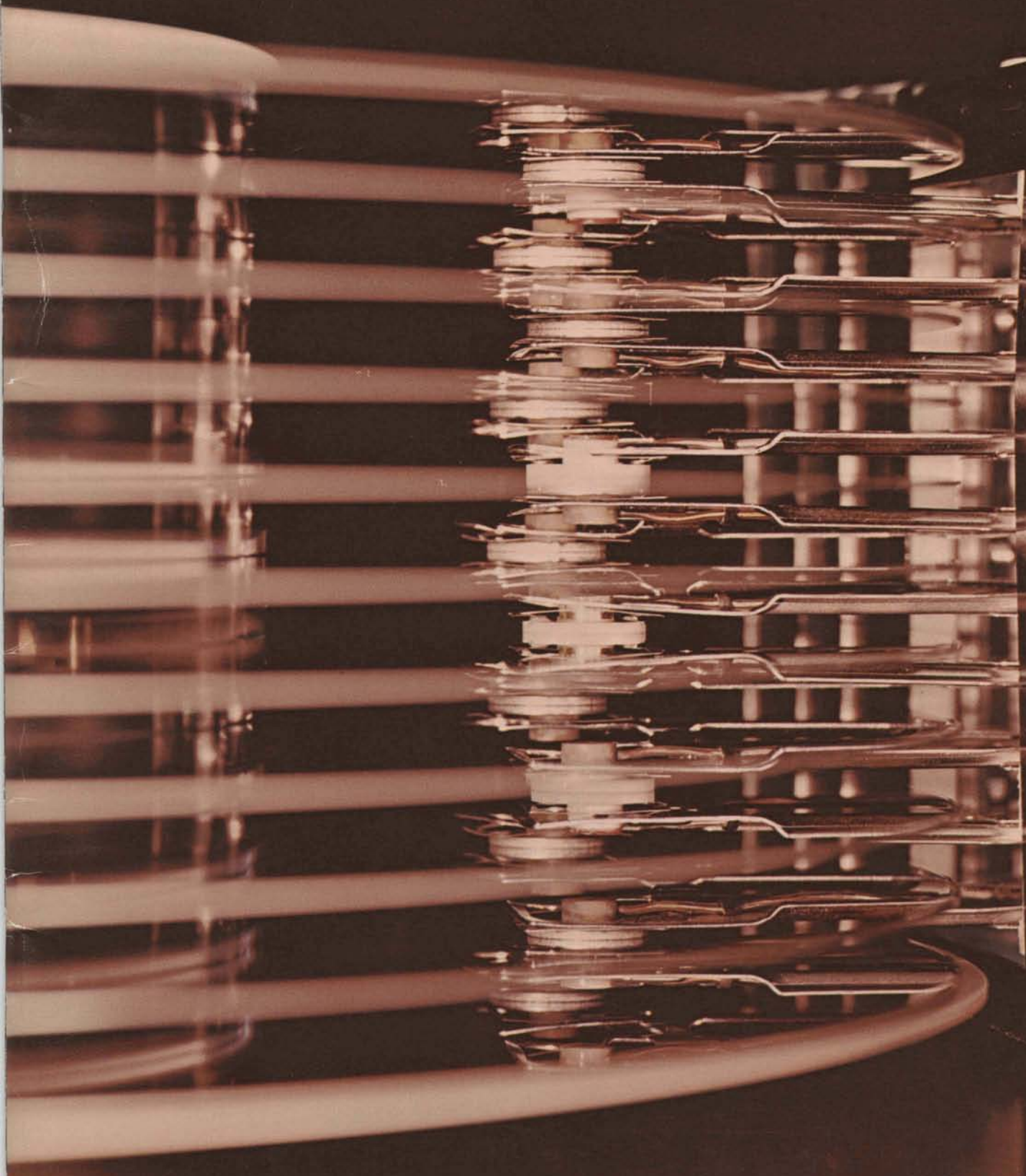


MEMOREX

1968 Annual Report

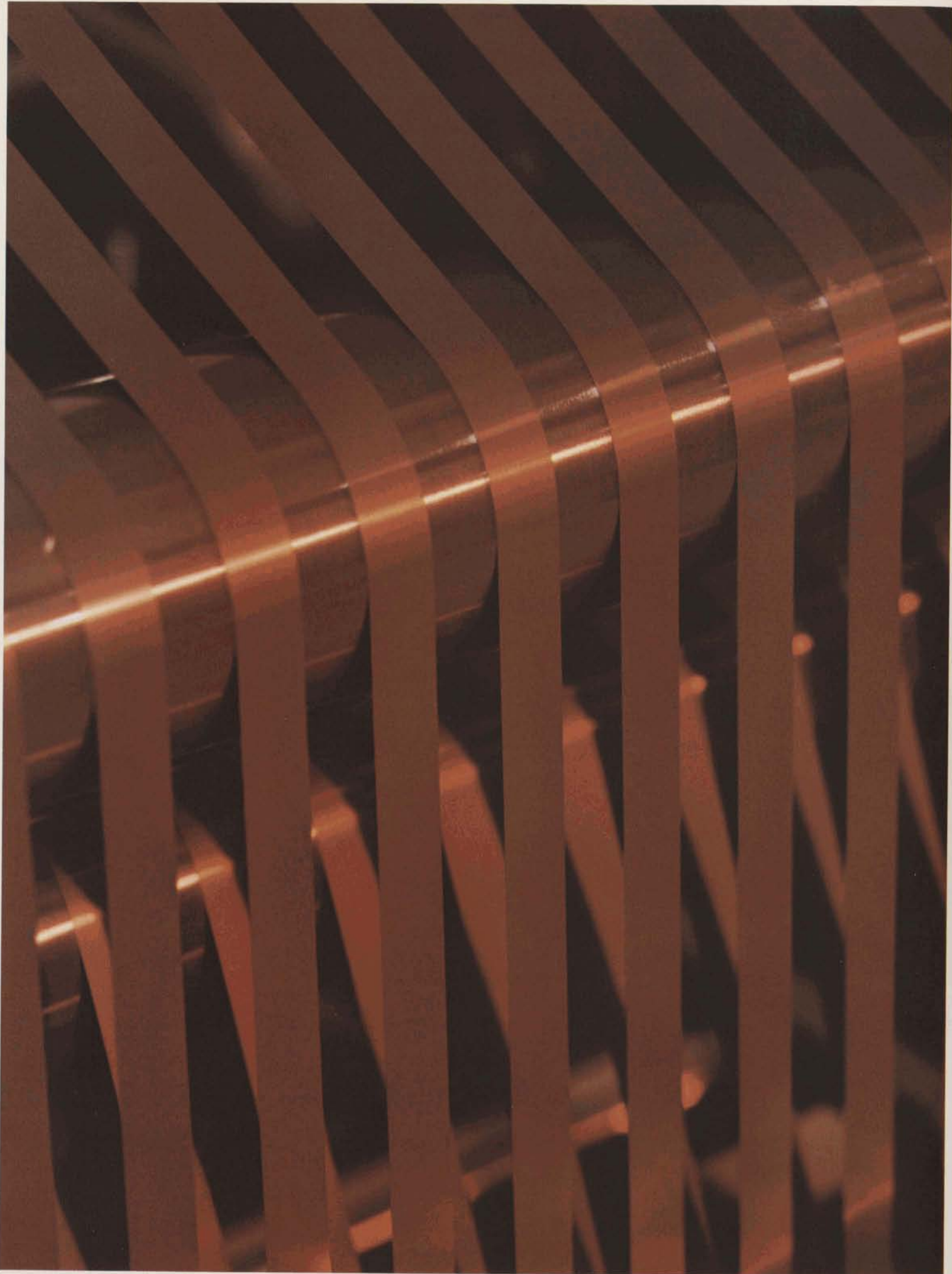


Cover: Twenty recording heads of the Memorex 660 Disc Drive search for data recorded in concentric tracks on the 20 surfaces of the Mark VI Disc Pack media. The heads "fly" at an average distance of 80 millionths of an inch from the disc surfaces, while the discs rotate at 2,400 revolutions per minute. Average access time to an information record at any location is approximately 50 thousandths of a second.

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Memorex Corporation is in the user-oriented information handling systems media and equipment business. The Company manufactures magnetic tapes and disc packs used in computers for mass data storage media and direct access memory media, respectively, and other precision magnetic tapes for the recording and reproduction of scientific data and television pictures and sound. In 1968, Memorex also inaugurated the manufacture of magnetic disc recording equipment which utilizes disc packs for its media.





**Financial Highlights**  
for the years ended December 31, 1968 and 1967

**Memorex Corporation**

	1968	1967
<b>Net sales</b>	\$58,295,000	\$34,232,000
<b>Income before provision for Federal and foreign income taxes</b>	10,084,000	6,765,000
<b>Net income after taxes</b>	4,939,000	3,576,000
<b>Net income per share*</b>	1.35	1.06
<b>Depreciation and amortization expense</b>	2,651,000	1,681,000
<b>Research and development expense</b>	3,798,000	2,377,000
<b>Working capital</b>	7,239,000	7,508,000
<b>Long-term debt</b>	4,289,000	6,816,000
<b>Shareholders' equity</b>	27,295,000	15,485,000
<b>Total capitalization</b>	31,584,000	22,301,000
<b>Return on total capitalization (average during year)</b>	18.3%	17.4%
<b>Shares outstanding (average during year)*</b>	3,663,010	3,120,120
<b>Number of employees at year's end</b>	1,916	1,304
<b>Number of shareholders at year's end</b>	17,050	6,850

\*Based on weighted average number of shares outstanding during the year after giving retroactive effect to the 3-for-1 stock split-up and the conversion of debentures.



## To Shareholders:

Growth in business, record earnings, and substantial progress in corporate development made the year 1968 an excellent one for Memorex.

Net sales rose to more than \$58 million, compared to \$34 million in 1967, a 70% increase.

Net income after taxes was \$4,939,000, compared to \$3,576,000 in 1967, a 38% increase. Earnings per share were \$1.35 in 1968 and \$1.06 in 1967. The 1968 figures reflect the 10% Federal income tax surcharge, which amounted to 9¢ per share.

Three other indices of growth during the year were significant:

- Research and development expenditures, including those capitalized, aggregated \$5.3 million. This level of R&D was an increase of nearly 70% from 1967's. R&D expenses charged against revenues were \$3.8 million, or 6.5% of sales.
- Increased investment in capital assets totalled \$7.8 million, bringing the Company's total plant, property, and equipment account to \$25.4 million.
- A 46% increase in employment was assimilated into our organization, with the year-end personnel count in excess of 1,900.

Important corporate development occurred in 1968 with the commercialization of Memorex's first equipment product line. The new product line effected a change of Memorex's corporate interests, from which has emanated a program for building a computer peripheral equipment business, described in the next section of this Report.

In the years prior to 1968, the Company had concentrated its business in the field of precision magnetic tapes for mass storage of data and the recording of television, and in the field of disc pack devices for direct-access data storage of computers. During the year, our subsidiary, Peripheral Systems Corporation, achieved an important diversification by beginning volume production of the Memorex Model 630 Disc Drive. This computer peripheral equipment, which had been under development since 1966, is the direct access equipment which utilizes disc pack devices for data storage media.

The technical success of PSC's development is evident in the performance specifications of the Model 630 and of the follow-on Model 660, volume production of which will begin in mid-1969, which exceed those of the IBM 2311 and 2314 counterpart equipments. The success of PSC's manufacturing is confirmed by customers' acceptance of several hundred units which have been delivered and which are operating more reliably and with less maintenance requirement than competitive equipments. The success of the total PSC program is evident in the \$30 million of orders received for deliveries in 1969 and 1970, its current contribution to our net profit, and the establishment of a cornerstone upon which to build other equipment product lines.

In pursuit of this objective, in June 1968, Memorex formed an optical technology subsidiary, Image Products Corporation. Its development of a computer output microfilm printer, which remains speculative, is progressing satisfactorily. More detail of this subsidiary's activities is set forth in another part of this Report.

Growth of disc pack sales accelerated during 1968 as a result of intensified marketing of this product line.

The prolonged shortage of disc packs, at the time of introduction of our Mark I product a year earlier, had induced Memorex to enter the market without advertising, adequate additions to our field sales staff, and aggressive marketing. The elimination of the shortage, during the first quarter 1968, compelled us to revamp our marketing.

By mid-year, disc packs were intensively promoted; we accelerated the expansion and training of the sales force; all manufacturing of finished packs was concentrated at a single, more efficient Santa Clara plant. We hastened the development of the Mark VI product, the higher-density data storage disc pack for IBM 2314 drives, and placed it in volume production in September. These vigorous actions resulted in steadily rising, profitable sales during the second half of 1968. Memorex's sales of disc packs at year-end exceeded the combined volume of all other competition excluding IBM. Because of these actions, we were also better able to sustain the 25% price reduction in Mark I packs, late in 1968, which was a required response to lower competitive prices.

The Company's precision magnetic tape sales increased substantially during the year. Because of expanded selling efforts, our share of market in the computer tape product line was maintained notwithstanding severe price competition for large volume contracts. Share of market of video tape products, broadcast and closed-circuit, was improved. Video products suffered less price deterioration because of the greater sensitivity of video tape users to the premium quality offered by our products. The instrumentation tape product line received only minimal marketing effort during the year because of continued depressed prices and profit



margins. The net result was that sales of precision tape products produced satisfactory earnings in 1968, despite overall price degradation which lowered tape's ratio of profit to sales.

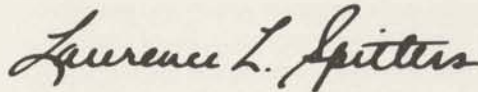
Expansion of field selling capacity in the United States was benefited by staffing 14 additional sales offices, making a total of 37 domestic offices. A Memorex sales office was located in Canada. Other foreign sales subsidiaries were organized in Mexico, Denmark, and Finland, bringing the total number of such organizations to 15. In Japan, the Company entered a marketing joint venture with the Japanese trading company which previously was our sales representative. Technical centers for support of international customers were established in London, Paris, Liege, Munich and Tokyo. In recognition of Memorex's international marketing activities, the Company was the recipient of President Lyndon Johnson's Export "E" Award in May, 1968.

At year-end 1968, Memorex's bank borrowings had increased to in excess of \$15 million. Of this amount, \$4.3 million were overseas term loans to finance construction of a tape manufacturing plant in Liege, Belgium. Short-term loans from U.S. banks produced the balance of borrowed capital. We expect additional bank loans will meet all external capital needs during 1969.

A milestone in corporate history occurred in June 1968, when Memorex Common Stock was listed for trading on the New York Stock Exchange. The listing gave to our shares a broader exposure to investors, resulting in the increase of our shareholders to more than 17,000.

In 1968, the Company's ambitious objectives materialized because of the commitment of Memorex people at all levels of our organization, their pride, hard work and ingenuity. The results are the successes described in this Report, which provide employees greater job security because of our enhanced competitive strength, better opportunities for promotion through growth, and, by profit-sharing, a participation with shareholders in improved net profits. In 1969, Memorex people aspire to achieve results which should be no less satisfying to shareholders.

Sincerely,



Laurence L. Spitters  
President





A new concept of Memorex's "target company," the company which we propose to develop during the next five years, was formulated during 1968. In contrast to the prior, narrowly defined idea of our business, which restricted our interests to magnetic media and disc drive equipment manufacturing, the new concept reflects expansive corporate interests. Its "target company" will be based upon multiple product lines of media and equipment whose sales will be several times larger than Memorex's current size. We have defined its business as the "user-oriented information handling systems media and equipment business."

This expanded definition sensitizes our technical and marketing personnel to new corporate development opportunities to which Memorex is prepared to make a substantial commitment of resources. But, it is more than a challenge "to do new things." It is a necessity, because the past process of corporate development, by which Memorex has leveraged its existing technology to enter new markets for magnetic media, cannot be counted upon to provide a sufficient future growth potential.

To expand our growth potential, we have undertaken the program of corporate development which encompasses other technologies and product lines than magnetic media. Our objective is to pursue opportunities in "information handling systems media," by which we mean, in addition to the magnetic media, the image and paper media which are storage and communication vehicles for information handling systems. Each possesses distinctive characteristics. Magnetic media are erasable and permit the easy updating of records; they record data in the electrical form in which data are processed by computers and information handling systems, and so facilitate system to system communication.

Image or film media are employed in applications which require a great reduction in the physical volume of storage data; and image media, unlike magnetic media, are man-readable. Paper media are the principal means of storing and communicating data intended to be directly man-readable.

The aggregate of these information systems media markets is of the order of \$1 billion annual sales, many times larger than the \$250 million market for high quality magnetic media. The markets are expected to grow and to change significantly during the next decade in their use of materials, form and applications. Media manufacturers which are sensitive to the changing requirements of systems, which possess the requisite technologies, and which have broad customer coverage and effective marketing, have good growth prospects. So, we propose to develop or acquire technologies for image and paper media, which can be exploited by Memorex's demonstrated product planning and marketing capabilities.

The new definition of corporate interests was also made necessary, in 1968, by our successful entry into the computer peripheral equipment business. The selection of the disc drive equipment as Memorex's first equipment product line and the decision to market primarily to computer manufacturers were legislated by the nature of the transient opportunity we sought to exploit. When the success of disc drive memories in IBM's Series 360 computer systems compelled other computer manufacturers to incorporate similar capability into their systems, many elected to meet their short-term needs by purchasing from independent suppliers.

Our strategy was to exploit this opportunity by developing an advanced disc drive technology in the shortest possible timeframe, and to market to computer manufacturers with a skeletal marketing organization.

Having succeeded in this opportunistic project, we require a more comprehensive objective toward which our equipment business will be directed. We also require it because other equipment market opportunities exist and are evolving, which talented technical and marketing personnel can exploit, given a charter to do so.

So, we have determined to pursue the "user-oriented information handling systems equipment business." By "information handling systems equipment" we mean those systems which are used for data acquisition, preparation, communication, conversion and reduction, storage, retrieval, and display. The business potential encompassed by this definition is in excess of \$1 billion annual sales, a significant portion of which will be increasingly made available to Memorex and other peripheral equipment manufacturers.

Unlike the computer peripheral equipment market of the past, which was largely limited to the needs of computer makers for components to incorporate into their systems, the market for "information handling systems" today includes, as well, products which can be sold to end-users. Many end-user market opportunities inhere in the growth of computer time-sharing. The development of data communication will also foster the incorporation of independently supplied equipment into the total computer system. We know that computer users, with their experience of two generations of computer systems, are more and more inclined to new concepts of information handling and new peripheral products, not all of which emanate from the laboratories of computer manufacturers. Equipment innovation by computer manufacturers is also inhibited from time to time by its impact upon outstanding leases of existing computer equipment. For these reasons, we foresee plentiful opportunities to build a sizeable information handling systems equipment business.



To make of Memorex a significant manufacturer of information handling systems equipment will require creative product planning, for which we have established the following criteria:

1. The equipment must incorporate some advanced technology or performance advantage; it must not be a simple copy of an otherwise available product.
2. The equipment must be "plug-to-plug" compatible or stand-alone equipment not hard-wired in a computer system, so that its use will not necessarily require the cooperation of computer system manufacturers.
3. The equipment must be capable of using existing software systems and not require extensive software modification or support.
4. The equipment, if designed for sale to original equipment manufacturers, must enjoy broad industry interest, especially among the many smaller manufacturers of computers whose lack of large volume and limited in-house capability should encourage long-term supply contracts.
5. The equipment, ideally, will involve a complementary development of new media by Memorex.

To succeed in our objective, we propose to organize an equipment sales and maintenance organization capable of marketing to computer users, as well as to computer manufacturers. Personnel of this organization will be experienced in computer systems marketing; so, our organization will be not unlike those of computer manufacturers.

We must also expand Memorex's leasing capability, which is currently limited to leasing disc packs. Our efforts will be disadvantaged unless we are able to meet the marketing/leasing strategies of the computer manufacturer, particularly relating to new equipments which third-party lessors are reluctant to finance on less than full pay-out leases. Memorex's equipment leasing capability will, fortunately, be aided by the "cash" business we enjoy in our media business and in equipment sales to computer manufacturers.

In the program of corporate development of new media and equipment business, we shall employ three different strategies to identify and exploit specific product opportunities. We shall provide generous budgets for internal research and development projects, as in the past, with the expectation that many of our objectives will be realized by internal developments. We shall engage in acquisitions of other companies when internal development is not a feasible means to a specific objective; for example, when a "quantum jump" is desired and only an acquired business will provide the technology and scale of operations in the desired timeframe.

We shall also continue to use the strategy of joining with technically skilled individuals to form "entrepreneurial subsidiaries." In these, Memorex commits financial support and marketing and administrative management assistance to partially-owned companies, whose minority ownership is retained by their operating managers. The latter have the incentive for capital gain in the ownership of their minority interests, if their enterprise is successful. When it is successful, Memorex has the right to acquire the entire ownership in exchange for shares of Memorex common stock according to a predetermined ratio based upon the degree of success.

The strategy of using "entrepreneurial subsidiaries" was used to enter the disc pack business in 1967, and, again in 1968, to enter the disc drive equipment business. It was employed a third time, in 1968, when we joined in the organization of Image Products Corporation, a subsidiary whose current activity is the development of a computer output microfilm printer.

The expanded definition of Memorex's corporate interests, "user-oriented information handling systems media and equipment," will help us, as we undertake the new program of corporate development, to avoid a conglomerate result. The definition provides our managers, technical and marketing staffs with a framework for the systematic building of a business which possesses a commonality, cohesion, and a sense of direction. It permits diversification in markets and a balance of high- and low-risk opportunities and long- and short-term profit objectives.

The top management and Board of Directors of Memorex are committed to build the larger "target company" from the larger potential afforded by this definition. We will be venturesome, not conservative, in this corporate development. Yet we shall be circumspect to employ vehicles of appropriate scale and to proceed at an appropriate pace, and simultaneously, to strengthen our existing businesses whose earnings are vital to corporate development.

Quantum Computer Tape operating on a typical drive is many times more resistant to self-generated errors than competitive products.





In the revolution of information processing and communication which increasingly affects our lives today, as did the automobile fifty years ago, magnetic media products play an indispensable role. They provide the means by which information is acquired, communicated from one computer system or television recorder to another, and stored and retrieved for updating and reproduction.

Magnetic media markets, in which Memorex enjoys a position of leadership, are four in number. The computer market has during the past six years purchased millions of reels of Memorex computer tape for EDP data storage. The computer market also uses our disc packs, which were marketed for a full year for the first time in 1968. Commercial television networks and stations depend upon Memorex broadcast video tape for producing TV programs and for delayed broadcasts. Educational, medical, and industrial users of television systems purchase our product line of closed-circuit video tapes. Laboratories of government, private industry, and education use Memorex instrumentation tape for scientific data recording.

These markets have in common characteristics of high growth rate and demanding technical requirements. Their growth occurs at several times the growth rate of the general economy, because of the multiplying uses of information processing and communications. Their need for quality products must be met to minimize errors and slow-down of information handling equipment or color imperfections and picture instability of television systems. The thrust of Memorex's marketing is to supply those segments of its markets which are fastest growing and most quality sensitive, a strategy which attempts to exploit the performance value, not price, of our media products.

The success of this strategy was evident in Memorex's sales of magnetic media in 1968, which accounted for more than \$50 million. Of this amount, more than one-third derived from international customers. The Company's share of the aggregate market for precision magnetic tapes increased because of excellent sales of computer and video products, notwithstanding price degradation especially severe in procurements of large computer tape orders. Disc pack sales rose sharply, constituted a significant, though minor, share of market, and made Memorex the industry's largest independent supplier of this product line.

Magnetic tapes and magnetic coated disc packs are largely complementary in providing data storage for computers. Both are removable media, that is, both tape reels and disc packs can easily be removed and replaced to provide an expandable library of computer information. Tapes enjoy a substantial cost advantage, however, which makes them more economical for storage of large volumes of information to which the computer does not require direct access. Per unit of data stored, tapes are effectively one-tenth the cost of disc packs. The disadvantage of tapes is that they store computer data sequentially. When a computer requires the retrieval of data other than in the sequence in which it was stored, the operation commonly involves costly delays of seconds while the tapes are being searched.

Removable disc packs are a concomitant of the IBM Series 360 and other third generation computers whose data processing capacities are so tremendous that their efficient operation requires non-sequential, direct access to large volumes of stored information. A disc pack consists of a series of discs, magnetically coated top and bottom, which are rotated at high speed around a common hub.

Every disc surface is exposed to "write" and "read" heads which move across its radius, thus enabling the computer to record or to retrieve information recorded at any location in the pack in thousandths of a second. Hence, disc packs provide the direct access data storage facility modern computers require and for which tapes are not appropriate. As an example of complementary use of disc packs and tapes in data processing, files of data are retrieved from tapes and written upon the disc packs to enable the data to be directly accessible to the computer for processing; afterwards, the updated files are read back from the disc packs and written upon tapes for the more permanent and more economical storage.

The computer tape market enjoys a growth rate substantially equivalent to that of the computer industry. Current sales in domestic and international markets exceed \$100 million. Three manufacturers, Memorex, IBM, and 3M, accounted for approximately three of every four reels sold during 1968, with Memorex enjoying some slight share of market advantage.

The trend of deteriorating prices which the computer tape market has suffered for the past four years, continued in 1968 with a general decline of about 15%. As a result, the market price level at year-end was nearly half that of 1964. Lower prices decreased the ratio of net profit to sales of the market leaders and made especially unsatisfactory the operations of marginal competitors. This distressing condition in the computer tape market can only be corrected by product quality differentiation and development of effective marketing programs which emphasize value and not price.

Memorex's leadership of the computer tape market is evident in our efforts to achieve quality differentiation. Throughout six years of competition, Memorex has marketed products which are initially error-free and which, because of their

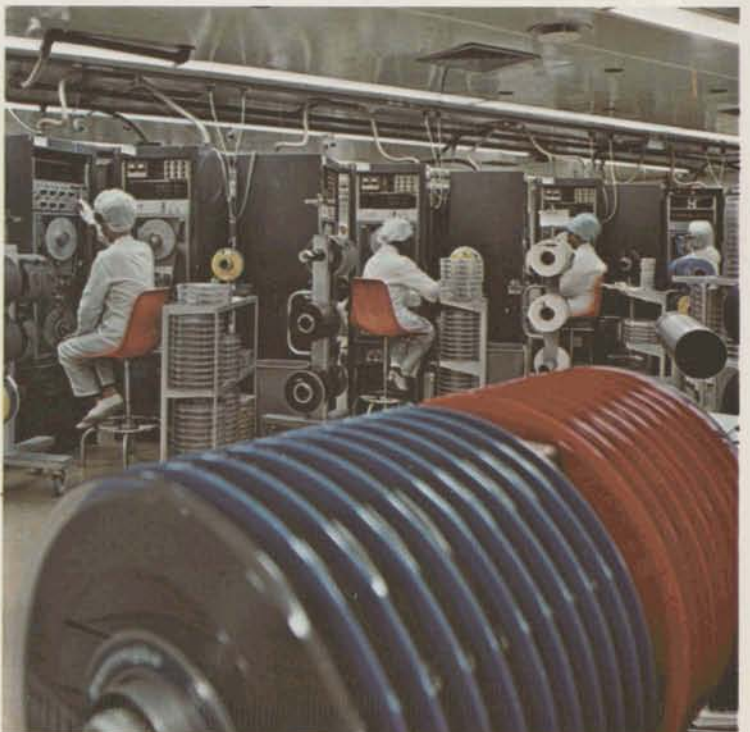
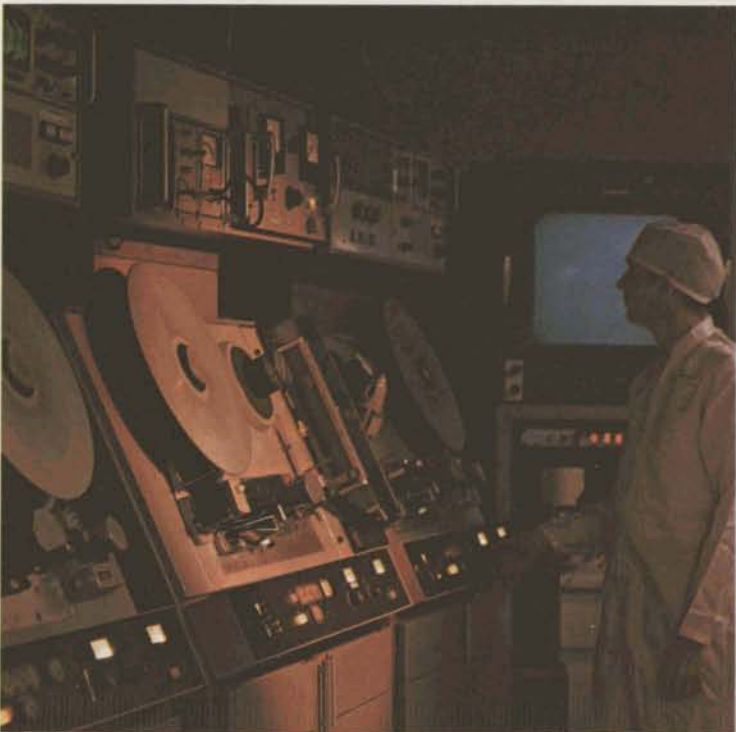


Wide webs a mile in length, enough intermediate product to make 20 hours of broadcast video tape, are wound onto drums after coating.

Certifiers are used to check the magnetic characteristics of Memorex's High-Chroma color video tape.

Quality of tape product is verified by passing tape through video certifier.

Every reel of computer tape is 100% certified on Memorex designed equipment in the computer certification area.





superb durability, remain error-free after prolonged use. Now, with a new computer tape product, product development of which was completed at year-end 1968, Memorex proposes to differentiate the quality of its product even more.

Quantum, the new product, is particularly beneficial to computer users who, because of disc pack usage, have reduced the frequency of use of some tapes. Contrary to what might be expected, as the time between a tape's uses increases, the overall quality of tape must be improved. This requirement is caused by the mechanical and thermal stress which tape experiences in storage and which cause errors to be introduced because of coating decomposition. To meet this requirement, Memorex Research has developed a stress-resistant coating formulation of unusual chemical stability and mechanical strength. Actual shelf tests and accelerated aging tests have demonstrated Quantum to be 15 times more resistant to temporary errors and twice as resistant to permanent errors as the two leading competitive products. Quantum's ability to command a premium price because of its quality will do much to cope with the condition of price competition in the computer tape market.

The disc pack market of approximately \$100 million is somewhat smaller than the computer tape market, but enjoys a higher rate of annual growth. Its competitive structure, however, is quite different, because of IBM's dominance of perhaps 75% of the world market. After IBM's creation of the disc pack market in the early and mid-1960's, Memorex in late 1967 became the first independent manufacturer. Because of a rapid growth of sales in 1968, Memorex now sells as many disc packs as all other competitors combined, excluding IBM. The sales volume increase of this product line provided the means, in 1968, by which the expansion of Memorex's world-wide sales organization was made economical.

During the last six months of the year, its better ratio of net profit to sales also provided an offset to the declining profit ratio of computer tape sales.

Memorex sells both the 10-surface disc pack, designated the Mark I, and the higher density and more difficult to manufacture 20-surface pack, the Mark VI. The latter product was introduced during the second half of 1968. The Mark I device is used by the Memorex 630 and IBM 2311 disc drive equipments, the Mark VI by the Memorex 660 and IBM 2314 models.

The Mark I Disc Pack was the computer industry's first certified error-free pack. It provided Memorex with the product differentiation from secondary competition which a market leader requires. In response to the Mark I quality standards, other disc pack producers, including IBM, were compelled to upgrade their products. The Mark VI was a similar technical success upon its introduction. The density of data recorded in the concentric tracks on the Mark VI discs is double that of the Mark I pack. Hence, the Mark VI pack is less tolerant of the sub-microscopic peaks and valleys of the coated surfaces which cause errors. Mark VI's finely polished disc surfaces are 40 percent smoother than the accepted industry standard which again provides a quality differentiation from competitive products.

Mark I disc pack prices were affected, in late 1968, by the market entry of a major producer whose apparent strategy was to obtain share of market by price reduction. Before this new entry, Memorex had maintained a 25% higher price level. Memorex's consistent pricing policy had been to reflect the price/performance advantage of its product in a price premium over those of secondary competition products which were deficient in quality or marketing.

However, faced with the probability of losing share of market to the new entrant because of his marketing strength, Memorex elected in December 1968, to meet the price reduction for the Mark I product line.

We did not do so for the Mark VI, because notwithstanding lower prices of some competitors, the Mark VI offers a material price/performance advantage to our customers. Memorex now counts upon the Mark VI to offset the inroads upon profits of reduced prices of Mark I sales. Disc packs' profitability will also be benefited by larger scale operations than we enjoyed during 1968 and by lower costs of production resulting from progress in our manufacturing learning curve.

Disc packs, in common with much computer equipment, are frequently leased by customers instead of being purchased. Leasing is common practice in the end-user computer market because the total costs of a computer installation sometimes preclude purchase and because users are apprehensive regarding changing equipment needs or technological obsolescence. To accommodate this customer practice, Memorex operates a wholly-owned financing subsidiary, Memorex Leasing Corporation (MLC). MLC purchases disc packs from Memorex and makes available a variety of lease plans which are tailored to our customers' desires and competitive with lease plans of IBM. Experience to date indicates that more than two-thirds of disc packs marketed to users are leased. In accordance with good accounting practice, financial reserves are established for leased packs to accommodate expected future costs of servicing the packs and to assure complete recovery of costs and profit during the expected economic life of the product.





**MEMOREX**  
DIGITAL TAPE CERTIFIER



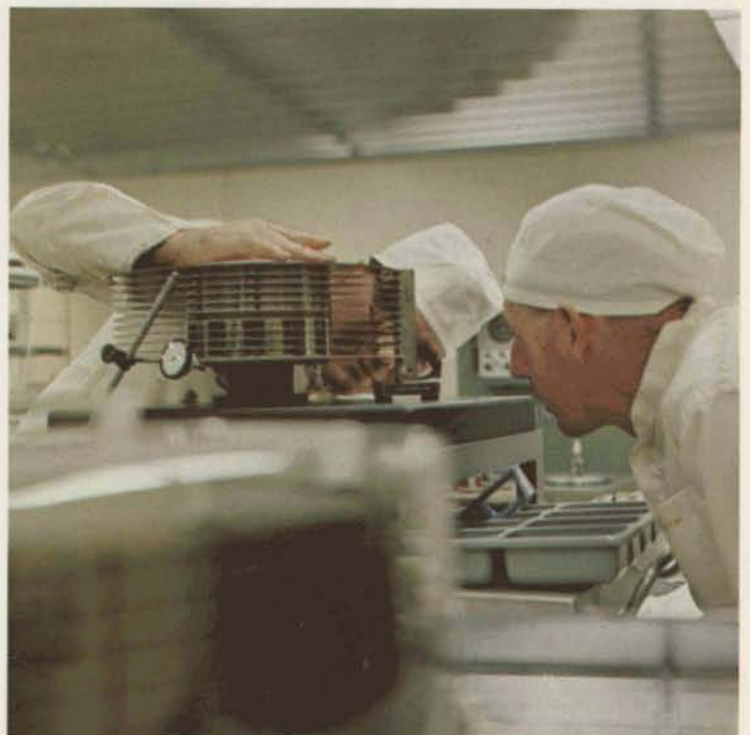
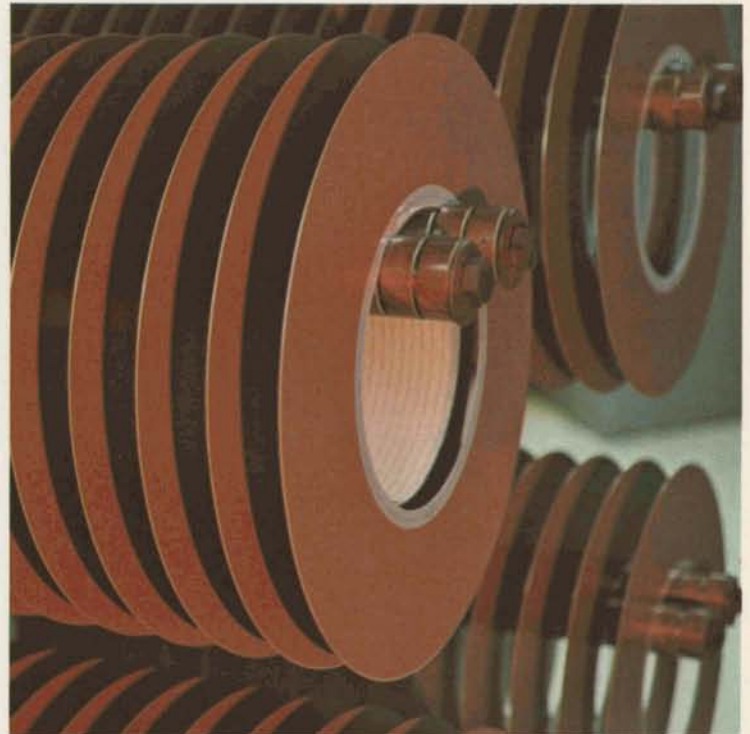
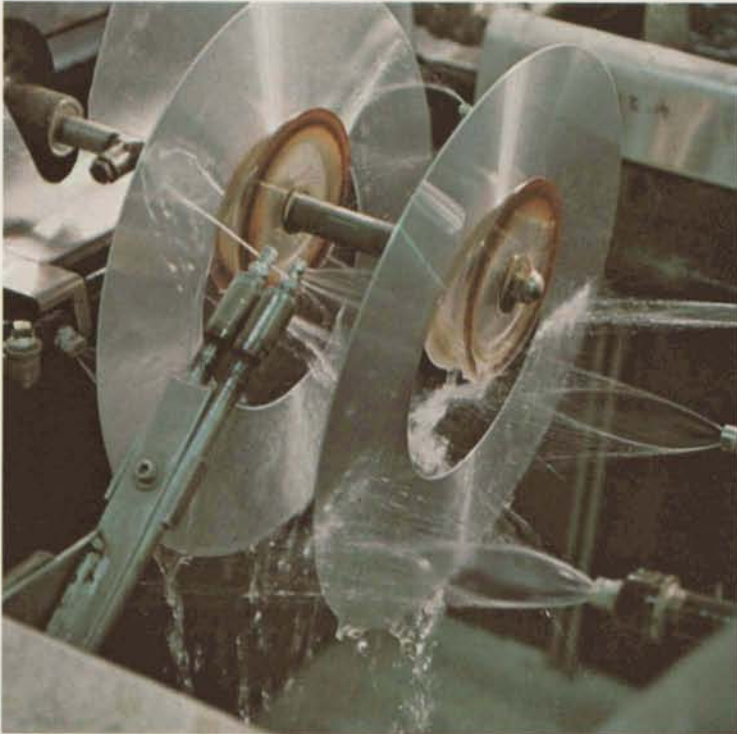
Newly-developed, premium-quality Quantum Computer Tape is 100% certified on Memorex's proprietary certifiers.

Disc pack substrates are thoroughly cleaned in an automatic process prior to coating.

Coated discs, immediately after coating, await assembly into finished product.

Single discs are surface tested on Memorex designed test equipment prior to assembly.

In-process evaluation of Mark VI Disc Packs confirms exacting mechanical tolerances of disc positions.



Mark I Disc Pack undergoes final testing on a Memorex 630 Disc Drive prior to shipment to customer.

A magnetic head on a disc tester "flies" on a thin film of air above the disc's surface.

A Mark VI Disc Pack in test at the Memorex Computer Center.

A Mark VI Disc Pack is mounted on one of Memorex's computers for final test.





Broadcast video tape is used in the professional television broadcasting industry by commercial, national and educational television networks, by independent television stations, and by the U.S. Government in a variety of activities, including the space program. It records both pictures and sound, and quality products can be used for either color or black-and-white pictures. Most television programming today is taped or filmed, and, although film enjoys cost advantages, the color quality and operating advantages of tape, including editing and reuse, are substantial. Taped copies can be made without loss of fidelity, and greater flexibility in use results because no chemical processing is involved. "Instant replay" of sports and other news events is thus made possible with video tape.

Memorex's broadcast video tape product, High-Chroma Video Tape, is acknowledged by users to be the finest available. It is used by networks around the world, as well as by a multitude of local television stations. This product was used exclusively to broadcast the 1968 Summer and Winter Olympics and, recently, has provided much of the master tape for televising Apollo space flights.

The broadcast video tape market is smaller than either of the computer media markets, and also experiences a more modest rate of growth. Yet, it represents one of the best markets for exploiting our technology by producing superior quality products. Only Memorex and one other manufacturer are capable of making the product with consistent, high quality. We enjoy a substantially equivalent share of the market of networks and larger local stations. During 1968, this product line suffered minimal price degradation.

The fastest growing market for precision magnetic tapes, albeit the smallest, is closed-circuit television. CC-TV tapes are used on recorder equipments which sell for \$1,000 to \$10,000, a fraction of the cost of broadcast recorders which sell for \$50,000 and more. CC-TV recorders are used in schools for the recording of lectures and classroom demonstrations, in businesses for salesmen's training and new product introductions, in retirement communities for entertainment, in law enforcement for recording of evidence for submission in court, and in a host of other activities. Memorex's closed-circuit video tapes are made in a variety of configurations for use on machines manufactured by nearly thirty different companies, most of which are capable of demonstrating better performance with use of our products.

As prices of closed-circuit recorder equipments are reduced by volume production, and as their reliability and ease of operation improve, their use is expected to increase rapidly. Estimates have placed market growth at the rate of 40-50% per year. Again, we are confident that Memorex's quality product differentiation will permit the Company to develop its leadership in this dynamic market.

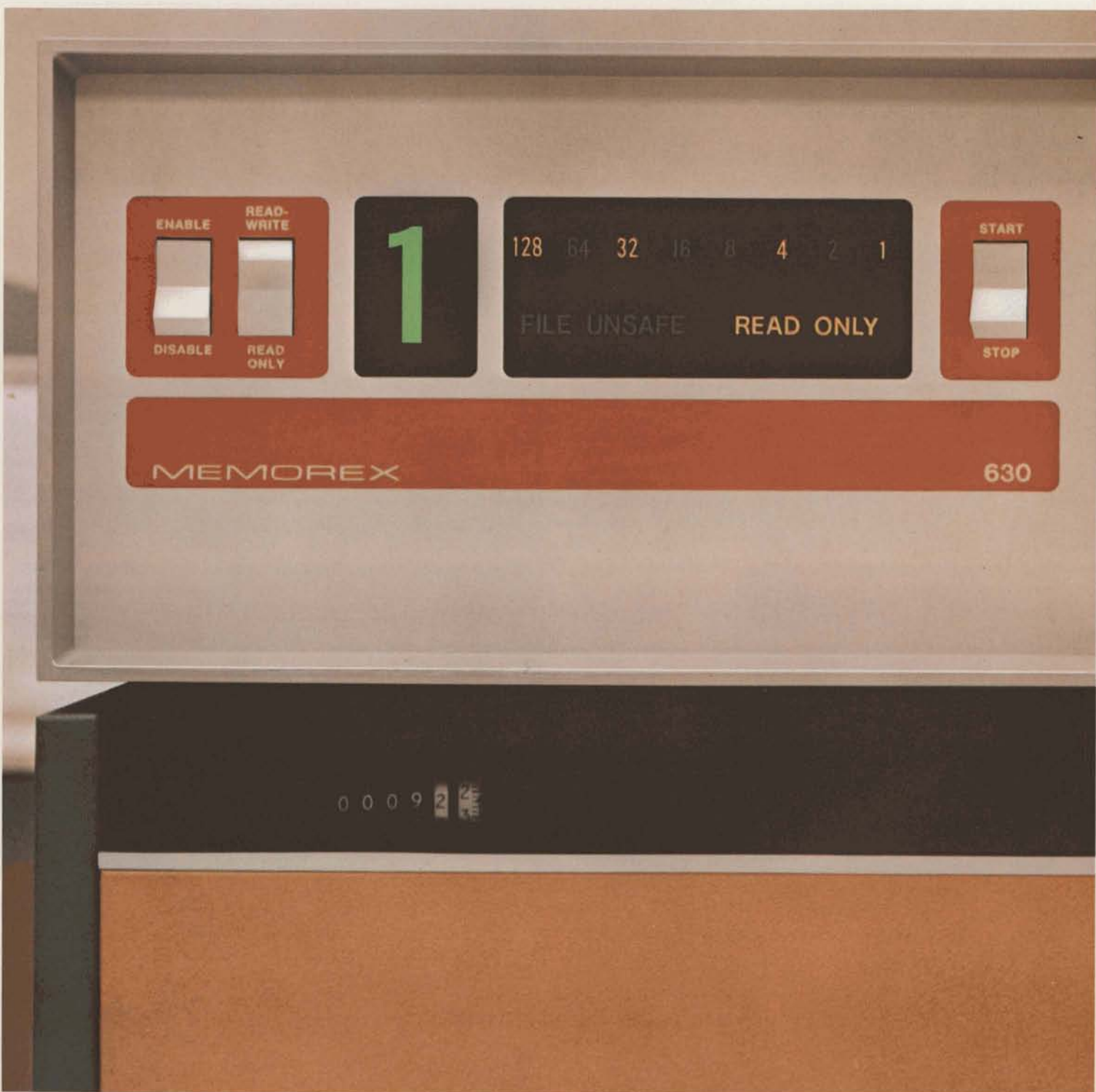
Instrumentation tapes are used in the aerospace program, in oceanography, in medical research, and in other scientific programs. The tapes record data of temperatures, pressures, stress, vibration, shock, atmospheric and meteorological data, as well as heart sounds, pulse rates and brain-wave currents. These products are purchased by NASA and other government agencies, university laboratories, and public and private research customers. Memorex's activity in the instrumentation market continued at low level in 1968 because its profit opportunities were unsatisfactory.

Memorex's direct selling organizations distribute all of our media products, other than CC-TV tapes, in the United States and Canada, Western Europe, Japan, and Latin America. The latter are sold by audio-visual product distributors. The Company's coverage of markets through branch offices and sales subsidiaries is more extensive than any independent manufacturer's. Expansion of coverage continued during 1968, as a result of which we are now in 37 principal cities of the United States and in 15 foreign countries. Other international distribution is obtained through representatives in countries in which the size of markets is insufficient to justify direct sales personnel.

This world-wide direct selling activity is basic to Memorex's marketing strength. Short lines of communication and close attention to customers' needs, immediate answers on prices and deliveries, and good service in general are its advantages. Our sales personnel are well-trained professionals, conversant with media applications, and qualified to troubleshoot the problems of users. Additional technical support for selling is provided by application engineers in branch offices, who, in turn, are supported by the Product Technical Service Department in Santa Clara and by engineers in technical centers located overseas.

Memorex's technical orientation, which determines our products' quality and differentiation from competitors', is communicated to the markets by the most intensive promotion in our industry. Our communications program includes advertisements in all major technical publications, customer educational literature prepared by the Technical Staff, and participation by Memorex people in industry symposia. We also solicit our 17,000 shareholders to promote Memorex's media products among users who do not yet benefit from the effective economy of our products' price/performance advantages.

The operator control panel and display of a Memorex 630 Disc Drive after final assembly.





The first step in our corporate development program to pursue the user-oriented information handling systems equipment business was our successful entry into the computer peripheral equipment market in 1968.

Memorex's first equipment product line, the Model 630 Disc Drive, reached volume production during the second half of the year. Initial deliveries of this equipment were made to Management Assistance Incorporated (MAI), a computer leasing and service company, and by year-end several hundred 630 Disc Drives were in operation at user locations across the country.

The 630 Disc Drive was designed to meet the requirements for IBM 2311 compatibility. The major task was to build a disc drive that could be shipped directly to the user's site, in this case to MAI's customer, for immediate attachment to that user's IBM Series 360 computer. The Memorex 630 must be manufactured and tested to very exacting standards at the factory to insure its operation with the customer's computer. Typically, the computer user's system has been in operation for some time prior to receiving the 630 Disc Drive, and lengthy interruptions to install the Memorex equipment are not tolerated. In fact, the 630 installation is usually accomplished within a few hours.

We cite these requirements to more fully describe the success which the 630 has achieved in the marketplace. No other manufacturer of disc drives has successfully attained this standard of excellence. This result has been accomplished, in part, because our product development program for the 630 Disc Drive specified significantly improved performance and reliability of operation.

The 630 unit has met or exceeded all of these initial goals, and this product technology and its acceptance in the marketplace form the base for further disc drive products.

In the spring of 1968 a second disc drive, the Memorex 660, was demonstrated at the national trade show of the computer industry. The 660 Disc Drive was designed to be compatible with the IBM 2314 series and uses the Memorex Mark VI Disc Pack for data storage. The 660 is an expanded version of the 630 Drive offering four times the storage capacity. The fourfold increase in capacity is achieved through use of a disc pack with twice the number of surfaces and double the recording frequency or number of bits of information stored circumferentially on the surface of each disc.

Orders have been received and units shipped from the initial production of the 660, principally for engineering and technical evaluation. Since there is a high degree of commonality between the 660 and 630 Disc Drives, we are confident these evaluations will lead to substantial production contracts. No other manufacturer, apart from IBM, has delivered a unit of this type, and if customer evaluations and our own internal program move ahead on schedule, Memorex could achieve a several-month lead over other manufacturers desirous of capturing a portion of the IBM 2314 compatible market. Because of our lead with the 660 we now include several computer manufacturers as prospects for the 660 who previously were not potential customers for our 630 due to earlier arrangements with other manufacturers.

The 660 Disc Drive will reach volume production during 1969, and we confidently expect this new product to contribute materially to sales and profits for several years to come. Total backlog for 630 and 660 equipment exceeds \$30 million. We expect several new contracts during 1969 which will broaden our customer base and enable the building of larger and more economical production facilities.

Most third generation IBM computer systems incorporate direct access disc storage drives. The software programs which are written for these computers use this direct access-to-data feature extensively. Certain applications exist where a disc drive-oriented computer system has performance advantages over non-disc drive computer systems.

Other computer manufacturers are under competitive pressure to incorporate disc drives in their third generation systems and have created a market opportunity for the Memorex 630 and 660 Disc Drives. The computer leasing companies which own IBM systems have created a market for our drives in the replacement of IBM equipment. These markets represent a substantial potential to Memorex.

An even larger and more important opportunity exists through creative product innovation. Computers have greatly increased in speed and capacity over the past five years. However, the ability to get information into and out of the computer system has not increased commensurately with the speed of the computer's ability to digest the information. Better means for data preparation, data acquisition, data inquiry, and data communication with the computer environment are necessary to solve the information logistics problem which exists. The principal aim of our longer range product planning activity will be to develop information systems of this type.



Fabrication of miniature head components requires high magnification and a steady hand.

Precision machining at Memorex assures quality of Disc Drive components.

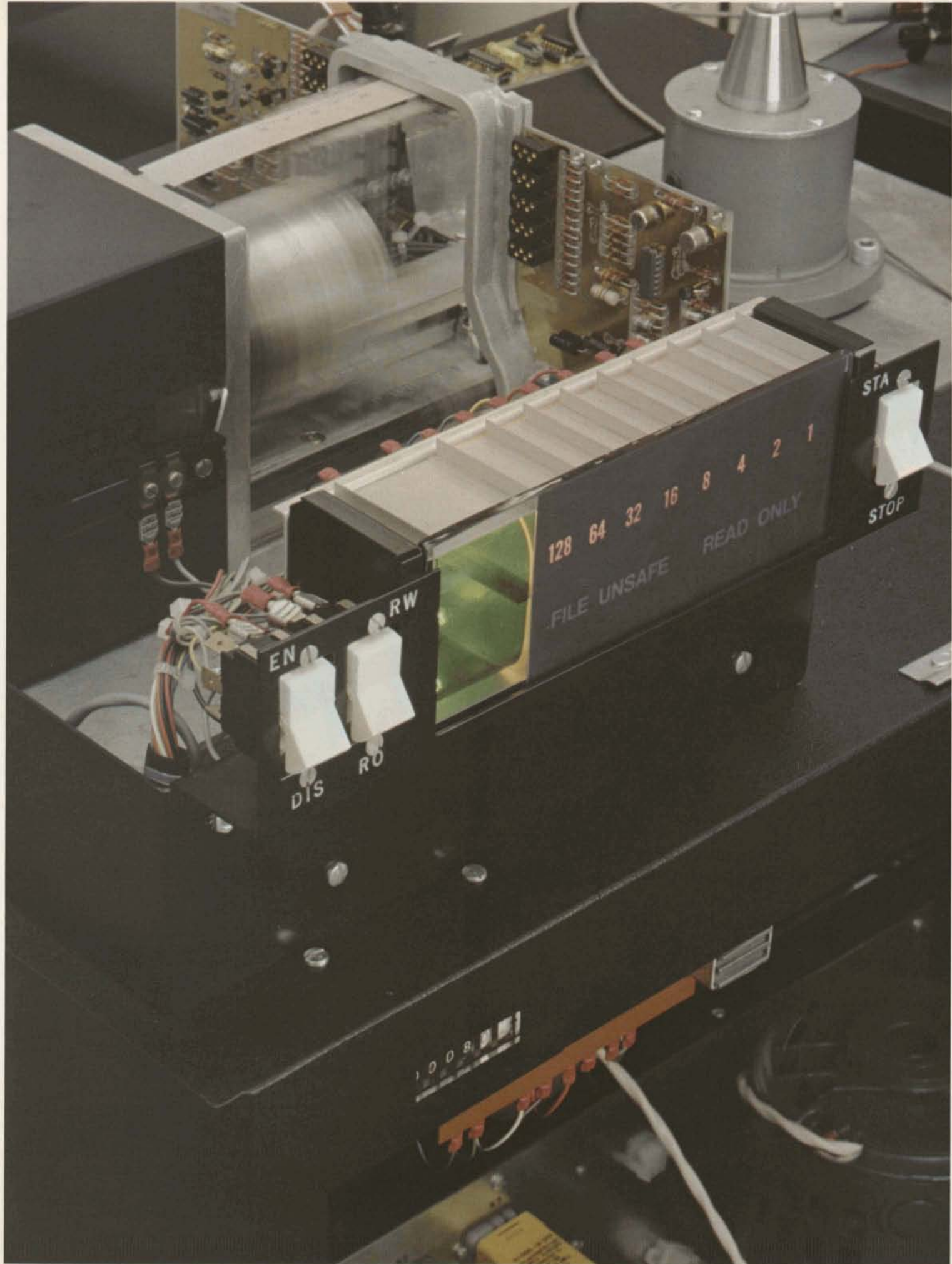
A precision welding fixture controls the final location of a Disc Drive's magnetic head assembly.

Memorex 630 Disc Drives begin to take shape in mechanical assembly area.

The linear motor (in motion) permits velocities and controlled responses unattainable by hydraulic or other positioning mechanisms.



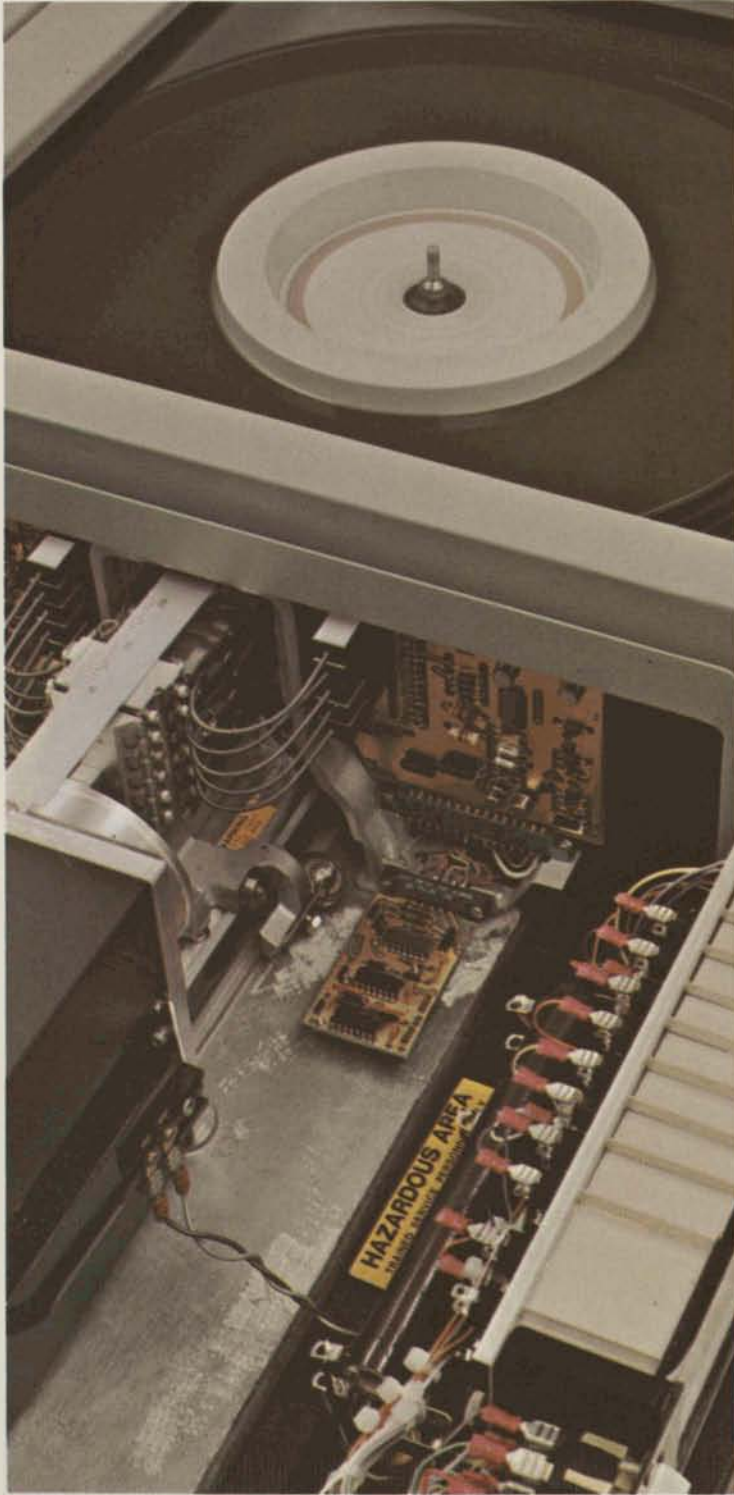




The actuator mechanism and read-write electronics is shown on the Memorex 630 Disc Drive.

Peripheral Systems management discuss a production problem.

Two Memorex 630 Disc Drives are operating on an IBM computer system.





Pursuing this objective, Memorex acquired in 1968 an 80% interest in a newly-formed optical technology company, Image Products Corporation. Image Products Corporation (IPC) is the successor to a small research and development company that had been actively engaged for a number of years in digitally-pulsed microfilm printing systems. As a result of this earlier development work, IPC is the owner of a patented invention which forms the basis of a new product development program.

The invention is a method and system for photographically printing on microfilm, at high speed, digital computer output. The IPC system potentially has important technical and cost advantages to computer users in that it employs only digital electronics and not a combination of digital and analog techniques commonly used in present day microfilm printers. The all-digital system can easily be connected directly to a digital computer system and operated compatibly with existing software programs.

Microfilm has been used in industry for many years, and a number of equipments are available for microfilm preparation. These equipments consist principally of high quality camera units for photographing paper documents or other images onto microfilm. This picture-taking process produces an image of the original on microfilm which is substantially reduced in size. Usually this reduction is greater than 20 times. The microfilm can then be read or "viewed" by simply magnifying the film image by an amount equal to the original reduction. Microfilm records prepared in this manner are useful and economical for long-term storage or, as it is sometimes called, archival storage. For example, most major banks in the United States microfilm all checks processed, and thereby maintain a record of these transactions, greatly reducing the amount of paper which otherwise would result.

There are many similar applications in industry, government, and education where microfilm records are extensively used.

The substantial growth in the use of computer systems over the past ten years has created a tremendous capacity to produce paper records. This volume of paper, much of which must be kept for several years, is a cause of concern to many computer users because of its cost to store, transport, and update. For many applications, microfilm is an economical and convenient method of storing and transporting large volumes of information. Until recently, the principal disadvantage of microfilm was the cost and time involved in preparing microfilm from the paper original. Consequently, equipment has been developed to produce or print microfilm directly from the computer, completely bypassing the paper "picture-taking" step. This process is called computer-outputted microfilming or COM.

Image Products Corporation, then, is developing a second generation COM device which it is planned will be in production in 1970. The principal customers for the IPC COM equipment will be computer users in voluminous paper record businesses such as banking, insurance, utilities, and government.

Image Products Corporation represents a diversification beyond the magnetic media and equipment technologies of our established product lines of computer tape, instrumentation tape, video tape, disc packs, and disc drives. Image Products Corporation brings to Memorex skills in the optical recording field and will be the focus of our image products technology. In addition, we are hopeful that the equipment products under development at Image Products Corporation will provide opportunities for new image media products and supplies.

Solid state reaction kinetics are studied in our  
Magnetic Materials Development Laboratory.





Because the Company's competitive edge results from the technical excellence of its media and equipment products, no activities are more vital than research and development. The flow of new media products from our laboratories and pilot lines has not been matched, during the past six years, by any competitor's. Memorex's recent entry into the disc drive equipment business has not been paralleled in timeliness or price/performance values by any independent computer peripheral equipment manufacturer. To achieve these results, we have provided ample funds and challenging projects to a Technical Staff of high academic attainment, extensive experience, and creative aptitudes.

Measured by numbers of people engaged in some phase of research and development and by dollars expended, R&D activities at Memorex were greater in 1968 than in the two preceding years combined. More than 250 people were involved, and more than \$5 million was expended, not including investments in facilities.

The Company charges against current sales revenues the costs of R&D which relate to media product lines and the continuing engineering expenses of existing equipment products. Costs which relate to the preproduction activities, that is, the development costs of new computer peripheral equipment product lines, are accounted for as deferred costs. These are reflected on the Balance Sheet as assets which are amortized, after production of a newly developed equipment begins, against its sales revenues. Amortization is fixed to assure that the deferred costs of development will be completely recovered over the period of the equipment's conservatively estimated commercial life.

In 1968, currently expensed R&D activities amounted to \$3.8 million or 6.5% of sales. In our media business, such expenses were incurred to develop new magnetic tape and disc pack products, to employ new raw materials and chemical formulae, to perfect new manufacturing processes, and to reduce costs of manufacturing by engineering improvements. Some initial, low level R&D activity related to film media data storage was also expensed. In our equipment business, product development costs relating to the Model 630 Disc Drive were deferred prior to July 1, 1968, when volume production for sale began, and thereafter charged against equipment revenues.

Deferred R&D expenses in 1968, which included the above costs of the 630 Disc Drive, amounted to \$1.5 million. Included in this amount were costs of development of the Model 660 Disc Drive, which was largely completed at year-end, and the R&D activity relating to the computer output microfilm printer.

Magnetic media research and development are principally directed toward products compatible with existing tape and disc recording equipments. Every design of recording equipments has some peculiarity of operation which must be complemented by the design of the media. The aggressive pursuit of these existing equipment needs is the objective of our Technical Staff.

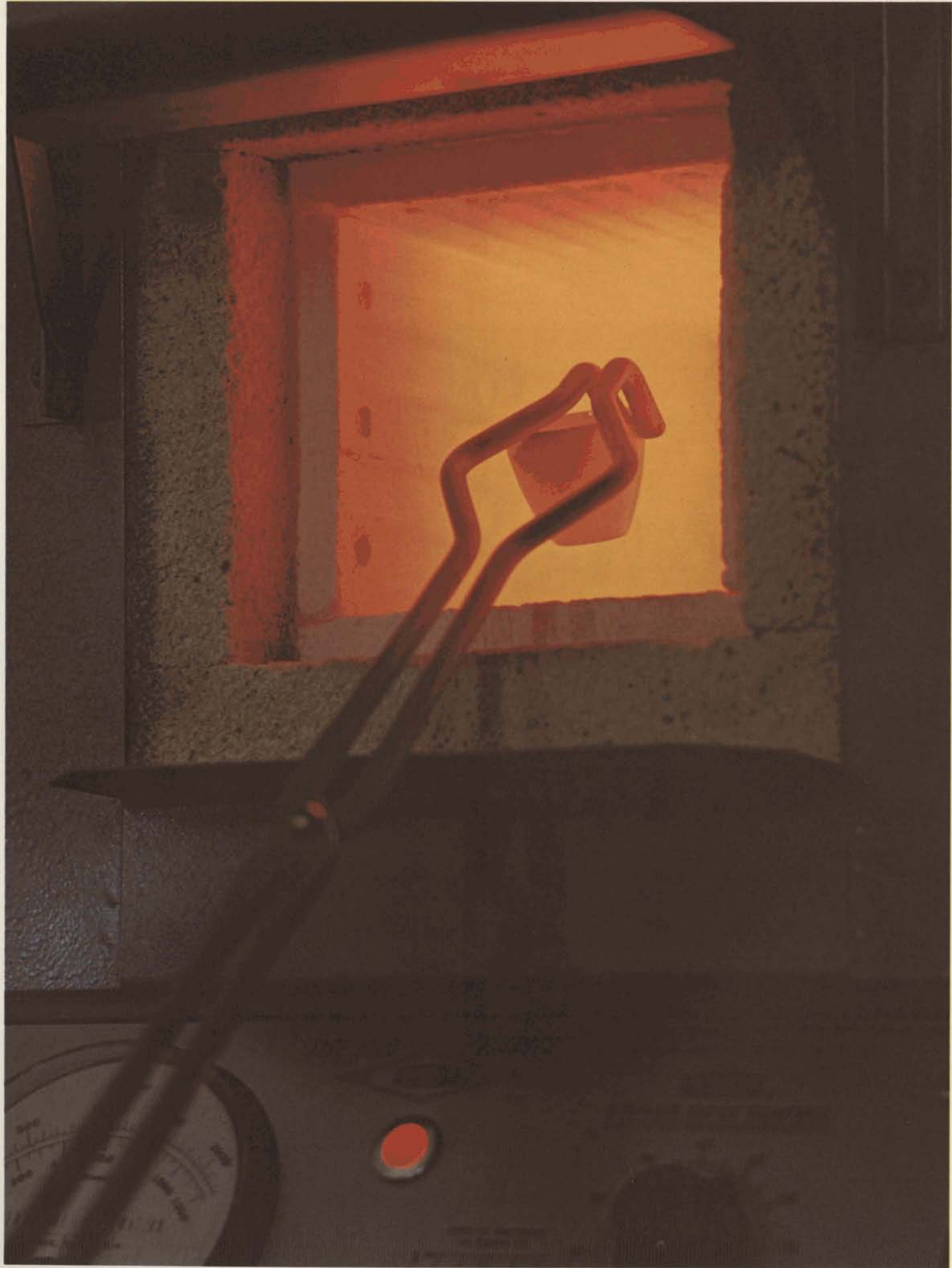
To satisfy these needs, Memorex technicians develop magnetic coated surfaces which are more durable, and whose wear does not generate particles of debris which impair the usefulness of the media. They reduce the abrasivity of the media surfaces to reduce their wearing against the magnetic heads of recording equipment. They seek improvements in the magnetic material constituent of the coated surfaces to improve the quality of signal output and the data storage capacity.

Engineering personnel endeavor to improve the operating efficiency and lower the costs of our manufacturing processes, as well as obtain quality improvements in the products by process modifications. R&D activity is also devoted to process control instrumentation for increasing automation of manufacturing and to quality control equipment for testing the quality of intermediate and finished products.

These technical activities engage the work of many technicians of diverse disciplines—physicists, magneto-chemists, polymer chemists, process and chemical engineers, electronic engineers, mechanical engineers, mathematicians. R&D management must effectively meld these technologies. Technical personnel whose competence lies in the physics, chemistry and processes by which raw materials are converted to magnetic media, are not also expert in the technology of magnetic recording which is essential to evaluate quality or specify performance characteristics. Those who possess the latter technology do not also know the chemistry, physics, and materials processing.

This integration of the Technical Staff by technical management can be illustrated in the following, simplified description of the development cycle of a new magnetic media product:

- a. Magnetic recording experts, working with product planners of the marketing function, identify a need for a new product whose operating characteristics are precisely defined. A Product Plan is written which describes the proposed product's market potential, its proposed sales program, and forecasted profitability.
- b. Time and expenses of product development are estimated and feasibility of the R&D work are described in a Technical Plan.





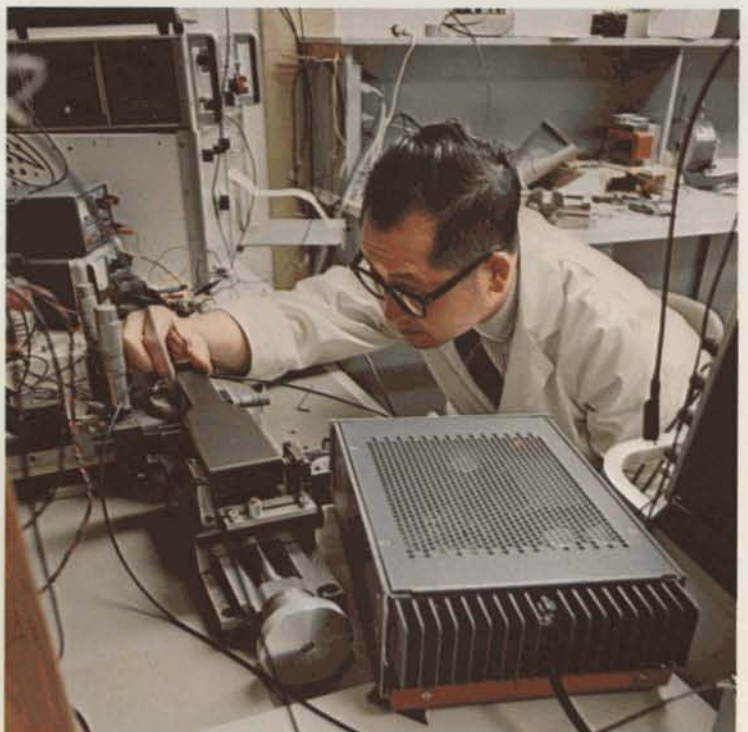
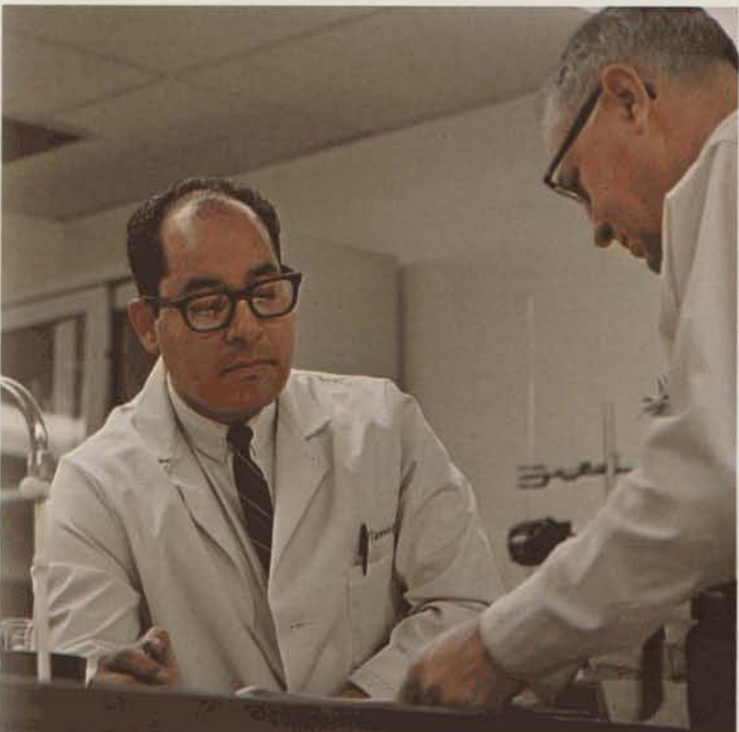
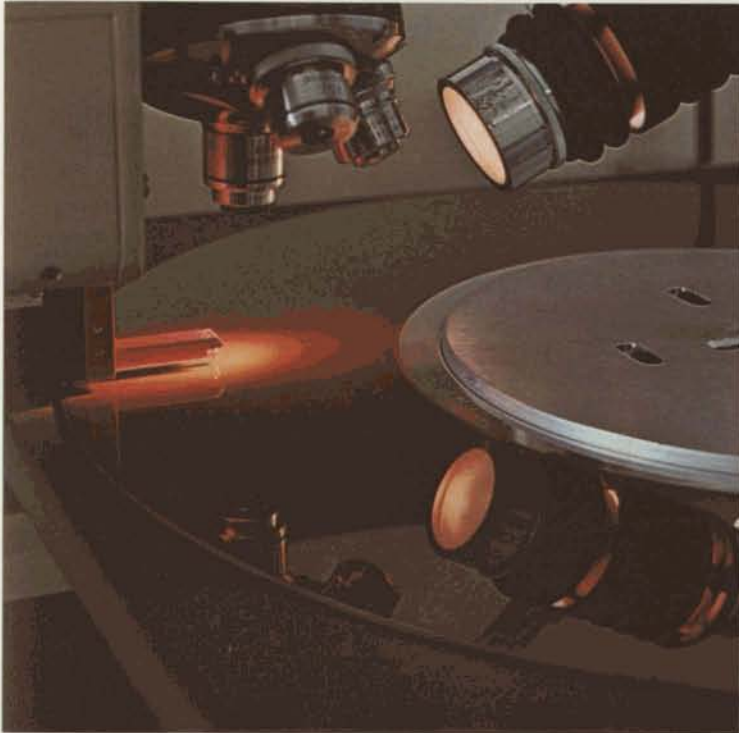
A crucible of experimental magnetic powder is placed in a furnace as one step in chemical analysis.

A diamond stylus carefully traces the roughness profile of a precision polished disc to assure the highest quality recording surface.

To improve head-to-tape compatibility, a magnetic head used in video recording is studied under a microscope.

Members of the technical staff review an experiment to produce a new magnetic recording material.

The recording head of a specially designed disc recorder is adjusted to observe the performance of experimental recording materials.



A development engineer at Image Products Corporation experiments with a light source which will be used in Memorex's microfilm printer.





The Plan details the requirements for the magnetic material to be used, the chemical binders which suspend the magnetic particles, the solvents and other ingredients of the formulation proposed, the probable processing techniques, product test activity, and R&D equipment and facilities requirements.

c. After management's decision to implement the Technical Plan, a team of scientists and engineers is organized to do so. Physicists are responsible for the magnetic particle development. Chemists select appropriate materials to develop the binder systems and coating formula. Chemical engineers design the chemical mixing and coating processes. Mechanical engineers design and fabricate the processing equipment. Electronic engineers design and fabricate the test equipment and evaluate the recording performance of the R&D product. Hundreds of pilot line products are made while materials and processing changes are made to achieve the specified performance for the desired product. When perfected in the laboratories, the product is moved to manufacturing operations where, under the supervision of the Technical Staff, its reproducibility in volume production is demonstrated. Thereafter, samples are placed with selected users under the cognizance of quality control engineers. After confirmation of the specified performance in actual field use over an extended period, the product is released for production and sale.

While a few shortcuts and some telescoping of these several steps of product development are possible, the state-of-the-art of magnetic media technology is so advanced today that improvements are obtainable only in R&D programs of long duration. Not uncommonly, two years or more are required for significant improvements.

Two programs were concluded successfully in 1968. The Mark VI Disk Pack was released in August, and development of Quantum, a new computer tape, was completed in December for market introduction in early 1969. (The products are discussed in a preceding section.)

Equally significant, although less dramatic than the new products, were improvements in throughput capacity of much of our processing equipment. In some processes, improvements exceeded 25%.

This accomplishment enabled Memorex to increase production volume without the commensurate investment in facilities, a necessity in light of our industry's maturing competition and lower price levels.

While media R&D efforts are principally directed to new products compatible with existing recording systems, a significant research program is pursued in the magnetic materials which will be used, in place of iron oxide, for the next generation of recording media to be commercialized in the early and mid-1970's. By demonstrating to recording system manufacturers our capability to supply these advanced media products, we encourage their development of next generation recording systems to complement our own research. In this activity, Memorex underwrites its technical leadership position in future media markets.

In technical activities carried on by the Company's equipment development groups, research or the pursuit of new technology is not our objective. It is rather the application of advanced, state-of-the-art technologies to known needs in a creative way. The emphasis is upon imaginative product definition and upon development work and engineering design.

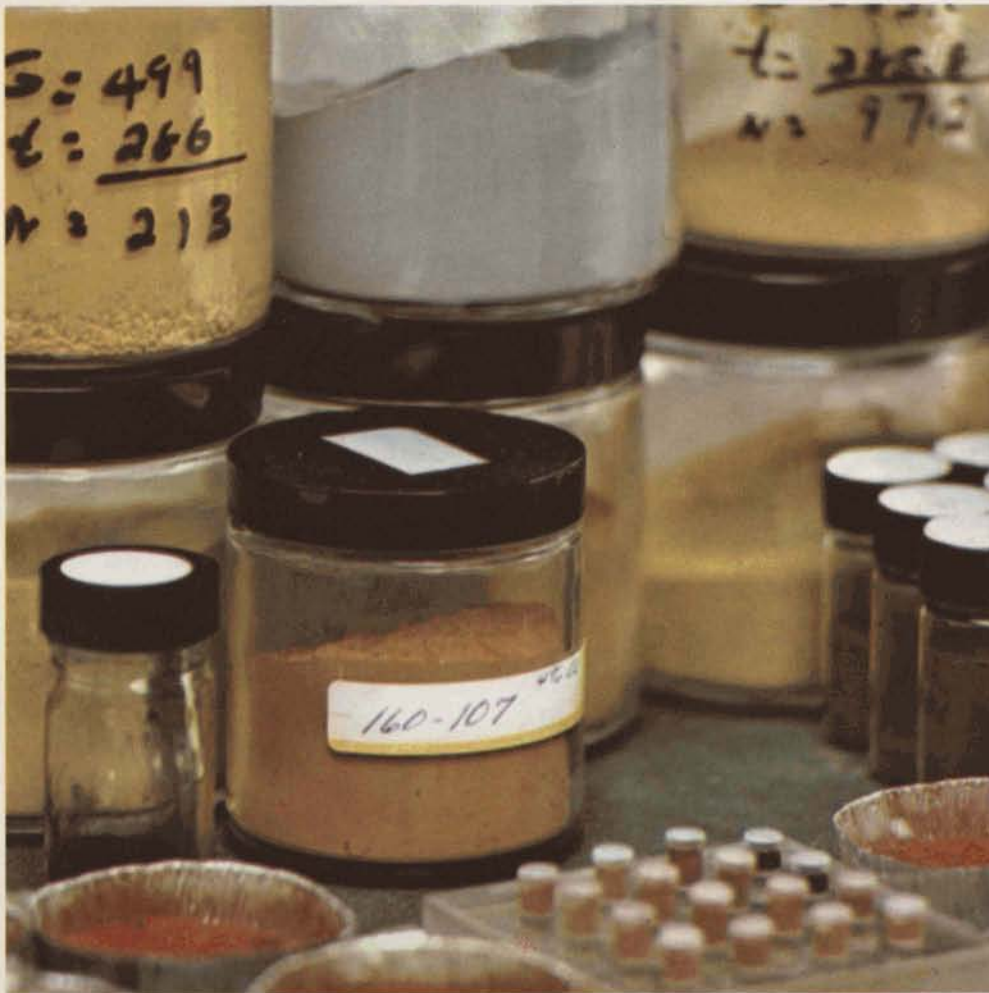
Peripheral Systems Corporation completed development of two products in 1968. The Model 630 Drive, which is competitive with the IBM 2311 Drive, was released to production in mid-1968. Development of an advanced disc drive, the Model 660, which is competitive with the IBM 2314 Drive and recently announced modifications of the latter, was largely completed at year-end. (This disc drive product line is described in the preceding section.)

The technologies involved in disc memory products development work are three.

First, and perhaps most difficult, is technology in the design and fabrication of high-density, flying magnetic heads. These devices are the transducers that impart a pattern to the magnetic coated surface of the disc pack corresponding to data signals, or which induce signals in the memory system corresponding to a magnetic pattern previously recorded. To perform their function, the flying heads move across rotating discs at extremely high speed, separated from the surface by a cushion of air resulting from aerodynamic characteristics of the head geometry. The operation of a flying head has been analogized to the flight of a jet plane over a runway at an altitude of a few inches. The technology of head making includes metallurgy, the chemistry and physics of plastics bonding, electronics, and mechanical engineering. Also required are metal fabrication techniques for holding tolerances to several micro-inches—a precision which only five years ago mechanical engineers were unable to measure.

A second technology relates to the actuator system which moves the flying heads. In design of our equipment, a commonly employed hydraulic system was abandoned because of its slowness and high maintenance requirements.





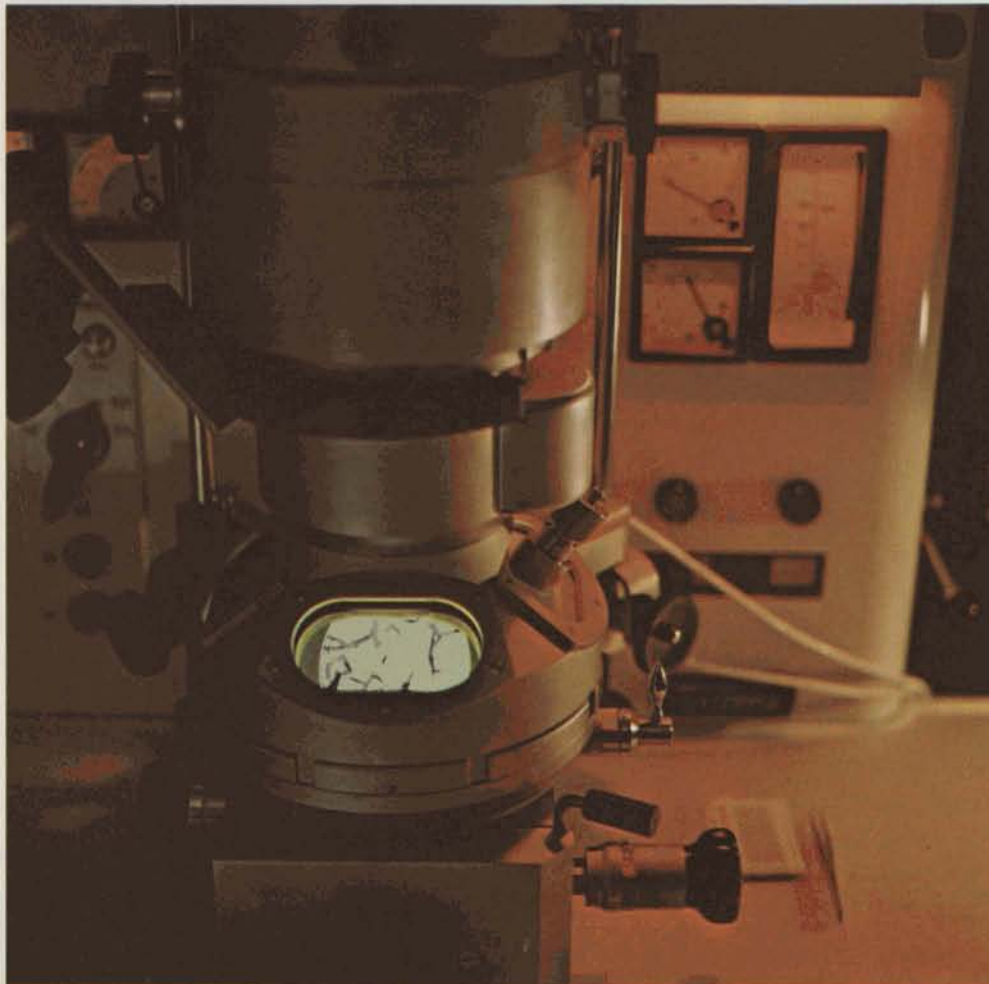
Experimental powders exhibit many colors at various stages in development of new magnetic recording materials.

In advanced research, the most minute detail is revealed by the probing beam of an electron microscope.

The design of Memorex's actuator incorporates a "voice coil" linear motor, which converts electrical energy directly to linear motion, just as in a loudspeaker system the electronic signals are converted directly to the physical vibrations of the speaker. This linear motor device moves the heads at high velocity with positioning accuracy matched by no other mechanical or hydraulic system. The specification for a magnetic head to retrieve recorded data is a mean access time of 50 milliseconds for Memorex equipment, compared to 75 milliseconds for most competitive equipment.

Other technology employed by Peripheral Systems Corporation relates to electronics which are necessary to control the operation of the disc drive and to knowledge of the interface between the drive and the computer. Without a comprehensive understanding of the data format and flow to and from the computer, satisfactory design of direct access data storage equipment is impossible. Because Memorex is the only independent manufacturer of disc drive equipment which is recognized in the industry for having mastered this technology relating to IBM computers, we stress that the design of our equipment is "IBM-compatible."

Development work pursued by Image Products Corporation, whose objective is the completed design in 1970 of computer output microfilm printing equipment, involves optics technology as well as film handling mechanisms, electronics, and computer interface technology. This work remains speculative, but as more development progress is made and its commercialization is assured, Memorex will also pursue the opportunity for developing a complementary microfilm media product.





**To the Shareholders and Board of Directors  
of Memorex Corporation**

We have examined the consolidated statement of financial position of Memorex Corporation (a California corporation) and subsidiaries as of December 31, 1968, and the related consolidated statements of income, shareholders' equity, and source and use of funds for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances. We have previously examined and reported on the consolidated financial statements for the preceding year.

In our opinion, the consolidated financial statements referred to above present fairly the financial position of Memorex Corporation and subsidiaries as of December 31, 1968, and the results of their operations and the source and use of funds for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

**Arthur Andersen & Co.**

San Jose, California,  
January 24, 1969.

**Consolidated Statement of Income  
for the years ended December 31, 1968 and 1967**

**Memorex Corporation and Subsidiaries**

	1968	1967
<b>Net sales</b>	<b>\$58,295,091</b>	<b>\$34,232,372</b>
<b>Operating costs and expenses</b> (including depreciation and amortization of \$2,650,964 in 1968 and \$1,681,320 in 1967):		
Cost of goods sold	33,580,994	18,597,634
Research and development expense	3,798,384	2,376,958
Selling, general and administrative expenses	9,249,476	5,233,764
Employee profit sharing expense	1,120,427	751,717
	47,749,281	26,960,073
<b>Operating income</b>	<b>10,545,810</b>	<b>7,272,299</b>
<b>Interest expense, net</b>	<b>461,972</b>	<b>506,848</b>
<b>Income before Federal and foreign income taxes</b>	<b>10,083,838</b>	<b>6,765,451</b>
<b>Provision for Federal and foreign income taxes</b>	<b>5,145,000</b>	<b>3,189,000</b>
<b>Net income</b>	<b>\$ 4,938,838</b>	<b>\$ 3,576,451</b>
<b>Net income per share (Note 9)</b>	<b>\$1.35</b>	<b>\$1.06</b>

The accompanying notes are an integral part of this statement.



**Consolidated Statement of Financial Position  
December 31, 1968 and 1967**

**Memorex Corporation and Subsidiaries**

	1968	1967
<b>Current assets:</b>		
Cash	\$ 843,426	\$ 689,394
Accounts receivable, net	16,273,756	8,250,998
Inventories, at the lower of cost (first-in, first-out) or market	6,513,515	5,381,946
Prepayments	995,889	649,837
	24,626,586	14,972,175
<b>Current liabilities:</b>		
Notes payable to bank	10,850,000	2,455,085
Accounts payable and accrued liabilities	6,538,082	4,378,146
Federal and foreign income taxes	—	630,620
	17,388,082	7,463,851
<b>Working capital</b>	<b>7,238,504</b>	<b>7,508,324</b>
<b>Property, plant and equipment, at cost:</b>		
Land	758,208	597,441
Buildings and improvements	9,829,971	7,310,556
Machinery and equipment	13,741,825	9,081,635
Furniture and fixtures	1,102,813	642,136
	25,432,817	17,631,768
Less accumulated depreciation	5,136,548	3,181,448
	20,296,269	14,450,320
<b>Deferred research and development costs (Note 3)</b>	<b>2,289,082</b>	<b>936,055</b>
<b>Other assets:</b>		
Equipment leased to customers, at estimated residual value (Note 4)	3,987,645	—
Other assets and deferred charges	1,762,160	621,465
	5,749,805	621,465
<b>Deduct other liabilities:</b>		
Deferred Federal income taxes (Note 5)	3,989,742	1,215,264
Long-term debt (Note 6)	4,288,529	6,816,000
	8,278,271	8,031,264
<b>Shareholders' equity</b>	<b>\$27,295,389</b>	<b>\$15,484,900</b>
<b>Represented by (Notes 7, 8 and 9):</b>		
Common stock	\$ 3,688,661	\$ 1,123,929
Paid-in surplus	10,310,793	6,003,874
Retained earnings	13,295,935	8,357,097
	\$27,295,389	\$15,484,900

The accompanying notes are an integral part of this statement.

**Consolidated Statement of Shareholders' Equity  
for the years ended December 31, 1967 and 1968**

**Memorex Corporation and Subsidiaries**

	Total	Common stock	Paid-in surplus	Retained earnings
<b>Balance December 31, 1966</b>	\$ 6,672,784	\$1,036,891	\$ 855,247	\$ 4,780,646
Net income for the year	3,576,451	—	—	3,576,451
Proceeds from sale of common stock to employees under stock option plan	208,783	15,023	193,760	—
Conversion of 5% subordinated debentures	5,026,882	72,015	4,954,867	—
<b>Balance December 31, 1967</b>	15,484,900	1,123,929	6,003,874	8,357,097
Net income for the year	4,938,838	—	—	4,938,838
Proceeds from sale of common stock to employees under stock option plan	295,859	24,910	270,949	—
Conversion of 5% subordinated debentures February 1, 1968	6,525,792	93,938	6,431,854	—
Stock split-up February 2, 1968	—	2,415,884	(2,415,884)	—
Acquisition of remaining interest in Peripheral Systems Corporation (Note 1)	50,000	30,000	20,000	—
<b>Balance December 31, 1968</b>	\$27,295,389	\$3,688,661	\$10,310,793	\$13,295,935

The accompanying notes are an integral part of this statement.



**Consolidated Statement of Source and Use of Funds  
for the years ended December 31, 1968 and 1967**

**Memorex Corporation and Subsidiaries**

	1968	1967
<b>Funds were obtained from:</b>		
Net income	\$ 4,938,838	\$3,576,451
Depreciation and amortization	2,650,964	1,681,320
Increase in deferred Federal income taxes	2,774,478	598,920
Total funds from operations	10,364,280	5,856,691
Net increase in long-term debt	4,284,529	—
Proceeds from issuance of common stock	295,859	208,783
Decrease in working capital	269,820	1,229,990
Total funds obtained	\$15,214,488	\$7,295,464

<b>Funds were used for:</b>		
Additions to property, plant and equipment, net	\$ 8,363,136	\$6,484,170
Equipment leased to customers, at estimated residual value	3,987,645	—
Deferred research and development costs	1,486,804	757,889
Increase in other assets	1,261,516	53,405
Costs incident to conversion of 5% subordinated debentures	115,387	—
Total funds used	\$15,214,488	\$7,295,464

The accompanying notes are an integral part of this statement.

**Notes to  
Consolidated Financial Statements  
for the year ended December 31, 1968**

**Memorex Corporation and Subsidiaries**

**1. Principles of Consolidation**

The consolidated financial statements include the accounts of Memorex Corporation and all subsidiaries (except Memorex Leasing Corporation) after elimination of intercompany accounts and transactions.

Consolidated sales include \$5,184,000 which represents sales to Memorex Leasing Corporation. Such sales reflect income from leasing operations as explained in Note 4. Memorex's equity in the net income of this subsidiary is \$79,000 and is included in "Net Sales". Memorex Leasing Corporation's financial statements for the year ended December 31, 1968, include the cost of equipment leased and a related obligation to Memorex Corporation.

All subsidiaries are wholly owned as of December 31, 1968, except for Image Products Corporation (IPC), in which the Company owns an 80% interest. The Company has entered into an agreement with the individual shareholders of IPC providing that the Company shall have the option to acquire, on or before June 30, 1973, all shares held by them in exchange for the Company's common stock on a share for share basis. The minority shareholders' interest in IPC, which is insignificant, is included in accrued liabilities at December 31, 1968.

In August 1968 the Company exercised its option to acquire the remaining 50% interest in Peripheral Systems Corporation (PSC) by issuing Memorex common stock. PSC was consolidated in 1967 and acquisition of the 50% interest has been accounted for as a "pooling of interests".

**2. Significant Events After December 31, 1968**

The Company's Board of Directors voted on January 17, 1969 not to proceed with the proposed merger of the Company and Technicolor, Inc. as approved by the shareholders on November 19, 1968. Costs related to the proposed merger, which are not material, have been included in general and administrative expenses for 1968.

**3. Deferred Research and Development Costs**

Research, development and start-up costs related to major new product developments are deferred in order to properly match costs and revenues. When commercial production commences, costs are no longer deferred and amortization begins.

Changes in deferred research and development costs were:

	1968	1967
Balance, beginning of year	\$ 936,055	\$178,166
Costs deferred	1,486,804	757,889
Costs amortized	(133,777)	—
Balance, end of year	\$2,289,082	\$936,055

**4. Accounting for Equipment Leased to Customers**

The Company leases disc packs to customers for periods of one to five years with month-to-month renewals thereafter subject to cancellation upon 90 days' notice. A portion of the rentals may be applied to purchase of the equipment by the customers under a purchase option. Upon initial lease the Company reflects a sale to its subsidiaries and limits profits recorded to the selling price of the equipment less the sum of (1) an amount calculated to reduce the profit on such transactions to the rental earned under the lease, (2) financing charges retained by the subsidiary and (3) the amount by which total costs incurred on manufacturing and leasing equipment exceed the estimated residual value thereof at the end of the lease term. Subsequent rental income from re-leased disc packs is included in "Net Sales" after deducting the excess of unamortized cost over residual value. The residual values used for this purpose are less than the purchase option and contemplate recovery of the equipment and lease acquisition costs over approximately three years or upon exercise of the purchase option. The financing element of the rental charges is included in income of the subsidiary ratably over the lease term.

"Equipment leased to customers, at estimated residual value" is net of rentals receivable from customers under current leases. Such portion is included in accounts receivable.

**5. Deferred Federal Income Taxes**

Deferred Federal income taxes have been provided to recognize timing differences in reporting certain income and expenses in the tax returns from those recorded in the books, including differences in depreciation resulting from using an accelerated method for tax purposes and the straight-line method for book purposes. As a result, \$3,989,742 of income taxes otherwise payable have been deferred. However, such amount has been charged to income and credited to deferred Federal income taxes in the consolidated financial statements. The deferred credit will be reflected in income in future years when income taxes payable increase as a result of using these tax deductions currently.

The provision for income taxes in the accompanying consolidated statement of income consists of the following:

	1968	1967
Payable for the period	\$2,371,000	\$2,590,000
Deferred	2,774,000	599,000
Total provision	\$5,145,000	\$3,189,000



## 6. Long-Term Debt

Long-term debt consisted of the following:

	December 31	1968	1967
5% convertible subordinated debentures, due August 1, 1986	\$ —		\$6,812,000
5% convertible subordinated debentures, due January 15, 1972	4,000		4,000
Term loans	4,284,529		—
	\$4,288,529		\$6,816,000

The 5% convertible subordinated debentures due August 1, 1986 were called for redemption on February 1, 1968.

The 5% debentures due January 15, 1972 may be converted after January 15, 1970, or earlier upon occurrence of certain events, into 6,000 shares of the Company's common stock and \$150,000.

The Company and Memorex S.A., a Belgian subsidiary, have obtained two long-term bank loans. These loans call for quarterly principal payments of \$150,000 and \$250,000, plus interest, commencing March 31, 1970 and October 1, 1972, respectively. Interest rates are tied to the prevailing rates for the currencies borrowed.

## 7. Preferred and Common Stock

Authorized and outstanding shares of \$100 par value preferred stock and \$1 par value common stock were as follows:

	December 31	1968	1967
Authorized preferred stock	1,000,000		200,000
Outstanding preferred stock	—		—
Authorized common stock	10,000,000		5,000,000
Outstanding common stock (excluding 10,000 shares held in treasury)	3,678,661		1,113,929

The Company has entered into agreements with key employees of two subsidiaries—Peripheral Systems Corporation (PSC) and Image Products Corporation (IPC)—which call for the potential issuance of up to 175,000 shares of Memorex common stock upon the achievement of certain levels of earnings by PSC and IPC. The issuance of such common stock would not result in a dilution of net income per share because of the profit levels that must be attained by PSC and IPC.

## 8. Stock Options (Parent Company)

Changes during 1968 in the status of options granted under the Stock Option Plans were:

### Shares Under Option—Changes During Year

Year Granted	Option Price	Jan. 1 1968	Granted	Exer- cised	Termi- nated	Dec. 31 1968
1963 <sup>(1)</sup>	.17 to 1.11	3,375	—	3,375	—	—
1964 <sup>(1)</sup>	1.22 to 2.22	6,750	—	6,750	—	—
1966 <sup>(2)</sup>	10.96 to 21.71	49,056	—	13,523	450	35,083
1967 <sup>(2)</sup>	34.79 to 63.92	98,700	—	1,412	2,776	94,512
1968 <sup>(2)</sup>	59.75 to 66.63	—	10,350	—	800	9,550
		157,881	10,350	25,060	4,026	139,145

(1) Options were granted under a Restricted Stock Option Plan adopted in 1961. No additional shares will be issued under this plan.

(2) Options were granted under a Qualified Stock Option Plan adopted in 1965. Under this plan, options may be issued to key employees to purchase common stock at 100% of market value of the shares at the dates the options are granted. As of December 31, 1968 the Company has reserved 183,746 shares of its common stock for issuance under this plan.

Both plans provide, among other things, that the options may be exercised at one-fourth the total shares each year on a cumulative basis, beginning one year after date of grant. Options granted before 1964 expire eight years after date of grant and those granted in 1964 and subsequent years expire five years after date of grant.

## 9. Net Income Per Share

Net income per share has been computed on the basis of the weighted average number of common shares outstanding during the year, excluding 10,000 shares held in treasury, after giving retroactive effect to (1) the 3-for-1 common stock split-up February 2, 1968, and (2) the conversion February 1, 1968 of 5% convertible subordinated debentures, due August 1, 1986.

**Five-Year Summary  
for the years ended December 31**

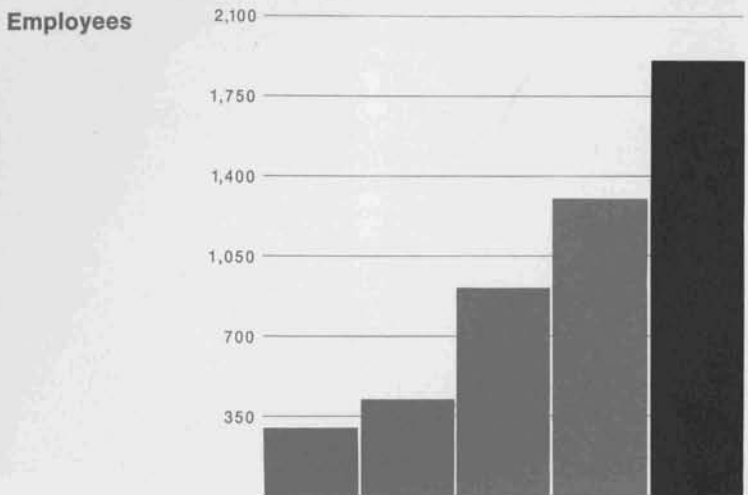
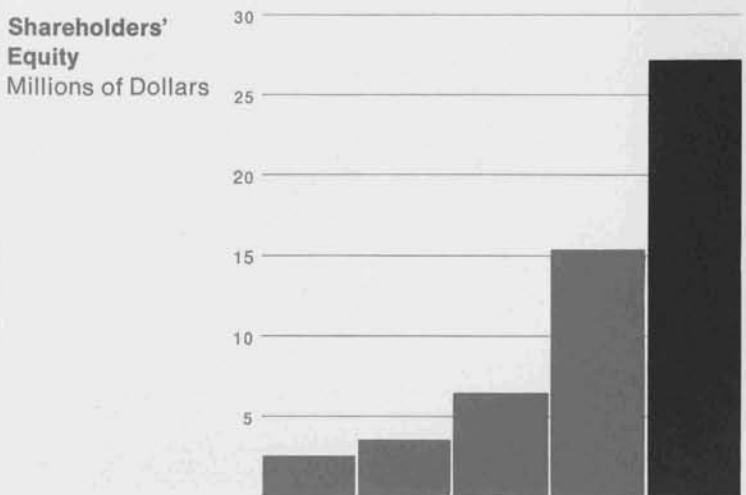
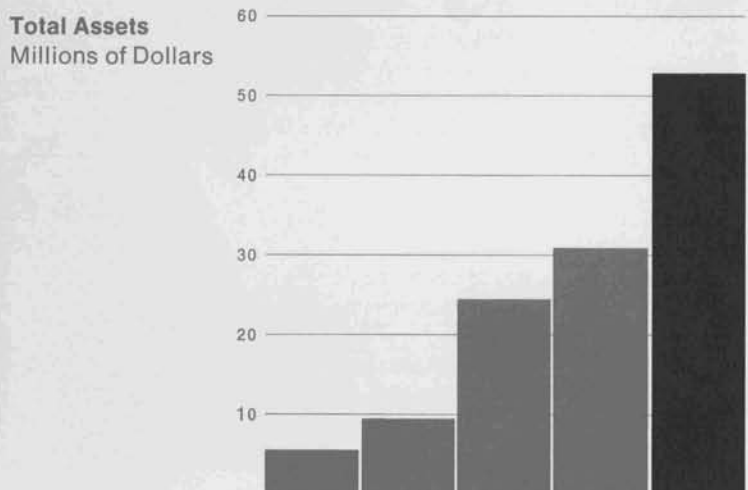
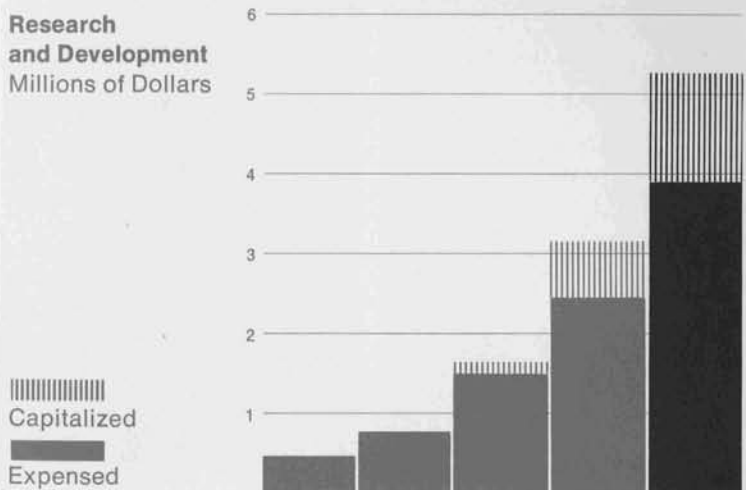
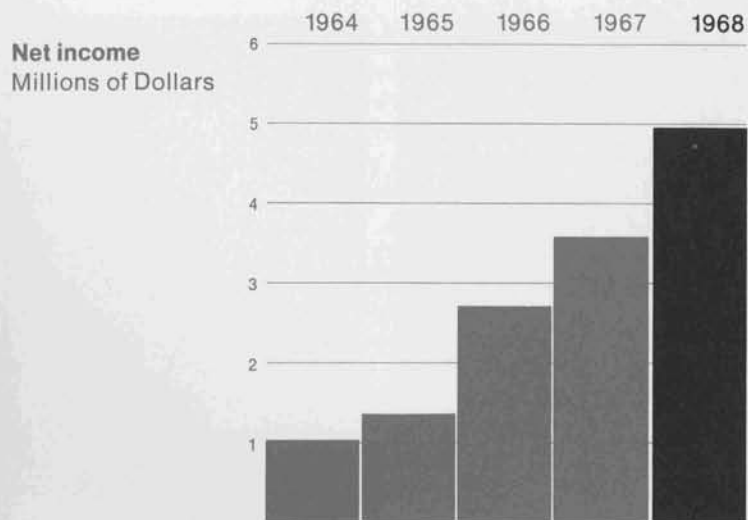
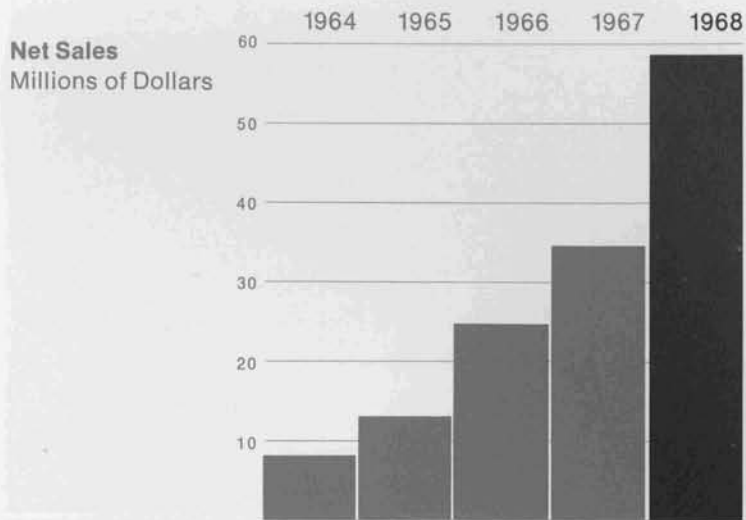
**Memorex Corporation**

(Dollar amounts in thousands except per share earnings)

	1968	1967	1966	1965	1964
<b>Operating Data</b>					
Net sales	\$ 58,295	\$ 34,232	\$ 24,417	\$ 13,099	\$ 8,042
Net income before taxes	10,084	6,765	5,181	2,481	1,962
Net income after taxes	4,939	3,576	2,724	1,331	1,002
Net income per common share*	1.35	1.06	.89	.45	.35
Depreciation and amortization	2,651	1,681	828	423	252
Research and development	3,798	2,377	1,454	747	452
<b>Financial Data</b>					
Capital expenditures	8,363	6,484	6,261	2,185	2,225
Working capital	7,239	7,508	8,738	1,977	994
Total assets	52,962	30,980	24,156	9,600	5,377
Long-term debt	4,289	6,816	12,055	2,352	1,037
Shareholders' equity	27,295	15,485	6,673	3,909	2,565
Average number of common shares outstanding*	3,663,010	3,120,120	3,062,235	2,962,770	2,892,150
Number of employees at year's end	1,916	1,304	918	442	306

\*Retroactively adjusted for 3-for-1 split-up and conversion of debentures.





Management is a primary resource of Memorex's business. Competitive strength in a technology-based industry, no less than in industry generally, reflects management's effectiveness. A small, brilliant staff of scientists can sustain a small business, but growth and diversification require managers who are able to leverage their efforts to effect larger results. Memorex has these managers. They have made possible our transition from a small business to industry leader in magnetic media products, from a computer tape company to an international, multi-product manufacturer.

The development of management in depth at Memorex is evident in the group of 23 executives who are principally responsible for our activities. These corporate and subsidiary company officers, division managers and senior technical staff members average 42 years of age. Their habits of hard work, analytical skills, sense of venture, and pride in accomplishment, give to Memorex a distinctive management character.

Memorex's management is satisfactorily compensated and enjoys a profit-oriented, monetary incentive in the Company's stock option program. Yet, non-monetary factors are far more important to our management's motivation. Outstanding young managers desire significant responsibility, the chance to contribute to a business whose objectives are ambitious and operations well ordered, whose work challenges their capacities and demands their self-improvement. These factors inhere in Memorex's dynamic program of corporate development. They assure ample opportunities in which the personal goals of our managers can be pursued, coincident with corporate goals.





1 John P. Del Favero  
Executive Vice President

2 Gordon E. Pilcher  
Vice President, Finance

3 Robert M. Brumbaugh  
President, Peripheral Systems Corporation

4 Eugene L. Rogers  
Vice President, International

5 D. James Guzy  
President, Image Products Corporation

6 John R. Eastling  
Managing Director, European Operations

7 Edward S. Seaman  
Vice President, Marketing, Supplies Division (left)  
Stanley W. Meyer  
Vice President, Technical Staff (center)  
Richard D. Boucher  
Vice President, Manufacturing, Supplies Division

8 Gordon O. Sheppard  
Treasurer

9 Carl A. Anderson  
Secretary

10 Leslie L. Burns  
Director, Research

11 Eric D. Daniel  
Director, Research Planning

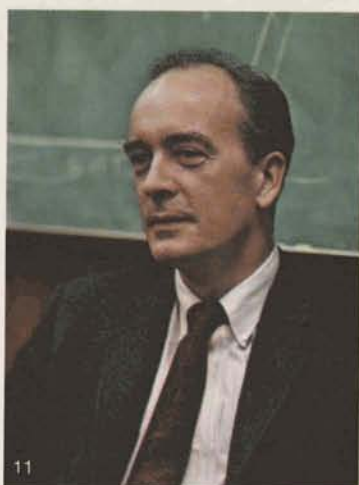
12 Kenneth I. Taylor  
Director, Product Development (left)  
Hillard P. Tavrow  
Plant Manager, Tape Plant

13 Gordon MacBeth  
Director, Chemical Development

14 Roland Jang  
Director, Engineering

15 Carl R. Moyer  
Director, Quality Control

16 John B. Mandle  
Plant Manager, Disc Pack Plant



**Officers and Management:**

Laurence L. Spitters  
President and Chairman of the  
Board of Directors

John P. Del Favero  
Executive Vice President

Gordon E. Pilcher  
Vice President, Finance

Gordon O. Sheppard  
Treasurer

Carl A. Anderson  
Secretary

Eugene L. Rogers  
Vice President, International

John R. Eastling  
Managing Director,  
European Operations

Richard D. Boucher  
Vice President,  
Manufacturing, Supplies Division

Stanley W. Meyer  
Vice President, Technical Staff

Edward S. Seaman  
Vice President,  
Marketing, Supplies Division

Robert M. Brumbaugh  
President,  
Peripheral Systems Corporation

Howard N. Burkhart  
Controller,  
Peripheral Systems Corporation

D. James Guzy  
President,  
Image Products Corporation

Leslie L. Burns  
Director, Research

Eric D. Daniel  
Director, Research Planning

Roland Jang  
Director, Engineering

Gordon MacBeth  
Director, Chemical Development

Carl R. Moyer  
Director, Quality Control

Kenneth I. Taylor  
Director, Product Development

John B. Mandle  
Plant Manager, Disc Pack Plant

Hillard P. Tavrow  
Plant Manager, Tape Plant

**Board of Directors:**

Laurence L. Spitters  
President and Chairman of the  
Board of Directors

Alger Chaney  
Chairman of the Board,  
Medford Corporation

W. Noel Eldred  
Executive Vice President,  
Hewlett-Packard Company

Prentis C. Hale  
Chairman of the Board,  
Broadway-Hale Stores, Inc.

T. Robert Sandberg  
Vice President,  
Cutter Laboratories, Inc.

Fred M. van Eck  
Partner, J. H. Whitney & Co.

Dr. Theodore Vermeulen  
Professor of Chemical Engineering,  
University of California

Dr. Alejandro Zaffaroni  
Director, Syntex Corporation

**Transfer Agents:**

First National City Bank  
111 Wall Street  
New York, New York 10015

Bank of America N.T. & S.A.  
1 South Van Ness Avenue  
San Francisco, California 94120

**Registrars:**

Morgan Guaranty Trust Company  
23 Wall Street  
New York, New York 10015

Wells Fargo Bank  
464 California Street  
San Francisco, California 94120



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Denver  
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Fort Worth  
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Indianapolis  
Kansas City  
Los Angeles  
Milwaukee  
Minneapolis  
Nashville  
New Orleans  
New York  
Oklahoma City  
Orlando  
Philadelphia  
Phoenix  
Pittsburgh  
Portland  
Salt Lake City  
San Antonio  
San Francisco  
Seattle  
St. Louis  
Syracuse  
Washington  
Winston-Salem

**U.S. Subsidiaries:**

Comdata Corporation  
Los Angeles, California  
  
Image Products Corporation  
Sunnyvale, California  
  
Memorex Leasing Corporation  
Santa Clara, California  
  
Peripheral Systems Corporation  
Sunnyvale, California  
  
Substrate Corporation  
Los Angeles, California

**International Subsidiaries:**

Memorex Ges.m.b.H.  
Vienna, Austria  
  
Memorex S.A.  
Brussels and Liege, Belgium  
  
Memorex Canada, Ltd.  
Toronto, Canada  
  
Memorex Precision Products A/S  
Copenhagen, Denmark  
  
Memorex Precision Products, Ltd.  
Maidenhead, England  
  
OY Memorex AB  
Helsinki, Finland  
  
Memorex S.A.R.L.  
Paris, France  
  
Memorex GmbH  
Cologne and Munich, West Germany  
  
Memorex S.R.L.  
Milan, Italy  
  
Memorex Japan, Ltd.  
Tokyo, Japan  
  
Memorex S.A. de C.V.  
Mexico City, Mexico  
  
Memorex N.V.  
Amsterdam, Netherlands  
  
Memorex A.S.  
Oslo, Norway  
  
Memorex A.B.  
Stockholm, Sweden  
  
Memorex A.G.  
Zurich, Switzerland

MEMOREX

**1968 Annual Report**