



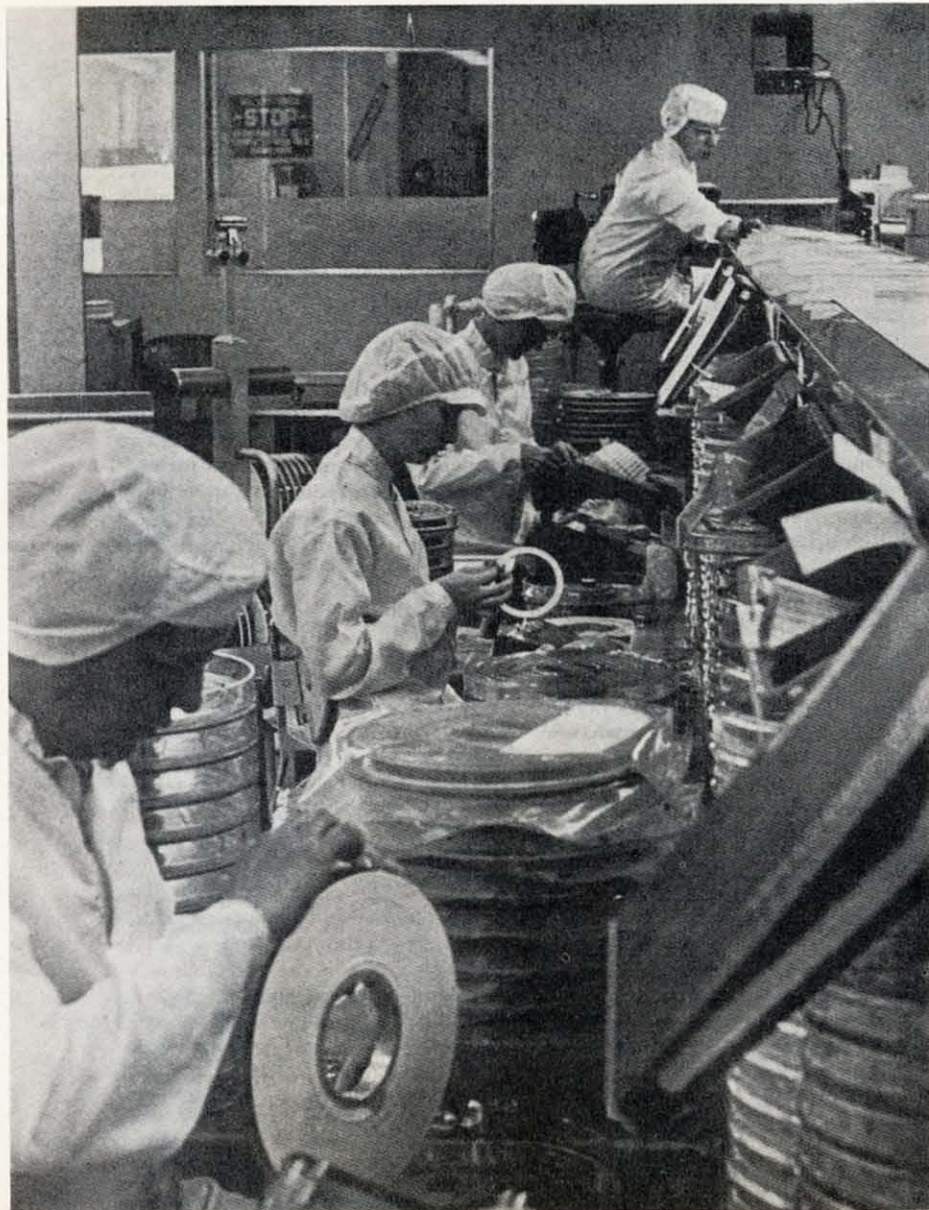
Laurence L. Spitters, chairman and president, is pitting Memorex against the giants of the computer business.

COMPANIES

A tiny competitor reels in tidy return

In a field dominated by giants, Memorex Corp. is piling up an enviable record with its precision computer tapes.

Now it is doing battle with an improved retrieval system



Precision tapes for computers, in which Memorex ranks second behind IBM, are coated, cured, and split to proper width at Santa Clara (Calif.) plant.

Such giants as IBM and Minnesota Mining & Mfg. Co. can probably afford to spill more money on the way to the bank than Memorex Corp. has earned in all seven years of its existence. But the tiny Santa Clara (Calif.) company chose the two giants as competitors when it went into the precision magnetic tape business in 1961.

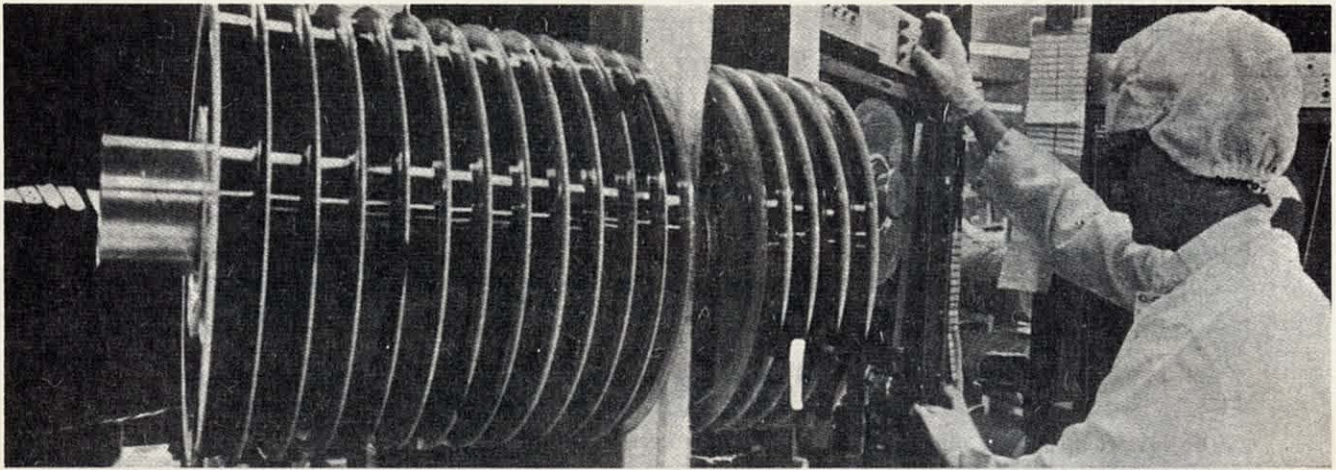
Memorex has since carved flesh out of the hides of both companies. And it has established itself as a solid little growth company that has operated in the black for five of its seven years, netting better than 10% on sales the last four.

Now Memorex is squaring off against an even more formidable array of big competitors in the computer hardware business with a disk drive. This is a computer accessory that, like a phonograph, "plays" a stack of magnetic plates called a disk pack. The pack performs the same data storage function as magnetic tape, but data can be retrieved from it at much higher speeds.

New tests. The new move pits Memorex not only against IBM, Honeywell, and Control Data, but potentially against such giants as Sperry Rand's Univac Div., National Cash Register, and General Electric.

Last month, Memorex landed its first big disk drive order when Management Assistance, Inc., a computer leasing company, signed up to buy up to 500 units a year of Memorex's Model 630 over the next five years. The disk drive sells for \$13,000 to \$20,000 apiece, and is compatible with IBM computers.

Memorex's chairman and president, Laurence L. Spitters, was a 34-year-old Ampex Corp. executive when he spotted a gap in the tape business that led to Memorex's birth. Although many companies, including Ampex, made audio tapes for music and voice recording, only 3M made a tape that satisfied both the computer industry's exacting qual-



Inch by inch, every reel of tape is run through a Memorex-built test machine to assure that it is flawless.

ity and high-volume requirements.

Minnesota Mining was IBM's sole tape supplier, and IBM was sole supplier to its computer customers—an arrangement born, Spitters says, "not of conspiracy but of necessity," and ultimately a source of "almost embarrassing mutual dependence" to both.

"Minnesota Mining could not enter the IBM computer user market," says Spitters, "without risking the loss of IBM's patronage. IBM, on the other hand, lacking tape-making capability, was limited by the technical improvement pace set by 3M. Given the competitive condition, 3M was driven to no excessive R&D effort. Had the two giants in 1960 undertaken the program of disengagement which they subsequently implemented in 1966, it's doubtful that anybody would ever have heard of Memorex."

Second place. IBM, with its own tape plant in Boulder, Colo., now leads the field in computer tapes, followed by Memorex. Suddenly cut adrift from its biggest sales outlet, 3M trails closely behind Memorex. In other precision tapes, 3M leads and Memorex is No. 2.

An upheaval in Ampex management was under way when Spitters resigned to start his own company. He took three Ampex employees with him; they used their own resources and had the backing of 21 outside investors.

Only a few other companies, such as Ampex, Audio Devices, and Computron, have mastered the highly complex technique of precision tape making. Even giant Eastman Kodak Co. reportedly sank some \$15-million into a tape effort before it gave up last year.

The basic problem, according to Spitters, is to achieve high yield. "Unless you can convert 75% of the ingredients into salable product," he says, "you might as well give up,

because you won't make a profit."

Spitters, now 41, was alert to the hazard before the company was born. Neither a scientist nor an engineer, but a lawyer with a graduate degree in business from Harvard, he made provision for a quick exit—"our Plan B"—in case Memorex flopped. He gave the outside investors a preferred position in the event of liquidation.

But the new company did not flop. By 1962, Memorex had a salable product, and by 1963 showed a modest profit. Last year, it netted \$3.8-million on sales of \$34.2-million.

Growth brought Memorex to an inevitable crossroad by 1965. "If a customer had a problem with our tape," Spitters recalls, "nobody relaxed until it was solved. Our manufacturing vice-president seemed to spend more time on airplanes, rushing off to help our customers and our sales engineers, than at the plant. This should have been the responsibility of a marketing vice-president. We had to make a decision on how we wished this company to be operated."

Crucial choice. The question, in short, was whether to remain a small, chummy business of limited potential and unlimited crises, or become "big" business.

Says Spitters: "We really didn't have much choice. Top management was susceptible to two pressures. One was from the market place, demanding new products, new businesses, that were within our capability. The other pressure we couldn't ignore was from Memorex people . . . It would have disaffected them if we broke our stride."

There was yet another pressure, which Spitters tends to soft-pedal: pressure from the stock market. In December, 1964, Spitters and the other original investors split the stock 30 for 1, and the following March sold 221,000 shares in a sec-

ondary offering at \$25. Eighteen months later another 95,000 shares were gobbled up at \$60. From there the stock rose last fall to a high of \$230 bid in the over-the-counter market. After another 3-for-1 split last February, the bid price has fluctuated between \$50 and \$60.

Added pressure. The widened ownership and the close attention a hot issue gets from security analysts intensified the pressure on Memorex to pursue a growth course.

To facilitate that, Spitters last year divided the company into three decentralized operating divisions, and hired an executive vice-president and a finance vice-president.

Until last summer, precision tape was the only recording medium in the Memorex product catalog. With the success of IBM and its rivals in speeding up computers and intensifying the complexity of the calculations they can handle, the need arose for infinitely faster data filing and retrieval techniques.

One answer was the disk pack. As conceived by IBM, this is a stack of six aluminum disks about the size of long-play phonograph records. Both sides of each disk are coated with iron oxide to record 57-million bits of data. Spaces between the disks permit special recording and reading heads to dart in and out as the pack spins at very high speed on the turntable of a disk drive.

Good timing. Having mastered the difficult chemistry of oxide coatings for tape, Memorex transferred its knowledge to disk manufacture, and introduced its first disk pack last September.

The timing was perfect, for even IBM was unable to keep up with demand, and Memorex has since sold more than 1,000. The pack costs \$490. Although disks will not displace computer tapes, disk sales will exceed computer tape volume for the first time this year.