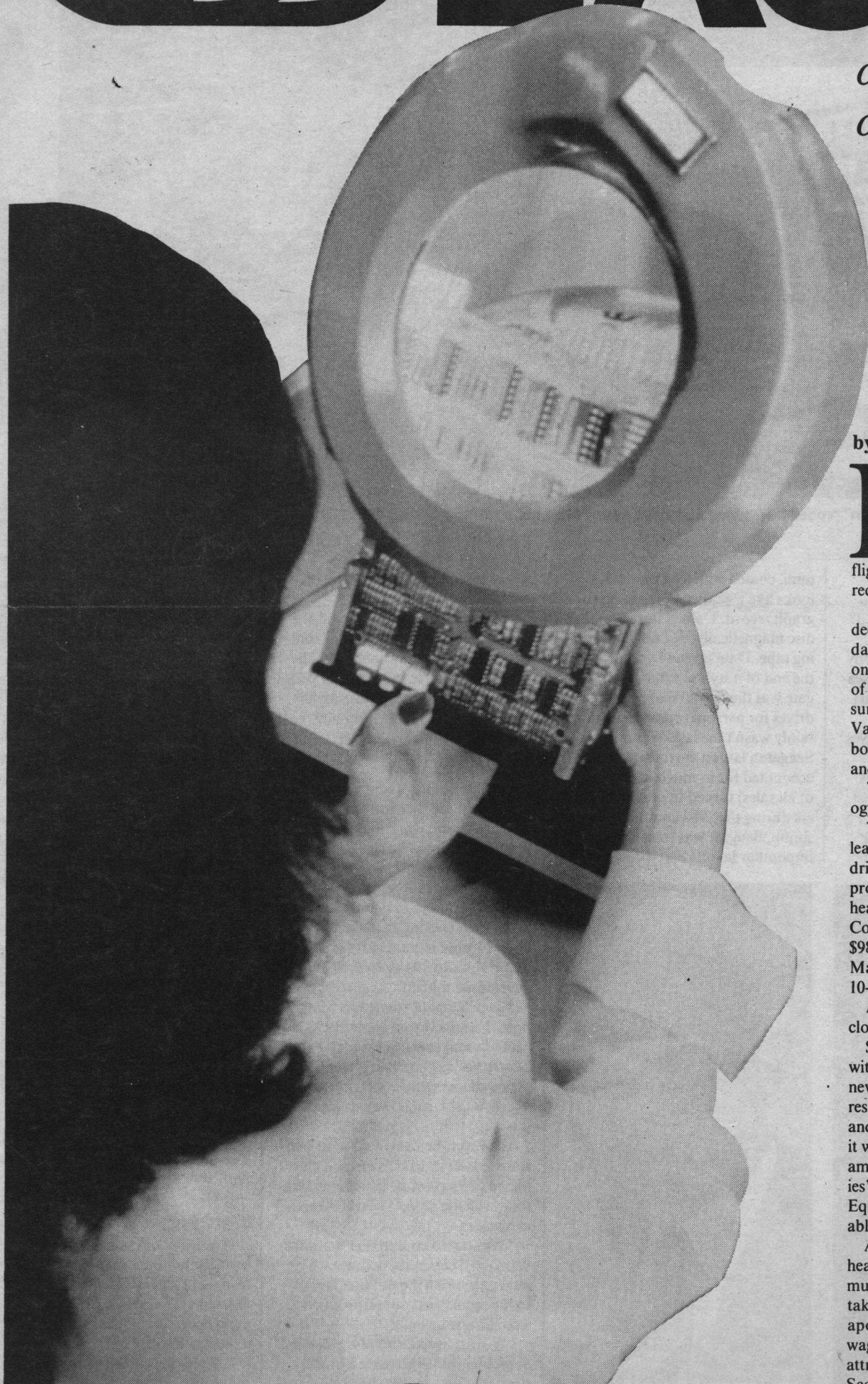# SSEAGATE

Less than 10 years old but with assets nearing $1 billion, Seagate Technology is one of the county's most important companies and certainly its fastest growing. Here's how Seagate made its mythic march to mega-manufacturing — at doubletime.

by Rick Hildreth

IN 1979, Scotts Valley's greatest claim to fame was Skypark Airport, a popular touch-and-go spot for private pilots with time to kill and flight-time needs for license requirements.

That year, a group of engineers decided to develop a new form of data storage for personal computers, one that would increase the amount of data that could be kept on one surface. They set up shop in a Scotts Valley loft and ended up changing both the modern computer industry and Santa Cruz County.

They founded Seagate Technology.

Today, Seagate is the planet's leading manufacturer of rigid disk drives for personal computers. It's probably the largest single company headquartered in Santa Cruz County, with assets totaling $989,199,000 at the end of 1987. On March 28, the company shipped its 10-millionth disk drive.

As for Skypark Airport, it's closed.

Scotts Valley has grown along with Seagate. Today, the city has new shopping centers, dozens of new restaurants, and several other high- and low-tech companies. Last year, it was, for the first time, placed among California's "240 largest cities" as charted by the state Board of Equalization, which reports on taxable sales.

Although Seagate's corporate headquarters are in Scotts Valley, much of the actual manufacturing takes place in exotic locales like Singapore and Thailand, where lower wages make mass production more attractive than in the United States. Scotts Valley, and soon, Watsonville, are primarily research and development centers.

With facilities around the globe and its product in millions of computers, Seagate may be the most important company in the county.

The People

Al Shugart, Seagate's co-founder, chief executive officer and chairman of the board, started in the computer business in 1951. He graduated from the University of Redlands on a Sunday, and went to work for IBM the following Monday, he said.

He'd started and left another computers peripherals firm, Shugart Associates, in the early 1970s. Shugart then owned and operated a legendary Santa Cruz bar, the Castaways, before starting Seagate. Known for its oversized, cushy chairs and a clientele predisposed to straight shots, Shugart recalls the bar as a not-too-nice place.

Despite his position now as CEO of a huge corporation, Shugart shows up for work at 7 a.m. every day and still acts like an employee.

Another co-founder and the company's president and chief operating officer, Tom Mitchell, is an ex-Marine who has applied the philosophy of "the few and the proud" to his company. Seagate employees are expected to give their all to the company; overtime isn't a privilege there, it's an obligation.

Mitchell is willing to go to any extreme to make Seagate successful. A Silicon Valley legend has Mitchell falling to his knees before the Atari chief executive in Las Vegas, pleading to have Atari buy Seagate products. The display worked, and Seagate started selling to Atari within two months. The term "golden kneepads" became one of endearment at the company.

Today, Mitchell and Shugart,

Examination of every printed circuit board is part of Seagate's "Zero Defects" program.

GREG PIO

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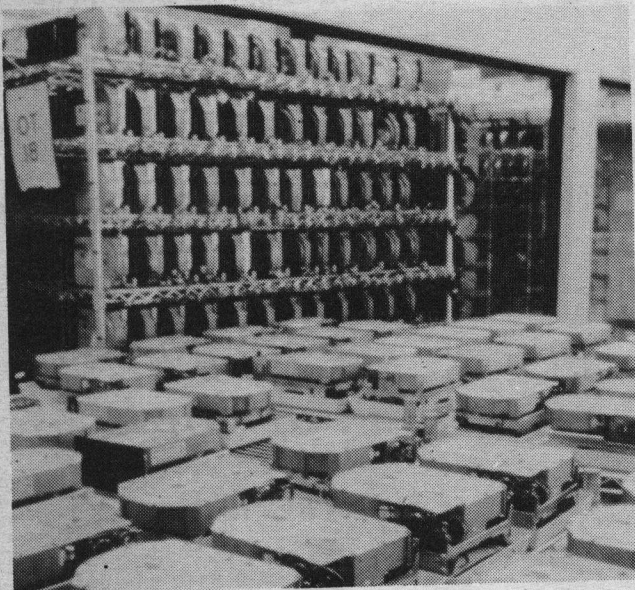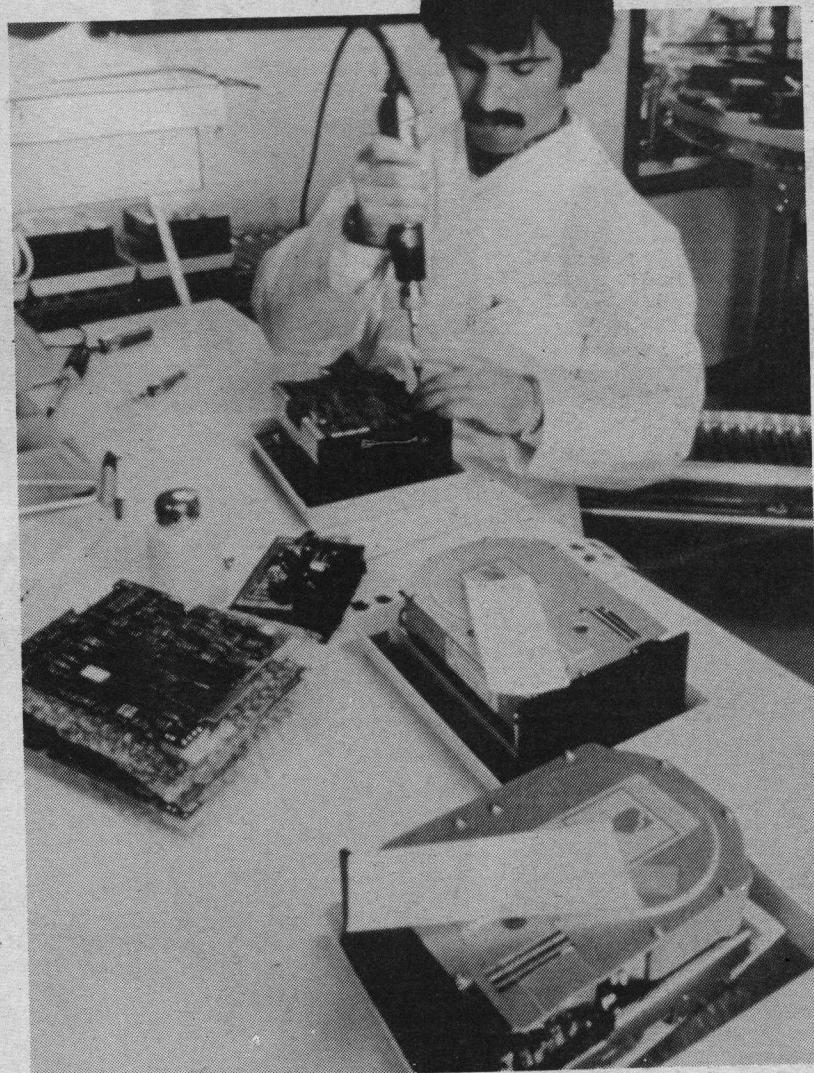
Clockwise from top: "Clean room" procedures during disk drive assembly; final assembly of disk drives; drives awaiting final testing.

along with senior vice-president Doug Mahon, are among the 10 highest-paid Silicon Valley executives, according to a survey by the San Jose Mercury News. Mitchell places second (behind Apple's John Sculley) with an annual salary of $1,354,975. Mahon ranks third, at $1,274,120, and Shugart places at fourth with $1,263,951.

"I think if we thought it was going to get this big, we wouldn't have started it," said Shugart. "We knew it was going to grow, but to be as large as we are probably wasn't really in our minds."

The Disk Drive

Science fiction accounts which imbue computers with the power of rational thought or the personality of HAL rarely attempt to describe how those supercomputers "think." Yet advances engineered at Seagate are giving computers more compact brains that can remember more things.

For most computer users, the disk drive is the only practical medium to operate a computer from. But until Seagate came on the scene, rigid disk drives were large, cumbersome machines built around an eight-inch diameter platter. Personal computers, such as they were then, relied on five-and-a-quarter-inch floppy disk drives, with removable plastic-based platters. These unfortunately had limited storage space and a short life.

Seagate took the technology of the eight-inch rigid disk drive and modi-

fied it to meet the needs of a five-and-a-quarter-inch world.

Their first model could store 6.38 megabytes of information, a big jump over the half-megabyte floppy disks. And, barring accidents, a Seagate drive could be expected to last years.

Today, Seagate builds disk drives able to hold 169.5 megabytes of data. Its biggest single customer is IBM, and you can probably expect that most IBM PCs, PC Jrs. and PS computers run on Seagate drives.

The rigid disk is made of aluminum, coated with iron oxide. It looks like a copper 45 rpm phonograph record. Data is stored on the disc magnetically, not unlike recording tape. Data is read by a "head" at the end of a stylus. Although Seagate was the first to make rigid disk drives for personal computers, it certainly wasn't the last. When IBM, Seagate's largest customer (it once accounted for as much as 65 percent of all sales) turned to other producers during the 1984 computer market slump, Seagate was forced into unpopular layoffs and a quick re-

structuring. Today, the company is back on top.

"You stay ahead (of the competition) by emphasizing low cost and volume production capability. The name of the game in computer peripherals is cost, so emphasizing low cost has enabled us to keep our market share," said Shugart.

Around the World

Seagate employs some 30,000 people around the world, about 2,300 of whom work in Scotts Valley. The company has sales offices in London, Munich, Tokyo, Paris, Seoul and Singapore.

Most production manufacturing takes place in Singapore and Thailand. Florida has a repair facility, and Colorado has a research and development plant.

When Seagate opened its Singapore manufacturing plant in 1983, it caused great concern for many of its Scotts Valley employees, who were afraid of losing their jobs to the Third World, where wages were lower.

However, Seagate needed to meet the needs of its customers and stay ahead of its growing list of competitors, which it couldn't do at American wages.

"We started component manufacturing in Singapore, because we've always been on the outlook for reducing the cost of our products," said Shugart.

"We discovered in 1984, when the computer industry made a downturn, that we not only had to make components over there, but we had to make whole disk drives."

Hundreds were laid off at Scotts Valley. But as the market stabilized, Seagate rearranged itself, putting all of its manufacturing overseas, concentrating on research and development in Scotts Valley. When it started to break into the three-and-one-half-inch disk drive market (it's been shipping those for nine months now), jobs came back to America.

As Seagate has grown, it's improved its flow through acquisitions of other companies, or "vertical integration" as Shugart calls it.

In 1985, they bought out Grenex, Inc. of Fremont, a company that had been supplying Seagate with "sputtered thin film media." It's now Seagate Magnetics.

In 1987, Aeon Corp. of Brea, producer of aluminum substrates used to manufacture the rigid discs, is now Seagate Substrates.

Also last year, a Scotland integrated circuit (or computer chip) firm, Integrated Power Semiconductor, Ltd., became Seagate Microelectronics.

This consolidation of vendors allows Seagate to control all aspects of its manufacturing operation very closely.

Watsonville Work

After years of public wrangling over the building's ultimate disposition, Seagate finally moves into its Watsonville building May 23. Complete operation of the building is expected by July 15.

Like its Scotts Valley operations, the Watsonville plant will essentially be a research and development pro-
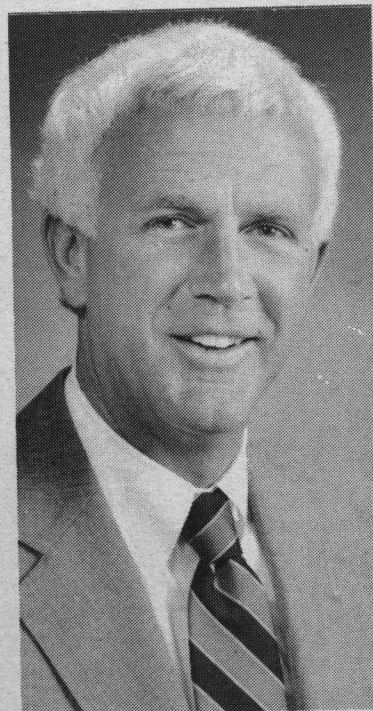
Al Shugart, CEO and chairman of the board, left; and Tom Mitchell, president and chief operating officer.

⧓EAGATE

Rigid disk platters are tested for spin tolerance. As the surface of the platters must be free of all contamination, workers dress as if they're performing surgery.

duction line; new products will be made there until engineers are convinced all the bugs are worked out of the production process.

The company boasts of the $25 million it has spent on the building, and its insistence on drawing from the Watsonville labor force.

Seagate expects to hire between 400 to 600 people in Watsonville, all drawn from the local labor pool. Julie Still, public relations coordinator, stressed the projected employment figure is extremely tentative, and could change at any time. Still, some 3,000 people have applied to work there.

When the company built the Watsonville building in 1984, it intended to build disk drives there, employing about 1,000 people. But a severe drop-off in personal computer sales forced Seagate into an unpopular series of lay-offs at Scotts Valley. Expansion plans were scuttled, and Watsonville had another vacant building, not the cornerstone of its hoped-for industrial revival.

By late 1987, computer sales were back up, and Seagate was once again gearing up to meet demand. Plans were made to produce magnetic media in Watsonville, employing up to 3,000 by 1991. Early this year, an engineering change increased the potential output of Seagate's Fremont plant (already making the magnetic media), and the company changed its Watsonville plans again.

Seagate-Watsonville will be a production line test center, like much of the manufacturing in Scotts Valley. New, top-secret disk drive

designs will be built there, until the heralded "Zero Defects" goal is achieved. Then the model will be built at one of the overseas facilities, while a new design is brought on-line at Watsonville.

Depending on the capricious computer market, Seagate may yet build more in Watsonville. A "conceptual master plan" calls for a new warehouse and another manufacturing or research facility at some unspecified time in the future.

The Future

Seagate has no plans to leave Scotts Valley or Watsonville, Shugart said. If the market takes another slide, jobs may be lost, but as long as there's a Seagate, it will be located here. Shugart believes in supporting the local community, but does so silently.

"We have a broad range of support activities, and we don't make all of them public. In fact a lot of times, our contributions — we tell people we don't want them public," he said.

The Seagate philosophy, exemplified by their in-company slogan "Zero Defects" and the Seagate memo pads printed with the banner "keep it simple" (with the "i" and "t" of "it" superimposed one on top of the other), is likely to remain unchanged.

"It turns out when you're growing like we are, you really don't manage your growth, your growth manages you," Shugart said. "You adapt to what the market is and the growth that you have, obviously, it takes good people — people that are not only good, but people that enjoy it, because it's a 24-hour-a-day job." •