstrates SRI's speech recognition program. She asks, by voice and over the phone, for information on airline flights, timetables and ticket prices. Answers appear instantly on her computer screen.

Spin-off launches voice of the future

By MARION SOFTKY

Want to know the stock value of Consolidated Egg Cartons or whether General Micropulleys is up or down?

Thanks to SRI International in Menlo Park, getting stock quotes is now as easy as dialing a 1-800 number and talking — if you are a customer of the brokerage house, Charles Schwab.

On Schwab's "Voicebroker" you can speak your account number into the phone and tell a pleasant voice what kinds of stock quotes you want. You speak the name of the company, and the voice gives you the value of the stock and whether it's up or down. No endless voice-mail trees; no waiting on hold; you get an immediate response. And it's easy to get help or a person — just by asking aloud.

I have a Schwab account, so I tried Voicebroker. IBM and General Electric worked fine. But when I said, "Consolidated Egg Cartons," I got Consolidated Edison; General Micropulleys gave me General Microwave; a mumbled name gave me Zycad, which was level at 2 19/32.

The computer program that allows Schwab customers all over the country to retrieve stock quotes by voice over a telephone, is the first of many such easy-to-use applications being developed at SRI's Speech Technology and Research Laboratory (STAR) in Menlo Park. Here scientists are breaking down normal speech so it can be recognized and an-

swered by a computer. "You don't have to learn to pause between words (to be understood)," says laboratory director Dr. Patti Price of Menlo Park, pausing unnaturally between words.

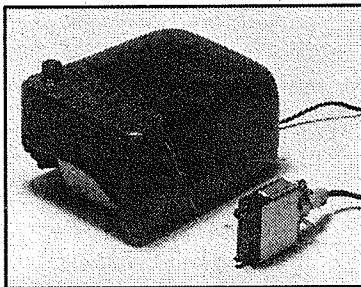
While the technology was developed at SRI, the marketing is being handled by Nuance Communications, a for-profit spin-off located on the SRI campus. The two-year-old company, and others like it, are part of non-profit SRI's strategy to cash in on its new technologies.

SRI is a world leader in the long quest to develop computer programs that deal with the ambiguities and slurring of language as people actually speak it. Now that such programs are here and working, Dr. Price speaks enthusiastically of other applications. Speech recognition technology can be used in education and translation, she says, and to retrieve information from news broadcasts. It can be used to make a voice print of people's speech to be used, like a fingerprint, for security to verify the identity of the speaker. It can be used for ordering products, or for banking, or for airline and travel information. SRI is already working with the Swedish telephone company to employ its technology in the Swedish phone system.

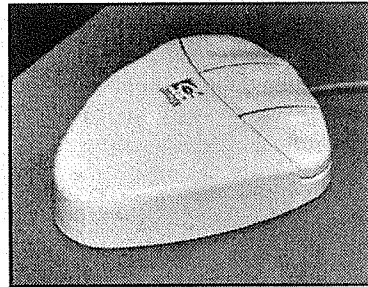
"This (technology) vastly increases your access to information," says Dr. Price. "Most of how people communicate and share information together is through talking."

Its new leaders — installed after former President James Tietjen was abruptly replaced in late 1993 — have focused on innovation, com-

mercial development, and moving technology into the marketplace. "Over the long run, only new ways (Continued on next page)



Old photo courtesy of SRI International



New one: Carol Ivie

The computer mouse — at the heart of America's love affair with the personal computer — was invented by Doug Engelbart of Atherton at SRI international more than 30 years ago. At left is Dr. Engelbart's wooden version; at right is a new, streamlined version of the trusty pointer.

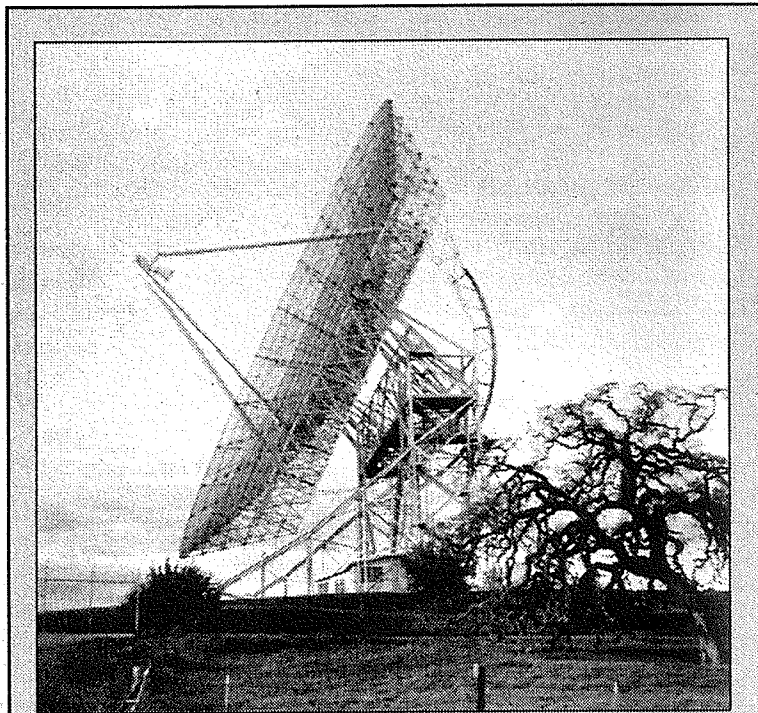


Photo by Marion Softky

The "Big Dish" atop one of Stanford's local hills near Highway 280 is the most visible local symbol of SRI International, one of the world's top research and technology institutions.

Since 1962 the 150-ton, 150-foot radiotelescope has been scanning the skies for science and defense. For 10 years it helped study the solar wind with the Pioneer spacecraft program, and sometimes helped commu-

nicate with disabled spacecraft.

After years of disuse, the dish was refurbished and improved. Now it is mostly used for research and training in radio-astronomy in conjunction with Stanford University. It does some satellite-tracking duty and is also helping to instruct and inspire high school students.

Just last Thanksgiving week the dish swung into action and helped fix a software glitch in NASA's Mars Global Surveyor launched Nov. 6.

COVER STORY

SRI at 50: what next?

(Continued from previous page)
of thinking about the marketplace can create and renew growth," says Dr. Sommers.

One 25-year veteran of SRI wonders if research has lost its luster as the answer to society's needs. "The need for research has changed; research has got a bad name," he suggests.

Mr. Cook acknowledges that research has changed; he denies it is less important. Research, mostly funded by the federal government, is the "core business of SRI," he says. "It's enabled us to be at the

forefront of new technology. It's just as important as it ever was."

Even as the military downsizes, it is increasing the money it spends on modern technology to support new mobile forces, he says, but more is being spent on development and less on basic research. "The Pentagon is strongly behind new technology," he adds.

"Research and development is not going away at all," Mr. Cook continues enthusiastically. "The possibilities are enormous. The rate of technical change today is greater

than it's ever been."

Mr. Cook also remembers the days when SRI was active in the community and hopes to bring them back. Noting it's taken three years to regain financial control of SRI, he says: "The community is very important to us, and most of our employees live here. We'll be back and much more active."

As the interview ends, Mr. Cook turns and says: "You didn't ask me how old I am. I'm 72. I'll stay with it a few more years. I'm determined it's going to be a success."

Wanted: adult twins for SRI study

SRI International is looking for twins from the Bay Area to participate in a study that will shed light on the role that genetics and environment play in health and human behavior.

"Twins — with their similar genetic makeup — represent an ideal way to study various health and behavior issues and determine more exactly what influence genetic factors play and what influence environmental factors may play," said Gary Swan, director of SRI's Center for Health Sciences in Menlo Park.

To expand these studies, SRI, one of the world's largest technology research and development institutes, is forming a Northern California Twins Registry. The new registry is designed to provide better representation of ethnic and gender diversity in twin studies than previous registries, which were based on veterans and therefore largely male.

Twin studies have provided scientific insights into such issues as diabetes, heart disease,

and obesity, as well as alcohol and tobacco use.

Key findings from previous studies include:

- Obesity over the life span is determined in part by different genetic factors as people get older.
- Tobacco smoking is determined partly by genetic factors, some of which may also underlie alcohol use.
- Change in memory function as adults age is influenced partly by genetic factors; in identical twins who were different in memory change, blood pressure appeared as a significant factor.

Bay Area twins 18 and older interested in participating in the Northern California Twins Registry may contact the Registry hotline at 1-800-SRI-TWINS.

They will receive survey questionnaires and invitations to participate in studies at SRI's Menlo Park headquarters. Twins selected to participate will be given a stipend.



Photo by Eva Soos

Jane Klassen of Menlo Park, a post-doctoral fellow at SRI International, is studying the chemistry that makes the ozone hole. Here she's testing how hydrochloric acid diffuses through droplets of concentrated sulfuric acid.

Coffeehouse musical celebration for Valentine's Day

Bring your newest, truest or oldest sweetheart to an evening of love songs performed in a coffeehouse celebration of Valentine's Day on Friday and Saturday, Feb. 7 and 8, at 7:30 in Lane Family Hall at Valley Presbyterian Church, Portola Valley.

Performing artist Juliet Green will sing "oldies," such as "Falling in Love with Love," as well as contemporary songs, "Meadowlark" and "Love Changes Everything."

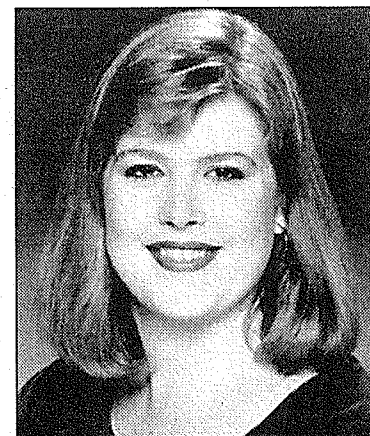
Ms. Green has appeared in lead roles in Peninsula musical theater, performed in "Quilters" at Valley Presbyterian Church, and directed the music for "The Music Man,"

presented last summer at the Portola Valley church. Her day job is music specialist for the Portola Valley School District.

Instrumentalists accompanying Ms. Green in the celebration, called "Tell Me the Truth about Love," include two pianists, a bass player and percussionist.

Coffee and desserts will be catered by Ted and Margaret Brown.

The evening is a benefit for the church's Theatre Arts Ministry. For reservations, call Valley Presbyterian Church office at 851-8282. A \$10 donation is requested. Child care is available.



Juliet Green has appeared in leading roles in Peninsula musical theater.

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