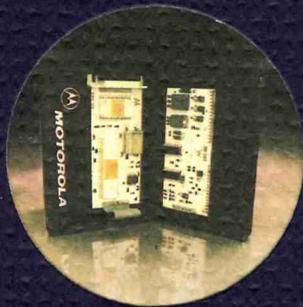
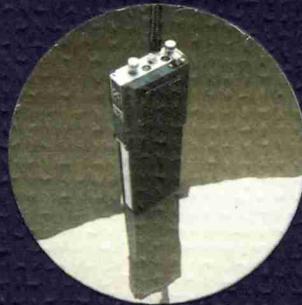
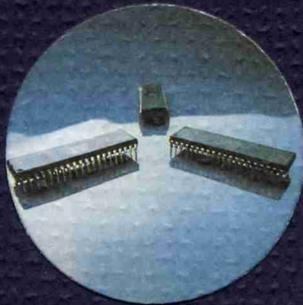




MOTOROLA INC.

Annual Report 1977

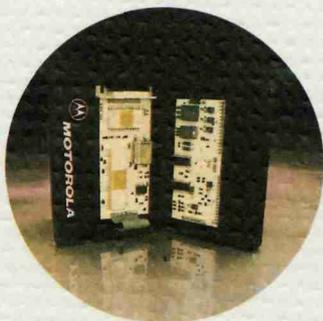
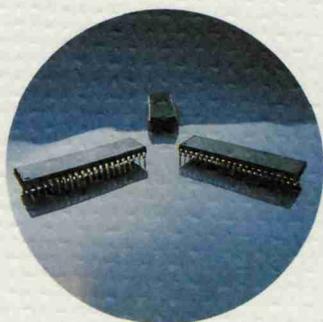


The Cover

New and expanded product lines in 1977 helped conserve energy, explore space, save lives and keep the peace. Motorola products helped people keep in touch and stay in tune through communications and automotive electronics. Through semiconductor technology, we helped people measure, control and compute. As Motorola grows larger, our products help the world grow smaller.

The Company

Motorola, Inc., one of the world's leading manufacturers of electronic equipment and components, is engaged in the design, manufacture and sale, principally under the Motorola brand, of a diversified line of products. These products include two-way radios and other forms of electronic communications systems; semiconductors, including integrated circuits and microprocessor units; electronic equipment for military and aerospace use; automobile radios, stereo tape players, citizens band radios and other automotive electronic equipment; and data communications products such as high speed modems, multiplexers and network processors. Motorola's products are manufactured for both United States and international markets.



Microprocessors

Electronic engine controls

Portable FM two-way radios

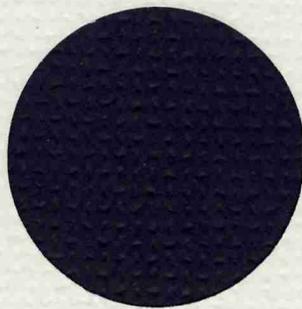
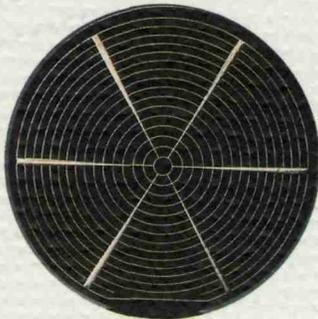
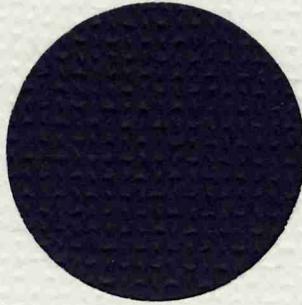
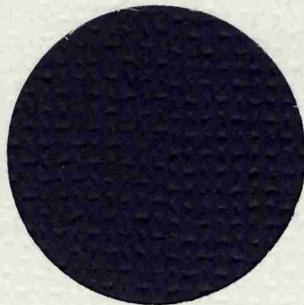
Electronic instrumentation

Data security modules

Radio paging systems

Load management systems

Citizens band radios



Communications control centers

Space communications systems

Microwave communications systems

Semiconductors

Data communications equipment

Mobile FM two-way radios

Solar energy components

Car telephone systems

Financial Highlights

(Dollars in thousands, except per share data)

	1977	1976
Sales and Other Revenues	\$1,848,395	\$1,534,881
Earnings from Continuing Operations before Income Taxes	190,415	167,367
% to Sales	10.3%	10.9%
Income Taxes	84,150	75,534
Earnings from Continuing Operations	106,265	91,833
% to Sales	5.7%	6.0%
Earnings Per Share from Continuing Operations	3.50	3.04
Research and Development	109,729	96,407
Fixed Asset Expenditures	123,844	97,789
Depreciation	72,699	57,873
Working Capital	565,883	438,529
Current Ratio	2.47:1	2.27:1
Return on Average Invested Capital (stockholders' equity plus long- and short-term debt net of short-term investments)	11.8%	11.7%
% of Total Debt (long- and short-term) to Total Debt plus Equity	26.1%	19.0%
Book Value Per Common Share	25.87	23.24
Yearend Employment (approximate)	60,000	56,000

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Annual Meeting of Stockholders

The annual meeting will be held on Monday, May 1, 1978. A notice of the meeting, together with a form of proxy and a proxy statement, will be mailed to stockholders on or about March 21, 1978, at which time proxies will be solicited by management.

Transfer Agents and Registrars

Harris Trust and Savings Bank
111 W. Monroe St., Chicago, Ill. 60690
Citibank, N.A.
111 Wall Street, New York, N.Y. 10015

Auditors

Peat, Marwick, Mitchell & Co.
222 S. Riverside Plaza
Chicago, Ill. 60606

At the close of each fiscal year, Motorola submits a report on Form 10-K to the Securities and Exchange Commission containing certain additional information concerning its business. A copy of this report may be obtained by addressing your request to the Secretary, Motorola Inc., Corporate Offices, Motorola Center, 1303 E. Algonquin Rd., Schaumburg, Ill. 60196.

To Our Stockholders and Friends

1977 was a year of progress for Motorola. Key new products were successfully introduced by each of our major operations, and the market positions of many existing products improved.

Sales and other revenues set records in every quarter of the year. For the 12 months, sales exceeded \$1.8 billion. This represents a 20 per cent improvement over the \$1.5 billion recorded in 1976. Earnings, while not up as much as sales, also reached a new high. Earnings from continuing operations totaled \$106 million, or 5.7 per cent of sales, compared with \$92 million, or 6.0 per cent of sales, in 1976. This translates into earnings per share from continuing operations of \$3.50 for 1977 vs. \$3.04 a year earlier. Details of both 1977 and 1976 results appear in the Financial Highlights on page 1.

Return on average invested capital (stockholders' equity plus long- and short-term debt net of marketable securities) was 11.8 per cent compared with 11.7 per cent in 1976.

Operational Overview

In an exceptionally strong performance, the Communications Group achieved record sales, earnings and new orders in 1977. Virtually all

market sectors showed improvement, and an aggressive new product introduction schedule expanded the group's broad lines of mobile, portable and paging equipment.

The Semiconductor Group's sales growth outperformed the industry in 1977. Worldwide sales, earnings and new orders were up as the group increased its share of market in both discrete semiconductors and integrated circuits.

The Automotive Products Division achieved record sales in 1977. Profit margin, while improved, remained below the division's margin standard due to losses in the citizens band (CB) radio operation and in certain international markets. The division's traditional product lines sold well and earned at an acceptable level in the U.S.

Sales by the Government Electronics Division showed modest improvement in 1977. Earnings were below 1976 due to planned additional investment in bid and proposal activity and Motorola-funded research and development. The division's new order bookings and backlog were up sharply.

Start-up costs and operating losses in the CB, watch module and crystal

programs plus continued difficulties at Autovox, an Italian subsidiary, were major problems faced during 1977. Each of these operations lost money, and their combined impact reduced profit margin for the year despite gains elsewhere in the corporation.

These and other operations' 1977 results are detailed later in this report.

Codex Acquisition

In addition to the active pursuit of internal growth opportunities, in May, 1977, Motorola acquired Codex Corporation, a leading supplier of data communications equipment and systems. The Codex acquisition represents implementation of our strategy to expand activity in this area of electronic technology. We believe the data communications field represents both a synergistic addition to our existing skills and an important growth opportunity for Motorola.

We welcome the men and women of Codex to the Motorola organization.

Public Financing

In October, 1977, Motorola sold publicly \$100 million of 30-year debentures. Proceeds were applied

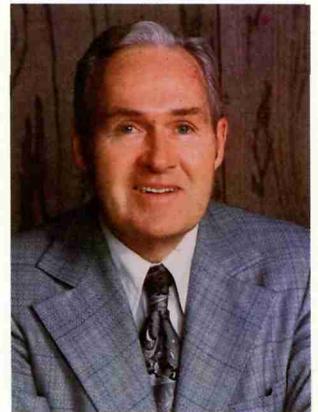
to the reduction of short-term debt (approximately \$76 million) and used to prepay the debentures of Motorola International Capital Corporation, a consolidated subsidiary.

Motorola's financial condition remained strong in 1977 with total long- and short-term borrowings at yearend 26.1 per cent of debt plus stockholders' equity. A more detailed discussion of financial matters can be found on page 18 of this report.

Research and Development

High technology electronics continues to offer substantial opportunities for investment in research and development. In 1977, Motorola spent \$110 million, or about 6 per cent of our total sales, on corporate-funded R&D. In addition, a portion of the revenue from the Government Electronics Division was devoted to government-funded R&D.

Motorola's research and development efforts cover many promising technologies. The 1977 program included, among many projects, a high-capacity cellular radiotelephone system; digital-data communications; advancements in large scale integration (LSI) semiconductor technology; electronic engine man-



Robert W. Galvin

agement; and sophisticated missile launch and guidance systems for the U.S. government.

Management Changes

Several officer appointments and promotions were made during 1977.

In the Semiconductor Group, John R. Welty, vice president and general manager of the group, was elected a senior vice president. Pasquale Pistorio, director of European operations, was elected a corporate vice president and director of world marketing for the group.

On the corporate staff, Richard H. Weise, deputy general counsel, was elected a corporate vice president and promoted to general counsel and secretary of the corporation. William P. Meehan, treasurer, was also elected a corporate vice president; and Robert N. Swift was named vice president and director of human relations.

Dividend

As reflected in the January, 1978, payment, we have increased our dividend rate by 19 per cent from 21 cents to 25 cents per quarter. This December, 1977, declaration represents the eighth consecutive year in

which the declared dividend has been increased.

Outlook

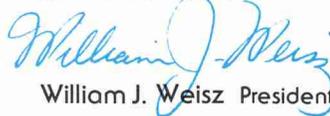
1978 will mark our fiftieth year of business. We expect growth in the U.S. and other major world economies, along with anticipated correction of the problem operations mentioned earlier, to sustain our objectives for further increases in sales and earnings.

We acknowledge with appreciation the collective commitment and individual contributions of Motorolans worldwide. Motorola's 50 years of service and achievement are testimony to their gifted capabilities.

Yours very truly,



Robert W. Galvin Chairman



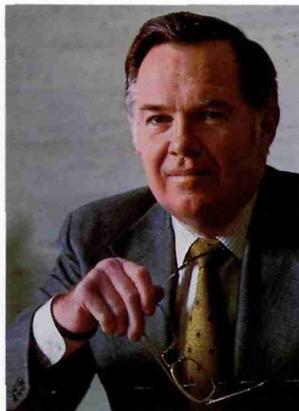
William J. Weisz President



John F. Mitchell Executive Vice President



William J. Weisz



John F. Mitchell

Motorola... Where We're Heading

Motorola today is in the forefront of the most exciting technological frontier of our time. Electronics.

Electronics has permitted us to respond in uncountable ways to people's needs to communicate, to measure, to control and to compute.

The scope of our business is focused. Our corporate purpose is clear: Motorola is in the business of designing, manufacturing and marketing electronic and electronically-related products, systems and services.

Historically, we have doubled our sales about every five or six years. We believe we can continue to do so. This would result in about \$3 billion in sales by 1981.

How are we going to get there?

First, Motorola will stay exclusively in electronics. We will not become a conglomerate. The fact is that we're experts in three major commercial fields: land mobile radio communications, semiconductor technology and automotive electronics. We hold leadership positions in significant parts of each of these high growth markets.

Equally important, Motorola is one of the very few commercial end-equipment manufacturers which have accomplished capabilities in both

semiconductor technology and government electronics. It's this combined expertise of end-equipment, semiconductor and government electronics that gives Motorola a distinctive competence which few in the electronics industry possess.

We think it makes sense to build on our strengths and continue to allocate the major portion of our resources to those products and markets, new and old, which derive from or extend our established, mainline enterprises.

Where appropriate, we shall also expand into associated fields of electronic technology. Our acquisition of Codex Corporation, a leading supplier of data communications equipment and systems, is an example.

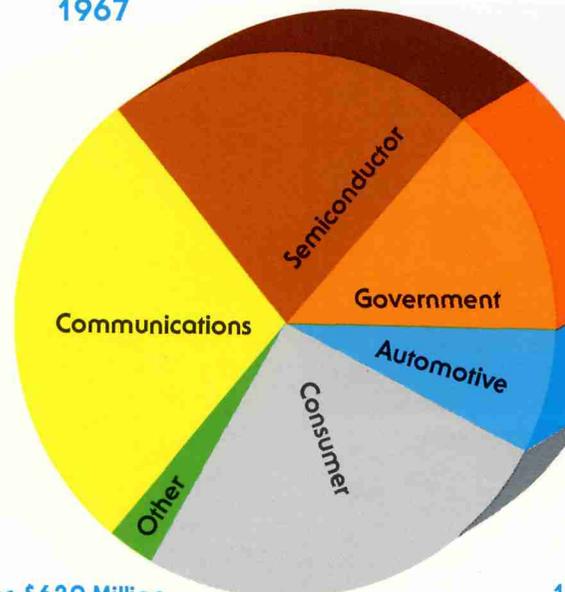
Another case in point is our Data Products Unit where Motorola's cathode ray tube displays and basic integrated circuit technology are combined with key utilization of microprocessor techniques. As a result, Data Products has become a major supplier of systems and sub-systems to computer and computer peripheral manufacturers.

Over the past ten years, Motorola's business mix has changed considerably. From our original position as primarily a consumer products company, we have evolved into a high technology electronics firm with major emphasis in the commercial, government and industrial markets. There, we think, is where the greatest potentials exist for increased sales for the corporation and improved earnings for stockholders.

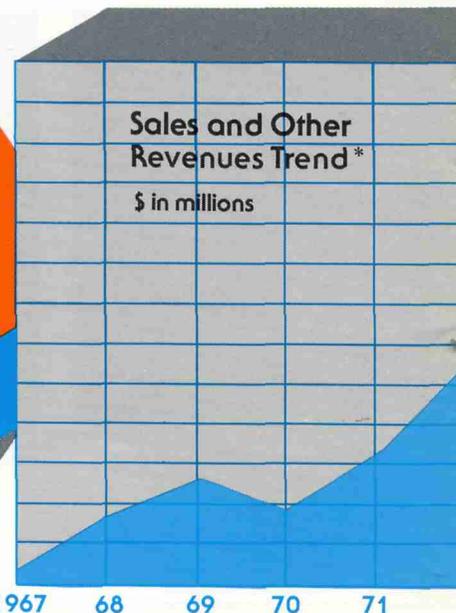
In 1977, for example, the Communications Group accounted for 44 per cent of the corporation's total sales. The Semiconductor Group contributed 30 per cent of our sales dollars followed by the Automotive Products Division with 11 per cent. The Government Electronics Division and other operations accounted for the remaining 15 per cent. Look to the charts below, and you can clearly see how Motorola's business mix has changed in the last ten years.

Motorola's mix of markets today is broadly diversified with 71 per cent of our revenues in the U.S. and 29 per cent in the rest of the world. Both domestically and internationally, our market mix is comprised primarily of commercial, industrial and govern-

1967



Total Sales \$630 Million



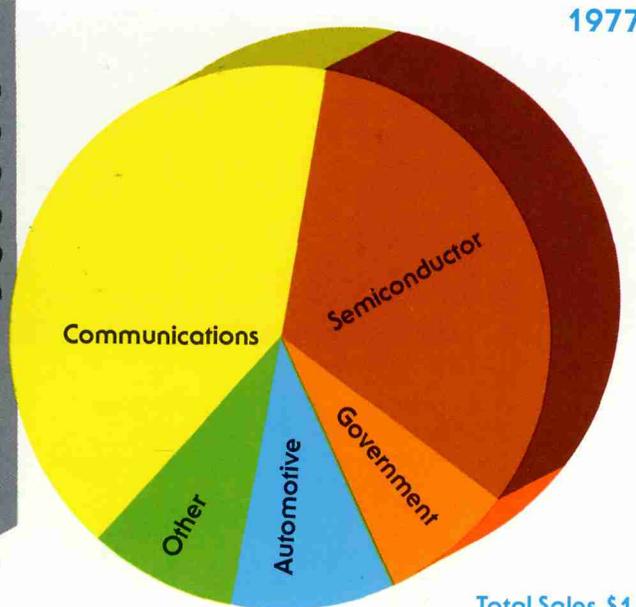
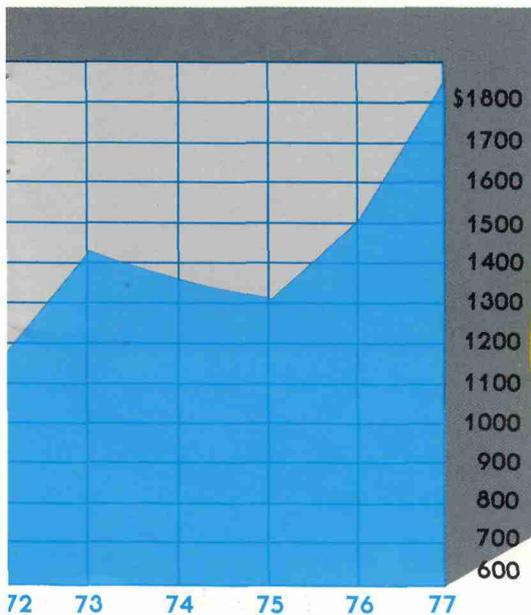
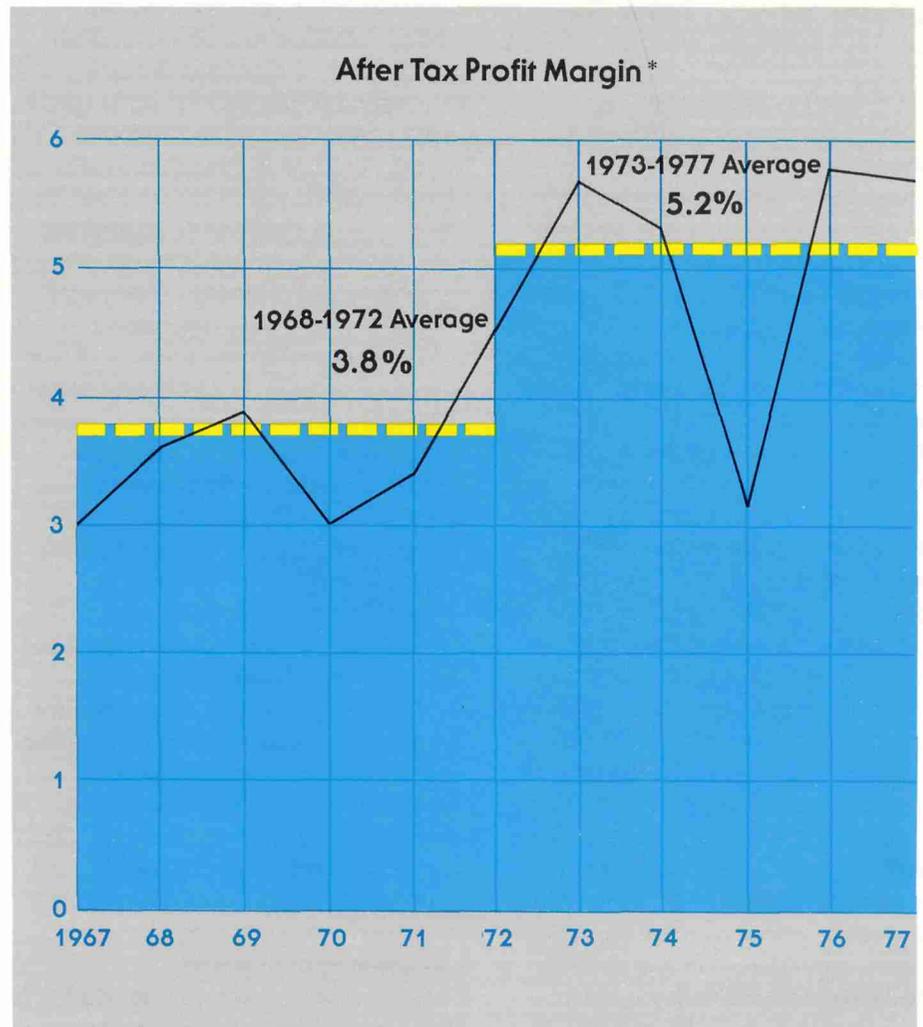
ment customers as well as automotive applications.

Turning again to our ten year performance picture (including discontinued operations), profit margins held relatively level between 1968 and 1971, rose to 4.5 per cent in 1972, and to 5.7 per cent in 1973. With the onset of recession in the last quarter of 1974, our margin declined, and it dropped to 3.1 per cent in the full recessionary year of 1975. We returned to a more acceptable 5.8 per cent margin in 1976 and achieved 5.7 per cent in 1977.

Taking a broader look, we see that Motorola's profit margin averaged 3.8 per cent of sales in the five year period from 1968 through 1972. In the last five years, 1973-77, our margin averaged 5.2 per cent.

Among Motorola's 60,000 employees are many of the most dedicated and skilled scientists, engineers, technicians and managers to be found anywhere; and the stake we share in the continued progress and profitability of the company is great.

Through effort and enterprise, Motorola intends to remain a world leader in advanced electronics.



*The sales and margin information in these graphs reflects Motorola's results for the appropriate reporting periods and has not been adjusted for the sale of the home television business in 1974 or the acquisition of Codex in 1977. Sales and earnings in the Ten Year Financial Summary, on page 30, have been adjusted for these transactions.

Communications Group

The Communications Group continued to set records in sales and earnings in 1977. Each successive quarter reflected an improved rate of sales growth over the comparable 1976 period, resulting in a 20 per cent increase in total sales over last year.

Earnings for the year rose at close to the same rate, equaling the fine margin achieved in 1976. New equipment orders booked worldwide by the group grew 25 per cent over last year's level as increases were recorded in every major market sector. Internationally, new orders climbed at a faster rate than in the U.S.

These results are attributable to continued dedication to market specialization and an aggressive new product announcement schedule which further expanded the group's product lines during the year.

As customers have become more sophisticated in their use of communications equipment, new and potential customers have become increasingly aware of the benefits. 1977's growth rate effectively demonstrated that, even after 25

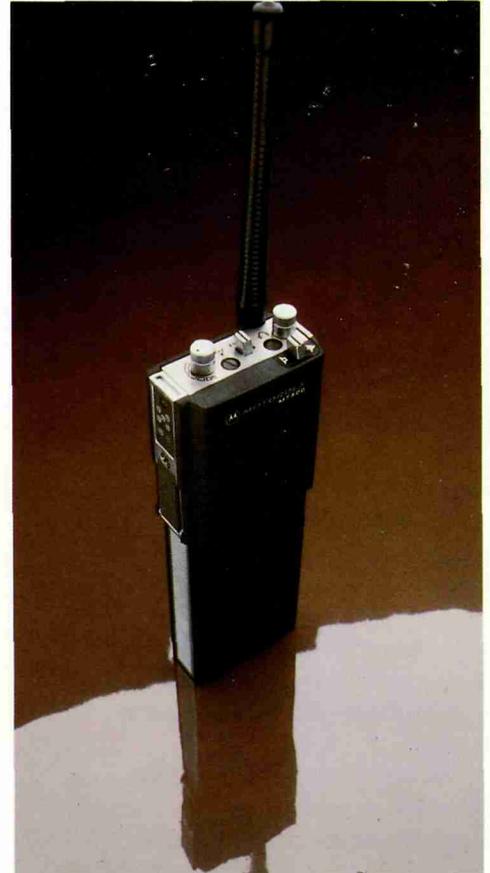
years of continuous growth, the market remains far from saturation.

The Communications Group's marketing organization has become increasingly specialized over the years. Along with the group's geographic coverage of commercial markets, special nationwide marketing teams have been developed to serve unique customer sectors. Ten years ago, for example, these teams covered the telephone, railroad and industrial sectors. In 1977, additional marketing teams covered the federal government, state and local government, radio common carrier, petroleum, utility, health care, marine, trucking, airlines and urban transit sectors.

In the geographic markets, which include small to medium-sized businesses with relatively modest system requirements, management also enlarged the sales force to serve the increasingly varied needs of customers. Specialized marketing teams were organized to cover the mining and educational sectors, and particular attention was devoted to bringing FM communications to people in rural America.

One of the group's new product lines introduced during the year

The MT 500 series Handie-Talkie® portable radio, introduced this year, combines high performance hybrid circuits with competitive pricing and systems capability. ▼



▲ The Centracom™ desk top model gives smaller radio system users the same flexibility and features of the larger freestanding model.

was the MOXY™ mobile radio line. MOXY™ mobile radio, which provides high-quality FM communications at the lowest price ever offered by Motorola, enabled many users of citizens band radio to upgrade to more sophisticated FM communications.

The group also enlarged its already extensive hand-held radio product line with the MT 500 series Handie-Talkie® portable radio.

1977 saw a resurgence of growth in the state and local government marketplace. Responding to a need for higher sophistication in public sector communications, the group expanded its Digital Voice Protection System in 1977 to include portable radios as well as mobile radios and base stations. This highly advanced communications system is designed to scramble voice signals, making it impossible for unauthorized people to intercept private messages.

Motorola's Multi-Line Data Terminal, which permits direct computer access from a vehicle, gained increased acceptance in 1977 as large industrial and commercial, as well as government, customers continued to make extensive use of data communications technology.

In the health care field, there was a growing appreciation of the need for two-way radio in emergency situations. Motorola's new high-power Coronary Observation Radio helped save lives in 1977 by enabling paramedics at the scene of a heart attack to talk to hospital personnel as the victim's electrocardiogram was transmitted and displayed to doctors in the hospital.

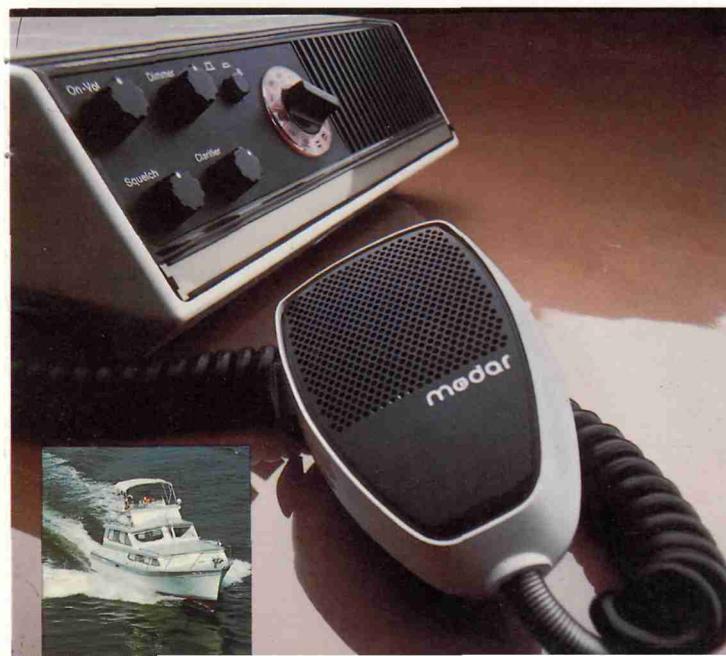
In the industrial marketplace, new plant construction and facility expansion during the year contributed to increased sales. Industrial users were among those customers needing the flexibility of a portable radio with the performance and range of a mobile radio. To help fill this need, the group introduced a new mobile repeater system. These mobile repeaters permit customers to leave their vehicles while continuing to talk on a portable radio through the mobile unit in the vehicle.

Two-way radio communication became an essential ingredient in the worldwide search for new energy sources in 1977. Refineries continued to use portable radios designed for rugged environments while offshore and land-based drilling rigs

depended upon high-frequency single sideband radio links for long-range communications. Motorola microwave radio systems also served the long distance communications needs of operators of pipelines carrying oil from Alaska and other areas. New, proposed gas pipelines offer continued opportunities.

The Communications Group's understanding of customers' needs to conserve energy also contributed to growth in 1977. In the utility market, the group's Load Management System™, in which radio switches are used to help electric utilities shave peak power demands, continued to attract widespread interest. Arkansas Power and Light purchased a Load Management System™ which eventually will include the installation of 100,000 radio switches on home air conditioners. Elsewhere in the country, similar systems helped control commercial and residential water heaters.

Continued high growth of area-wide paging resulted in increased sales of radio pagers and paging terminals to telephone companies and radio common carriers. The group expanded its already exten-



▲ Designed for remote site utilizations, Starpoint™, a 2 GHz microwave communications system, offers modular plug-in construction for simplified field repair.

◀ The Triton® VHF-FM marine radio is complemented by the introduction of a Triton® 24-channel SSB (single sideband) radio for commercial applications.

sive paging products by two lines during the year. In tone and voice paging, new entries were the Dimension IV™ and Spirit™ radio pagers. Both pagers, each about half the size of older units, offer quality performance in the medium price range.

Late in the year, a major goal of the Communications Group was reached when the Federal Communications Commission granted a developmental license to a radio common carrier for the field testing at 800 MHz of a Motorola-designed and produced high-capacity radiotelephone system. The Motorola system, which will be owned and operated by American Radio-Telephone Service, Inc., will be capable of accommodating upwards of 50,000 mobile telephone subscribers in the Washington-Baltimore corridor. Heretofore, only a very limited number of people in any given service area could enjoy the advantage of car telephones.

The Motorola system, with potential applications worldwide, will utilize both mobile and portable radiotelephones in the developmental tests. While commercial service in Washington-Baltimore is not expected

to begin until 1979 or 1980, technological innovations associated with the system began to appear in the group's radiotelephone product lines in 1977.

The group's international strategy in 1977 focused on the developed countries inasmuch as these countries had the greatest immediate need for high-quality communications equipment and systems. The strategy paid off particularly well in the European, Canadian and Australian group where new orders were considerably above the international average.

In order to serve rapid growth in the United Kingdom and the rest of the European Economic Community, the group began production of mobile radios and radio pagers in a newly acquired facility at Basingstoke, England.

In the less developed countries the need for communications also continued to grow. In Africa and South America, demand was particularly strong for communications for energy-related applications. For example, in Peru a microwave radio system was ordered to support pipeline operations.

Several facility plans matured during 1977. A major integrated

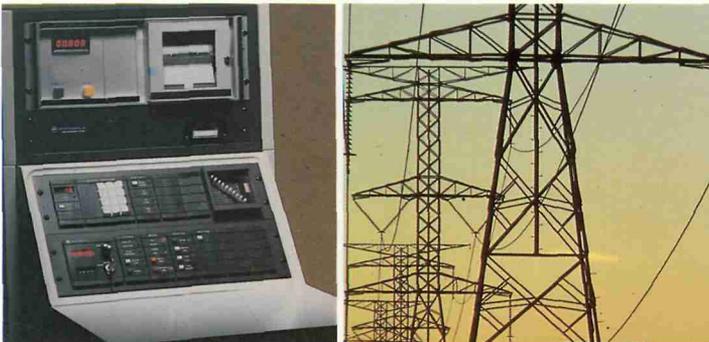
manufacturing, office and laboratory complex in Fort Worth, Texas, and a new building on the Schaumburg, Illinois, campus to house the Parts Department and Chicago area sales force neared completion. A new area sales office was opened in San Diego, California, and in Libertyville, Illinois, the group purchased 87 acres of land to support future expansion in the Chicago area.

Semiconductor Group

The Semiconductor Group achieved solid growth in 1977. Worldwide sales were up nearly 23 per cent over 1976, reflecting several technical, product, market and organizational achievements. 1977 earnings also increased over last year with improvement in profit margin.

Gains in both domestic and international markets combined to boost new order bookings by the group 13 per cent over 1976. Backlog was up 10 per cent over last year.

Based on industry estimates, the Semiconductor Group's sales in 1977 grew at nearly twice the rate of the



▲ Motorola Load Management Systems™ permit utilities to level peak loads by selectively turning off some appliances for short periods with no inconvenience to users.

Dimension IV™ personal pagers are tone and voice units ► incorporating advanced electronic design with high power and excellent audio quality.



competition, and the group increased its share of the world market served by U.S. industry by one full percentage point.

Although industry sales of discrete products were about level with last year, Motorola's discrete product sales were up 10 per cent over 1976. None of the group's major discrete product lines experienced a sales decline; and market share increases were achieved in mature product lines, such as small signal transistors and rectifiers, as well as in newer product lines, including field effect transistors and tuning diodes.

Continued investment in major mechanization programs during the year led to lower manufacturing costs and improved yields and productivity in many segments of discrete operations. Automated assembly equipment, for example, was purchased and put to work in several product areas such as small signal transistors, power transistors and zener diodes.

Focus on improved criteria for reliability and quality control during the year resulted in dramatic reductions in the in-line assembly reject rate and in the field failure rate of all discrete products. Overall, improved product

quality in 1977 led to the lowest percentage of quality-related returns for any year on record.

1977 also saw continued emphasis placed on development of discrete process and production technologies. Introduction of Motorola's new Powerbase™ technology allowed the development of more rugged power transistors capable of operating in applications having higher power requirements. This gives Motorola the ability to supply devices for applications which previously used single diffused products.

A program to convert to larger wafer sizes in many product families enabled further cost and price reductions in 1977 as expanded use of ion implantation provided better uniformity from wafer to wafer, resulting in increased yields.

Motorola's proprietary glass passivation process, in which a thin layer of glass protects open junctions, improved yields and reliability in both power transistors and thyristors during the year.

Motorola's leadership position in the discrete component industry was further solidified in 1977 with the addition of many new products which

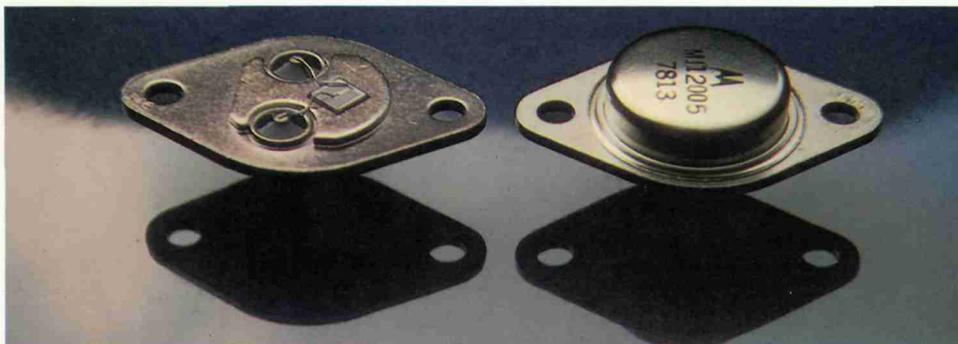
both expanded old markets and created new ones.

As projected last year, new deflection power transistors for the television market were put into production in 1977. As a result of this effort, Motorola received purchase commitments from every major U.S. TV manufacturer in 1977 as well as from several European TV manufacturers.

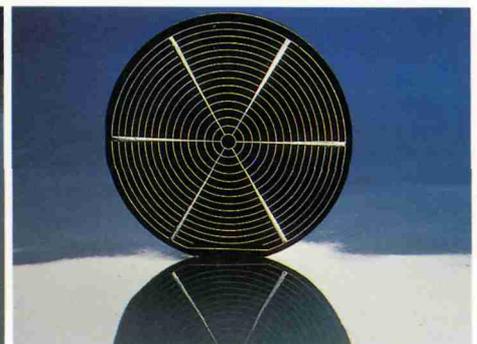
In addition, Schottky rectifiers and switch-mode power transistors, which offer both size reduction and efficiency improvement to customers, were introduced for rapidly growing applications in the computer, industrial and military markets. Field effect transistors were also introduced for such applications as smoke detectors in the consumer market.

Motorola's line of radio frequency power devices and modules was expanded for use in communications products which operate in the new 800 MHz frequency range. The introduction of thyristors in a standard industry package at lower prices in 1977 contributed to a significant increase in market share for this important product line.

Ion implantation technology permitted the development during the



▲ Every major U.S. television manufacturer has given purchase commitments for Motorola's deflection power transistors.



▲ Active for several years in solar energy research of silicon materials, Motorola is now producing solar cells, panels and complete solar energy systems.

year of a full line of AM tuning diodes for the automobile industry. Several major orders were received for this exciting product line which will allow the development of much smaller car radios.

Also introduced in 1977 was a line of MiniBloc™ standardized components for the hybrid marketplace. These high-quality, miniature transistor packages provide a low-priced alternative to the conventional "chip and wire" hybrid assembly techniques prevalent in the industry.

Since 1975, Motorola has been actively involved in the solar energy field through both company-funded and government-funded research and development programs. In 1977, Motorola received several major contracts from the Department of Energy for research in silicon material as well as a contract for a large number of Motorola-developed solar cells from Jet Propulsion Laboratories. At yearend, 36- and 48-solar cell panels and complete solar energy systems were available for purchase.

In integrated circuits (IC), 1977 was a year of resurgence and achievement for the group. IC sales were up 40 per cent over 1976 compared with

estimated industry growth of 24 per cent. More new products were introduced than in any previous year, and the group expanded its share of market by aggressively pursuing new products on several fronts.

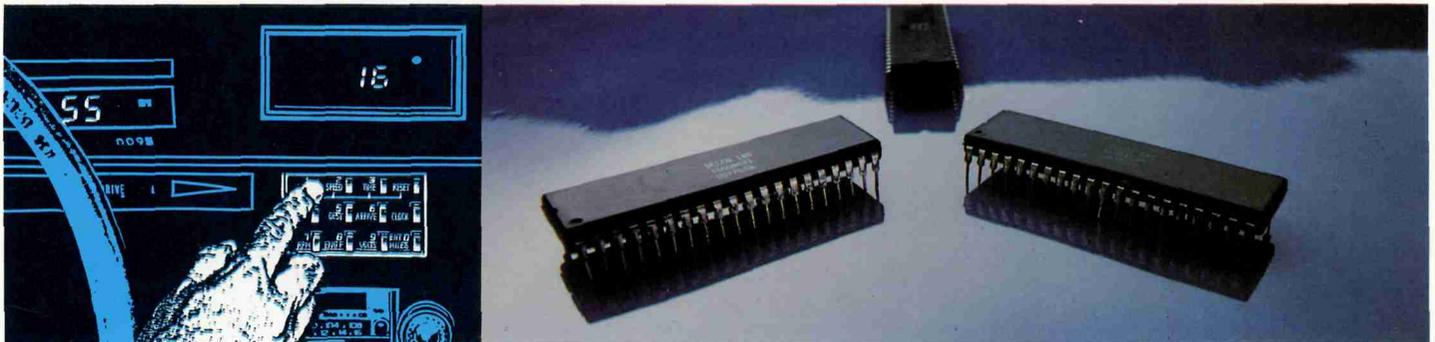
A complete line of low power Schottky transistor-transistor digital logic circuits, acquired through a technology exchange, was put into volume production expanding Motorola's product line in this significant portion of the IC market. A new generation of memory components and subsystems, which represent the fastest growing segment of the IC market, was also developed and introduced during the year.

Many new linear interface circuits were introduced to facilitate coupling memories and microprocessor (MPU) chips to each other, to input sensors and other output actuators or terminals in microprocessor applications.

Motorola also expanded its microprocessor line in 1977, making it the broadest in the industry. The new line covers four major technologies: complementary metal-oxide-semiconductor (CMOS) for applications requiring minimum power consumption; transistor-transistor logic (TTL) for computer and industrial control systems design applications; emitter-

coupled logic (ECL) involving high-speed logic performance; and metal-oxide-semiconductor (MOS) which involves maximum complexity at a reasonable price. These products are completely supported by software and design aids such as the EXORCISER® system produced by Motorola's microsystem unit. The microsystem line, too, was expanded with the introductions of floppy disc systems; cathode ray tube systems; micro-modules and systems for process automation; and automobile electronics development.

Teamwork and technical excellence in 1977 paid off with notable wins in several fiercely competitive major procurements. The combined requirements for improved pollution control and increased mileage performance in cars caused auto manufacturers to look to electronic engine management systems for solutions. Motorola's MOS and linear integrated circuit designs for engine control modules won major contracts from both General Motors Corporation and the Ford Motor Company for use in many of their cars in the coming model years. Motorola was also a principal supplier of advanced circuits for electronic watches to Timex.



▲ Trip Computer, available in the 1978 Cadillac Seville, utilizes the versatile M6800 microcomputer system. ▲

▶ AM tuning diodes (larger pieces) for the auto industry will permit development of smaller radios or radios located in areas other than the dashboard; and a line of MiniBloc® standardized components provide a low-priced alternative to conventional hybrid assembly techniques.

In 1977, Motorola's large scale integration (LSI) products contained as many as 36,000 discrete devices on a single chip of silicon. This represents a 250 per cent increase in LSI circuit density over 1976. This trend is expected to continue as research and development efforts provide for very large scale integration (VLSI) of 100,000 and more devices per chip.

Research and development expenditures were increased substantially in IC operations during the year, and factory operations for MOS production were expanded at the group's Austin, Texas, plant.

In order to better serve the world semiconductor market, which is expanding rapidly in geographic and product complexity as well as in number and variety of customers, the Semiconductor Group unified its worldwide marketing and product operations in 1977. Several management and structural realignments were made during the year to permit worldwide coordination of marketing and manufacturing strategies while maintaining regional decentralization of decision making at the operating level.

In addition, an on-line information system, which provides up-to-the-mi-

nute finished goods inventory, order status and product pricing information, was installed in 30 field sales offices. Sales offices, in turn, can now instantaneously enter new order and order change information via CRT terminals to the group's central computer system in Phoenix.

Automotive Products Division

1977 was the third best year in history for U.S. passenger car production and the second best year on record for combined car and truck production. Record sales by the Automotive Products Division reflected this strong industry performance with a 21 per cent increase over 1976. Earnings also increased over last year; but profit margin, while up, remained below the division's standard due to operating losses in the citizens band (CB) radio operation and in certain non-U.S. markets.

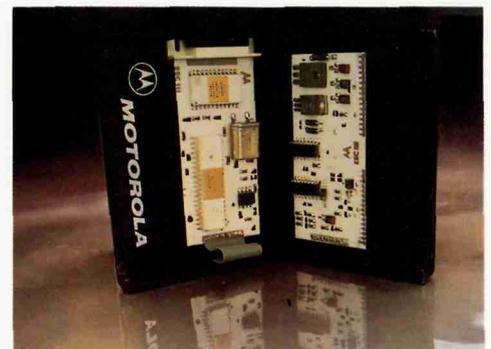
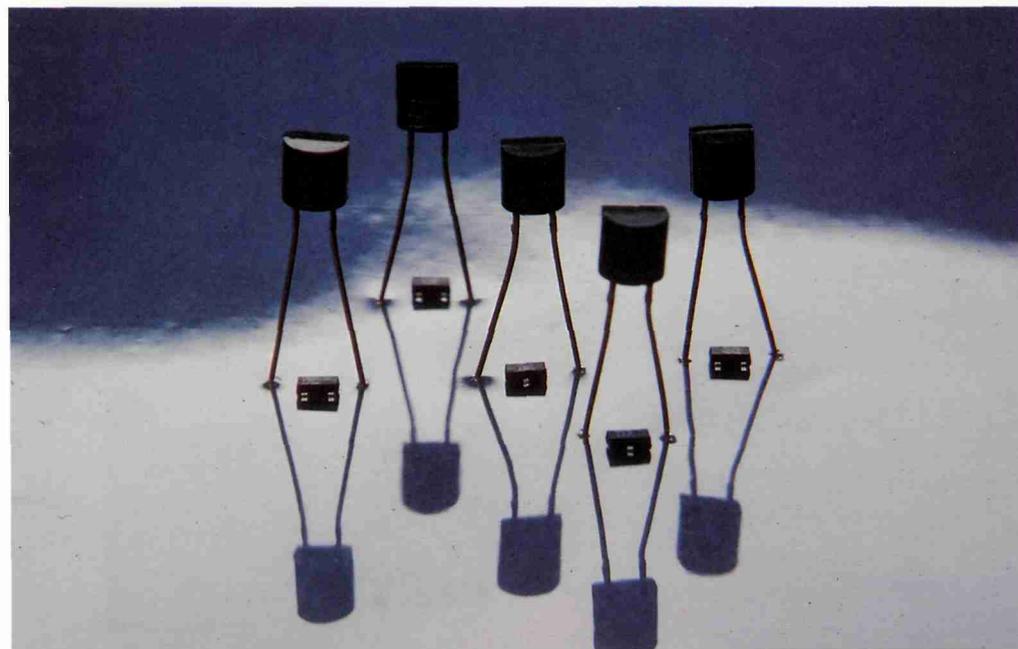
Sales of original equipment entertainment products, including AM radio, AM/FM and FM stereo radios, and 8 track stereo tape players, remained strong throughout the year.

The division continued to be a major supplier of original equipment

radios to Ford Motor Company and American Motors Corporation, as well as to many truck, tractor, recreational vehicle and motor home manufacturers. In addition, the division was chosen as a supplier of both radios and alternators to Volkswagen for their new U.S. manufacturing operations.

Among new products introduced into the aftermarket was a line of professional quality automotive speakers and two automotive stereo amplifiers. Several entertainment centers, incorporating AM/FM stereo radio, 8 track stereo tape and CB radio, were also introduced for the "custom line," installed by automobile dealers into new cars, and for the retail line purchased over the counter.

1977 was clearly a year of massive oversupply in the entire CB industry. Responding to the soft market, Motorola consolidated all CB production at the division's Seguin, Texas, manufacturing plant which additionally produces automotive entertainment products for the original equipment market and aftermarket installation. This move will provide economies of scale in production as well as in organization.



▲ Motorola's electronic engine control (EEC) is microprocessor-based and designed to increase engine performance and efficiency.

While consolidating its manufacturing base, Motorola expanded its original line of four underdash CB radios to include a dual monitor underdash transceiver which monitors the emergency channel 9, a single sideband underdash transceiver, a self-contained CB base station, two indash CB radios combining AM/FM stereo and 8 track tape, and an expanded line of CB antennas.

In addition to its traditional after-market distribution operations, Motorola also provided CB product for Ford and Bell Canada. Other original equipment contract awards were received with deliveries to be made in 1978.

A key technological development during the year was highlighted when Motorola submitted to the Federal Communications Commission (FCC) an approach to AM stereo broadcasting. Field tests of three systems, including the one submitted by Motorola, were begun in 1977. If the service is approved by the FCC, Motorola can be a prime participant in the new AM stereo marketplace.

Sales of electronic systems products, which include alternators, sensors, electronic ignitions and other

electronic modules and instruments, continued strong in 1977 and were ahead of last year.

The company reinforced its strong position in the automotive engine electronics business when the Automotive Products Division, in cooperation with the Semiconductor Group, won a competitive design award from Ford for an electronic engine control (EEC). Under terms of the award, Motorola will supply to Ford at least 25 per cent of their EEC requirements for the 1980 model year.

This award, along with key awards from other customers for both development and production contracts, demonstrated the division's ability to play a major role in the fast emerging engine electronics business.

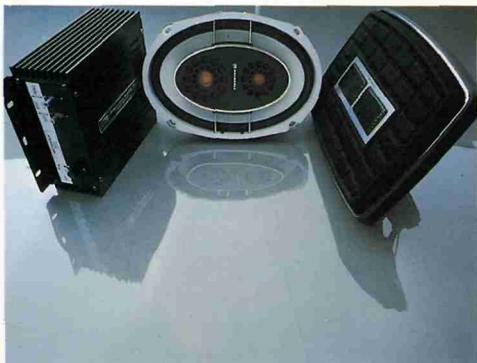
Internationally, all of the division's operations improved their operating performances in 1977. Of particular note were development efforts by the division with several European car manufacturers for Motorola's engine electronic products, offering still further growth opportunities in the coming years.

Government Electronics Division

The Government Electronics Division continued to grow and perform well in 1977. Although sales were up a modest 5 per cent over 1976, new orders booked by the division climbed more than 40 per cent over last year, setting an all-time high. Earnings of the division were below 1976 due primarily to planned increased expenditures for independent research and new business development.

Communications equipment built by the division was launched on its way to Jupiter, Saturn and beyond in 1977 on NASA's Voyager I and II spacecraft. Designed to withstand the rigors of deep space flight, the Motorola equipment will provide the only two-way communications link for radio communications and television signals which will relay still pictures of Jupiter and Saturn in 1979-80.

The division was also awarded contracts totaling \$13.5 million to design and build electronic subsystems for NASA's Tracking and Data Relay Satellite System. This system will pro-



▲ Motorola's autosound business continues to develop well with newly added lines of professional-quality automobile speakers and stereo amplifiers as well as indash ► entertainment centers with 40-channel CB, AM-FM stereo radio and cassette or 8-track tape player.





vide tracking, command, and data acquisition services for NASA's manned and unmanned Earth orbit missions through the 1980s.

Also during the year, the division introduced a new series of Info-guard™ data security products which are designed to protect data transmissions between computers or between computers and terminals. These products include both off-the-shelf and custom modules to fill a wide range of data security requirements for government, business and industry.

Major military contracts for the year included an award from the Navy for target detecting devices for use with the Navy standard missile; an Army contract to upgrade data link equipment for use with an airborne surveillance system; and another Army contract for the development of a modification to minimize jamming of their Side-Looking Airborne Radar system.

The division's international operations made excellent progress in 1977. New applications coupled with improved penetration of existing markets made the Mini-Ranger III™ position determining system line the

front runner in international sales growth during the year.

In new products, the SYNCOM-10™, a 9600 channel VHF emergency radio operating in the government and public service bands, showed promise of good future sales in overseas markets as an encouraging number of orders was received upon the product's introduction.

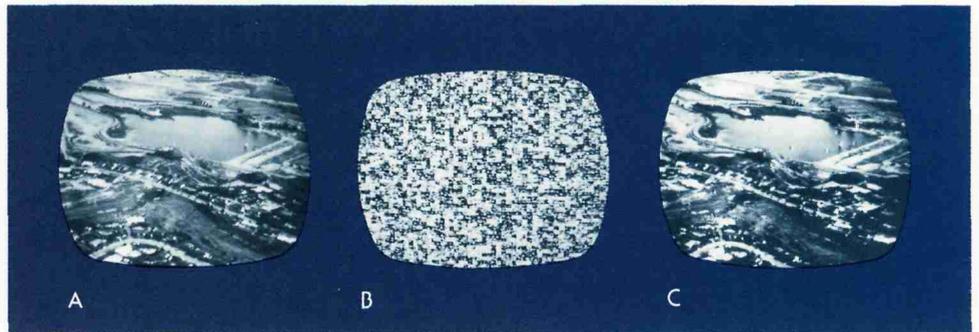
During 1977, the first contract was received from Canada for portable UHF and VHF Emergency Transceivers. This new product will be introduced worldwide in 1978 and is expected to contribute strongly to international bookings.

The first sale outside the U.S. of Side-Looking Airborne Radar for civil applications was also recorded during the year. The system will be used in Canada for detection of ice pack movements off the coasts.

In order to capitalize on the increasing importance of missile guidance equipment to the division's future, a separate internal organization was formed in 1977. The consolidated activities encompass all electronic, mechanical and aerodynamic technologies which relate to missile guidance programs.



▲ New applications of the Mini-Ranger III™ position determining system include positioning offshore oil platforms and guiding crop and forest air fertilization operations.



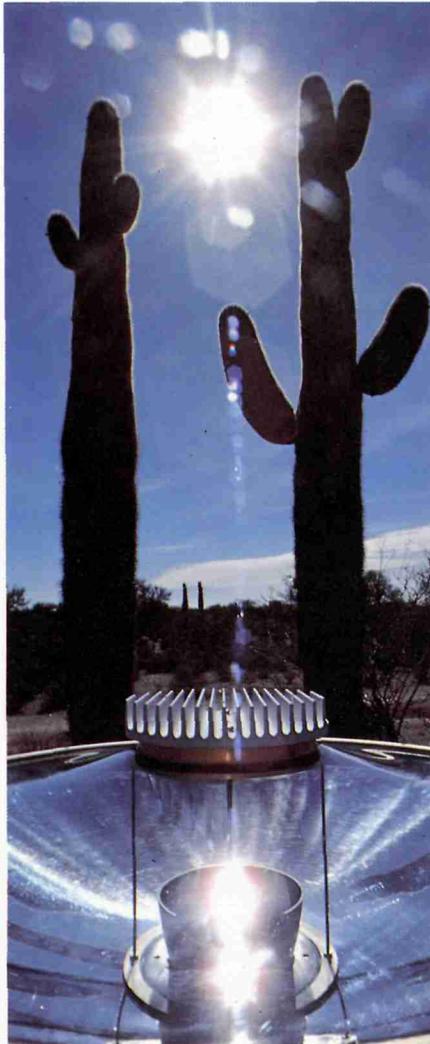
▲ Unretouched photos show how Motorola system slips TV pictures through powerful electronic jamming signals.

Photo A—Normal video taken directly from airborne camera as shown during simulation tests.

Photo B—Same video image subjected to simulated enemy signal jamming.

Photo C—Same video and same jamming as in photo B showing how Motorola's processing techniques almost eliminate jamming signals.

The Government Electronics Division, as well as Motorola's Semiconductor Group, was active in the development of solar energy in 1977. Under a proposal to the U.S. Department of Energy from the Arizona Public Service Company and the State of Arizona, both the Government Electronics Division and the Semiconductor Group would participate in development of one of the world's largest solar cell power plants for Phoenix's Sky Harbor Airport. If approved for funding by the Department of Energy, Motorola will design and supply the plant's solar electric generating equipment which represents an unprecedented opportunity to bring space age technology down to Earth.



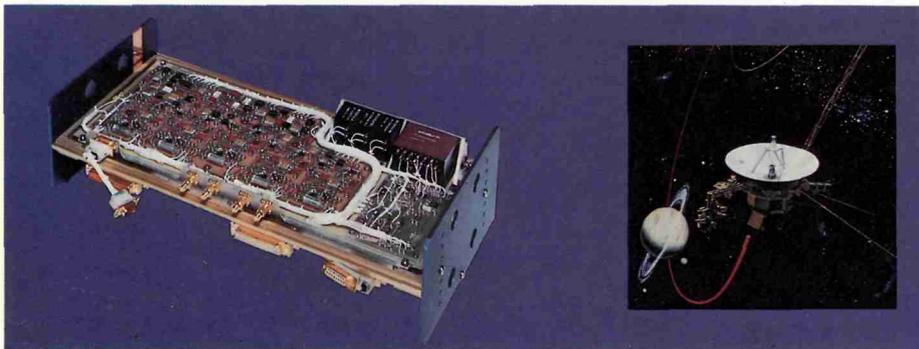
More than 14,000 of Motorola's Meinel ► optical concentrators may be utilized in a solar photovoltaic system proposed for a solar cell power plant in Phoenix, Arizona.

Data Products Unit

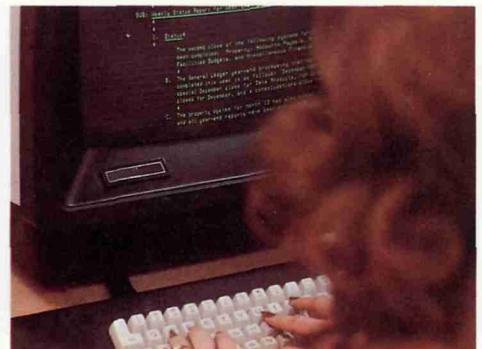
Motorola's Data Products Unit realized sharply increased sales and earnings in 1977. Profit margin also improved, signaling a solid recovery from heavy plant start-up costs incurred last year.

Major growth occurred in the display products operation which sells cathode ray tube display modules to manufacturers of computer terminals and coin-operated video games. Display products introduced two new products in 1977. The first was a low-priced, medium performance display for the low-end, high-volume data entry and small business terminal markets. The other was an ultra-high performance full page display for the burgeoning word processor terminal market.

The unit's systems products operation also experienced fine growth in 1977. Microprocessor-based information display systems, which are distributed through Motorola's Communications Group, ended the year with substantial backlog as markets for this product line were broadened from transportation and health care to



Continuing a long association with NASA space missions, communications equipment built by the Government Electronics Division is aiding in the exploration of our solar system on Voyager I and II spacecraft launched last summer.



A Data Products CRT (cathode ray tube) display is designed for use by the word processing market.

other markets served by the Communications Group. A new closed circuit television system for use in high temperature environments was also developed for introduction in the first quarter of 1978.

Codex

Codex achieved record revenues and earnings in 1977. Revenues were up more than 40 per cent over 1976 with profit margin about equal to last year. New order bookings, up 60 per cent over last year, also set a record.

Among major new orders for the year was a multimillion dollar contract with the Defense Communications Agency, an arm of the U.S. government, for the worldwide channel packing system which concentrates multiple data communications between the United States and other countries into high speed circuits across both the Atlantic and Pacific oceans. The channel packing system is designed to reduce leased circuit costs for the government by several million dollars each year.

Another agreement in excess of \$1 million was signed with Overseas

Fixed Telecommunications Service (OFTS) for Codex's 6000 Series of Intelligent Network Processors and other system products. OFTS is a worldwide telecommunications network managed by British Airways and Qantas Airways for the airlines of the Commonwealth countries.

Codex expanded its worldwide customer base in 1977 by more than 50 per cent over the previous year with increased market penetration of the banking, finance, manufacturing, transportation, retailing, communications, insurance and computer services markets.

Other Programs

Start-up costs associated with Motorola's watch module program did not permit profitable operation in 1977. In the second half, this program was transferred to the Semiconductor Group from the Communications Systems Division in order to take advantage of the Semiconductor Group's high volume, component-oriented capabilities. Production of watch modules steadily increased in volume and two new, advanced watch modules were introduced. Customer re-

sponse was highly favorable, and this program is expected to be profitable in 1978.

Motorola's watch crystal program experienced severe product and pricing pressures in 1977. Japanese suppliers, using excess capacity resulting from market and technical changes in the citizens band radio business, aggressively entered this product market early in the year. As a result, Motorola's market share eroded, and this program lost money. In January, 1978, the watch crystal program was also transferred to the Semiconductor Group where high volume process and production capabilities, together with planned reduction in overhead costs, should result in improved performance in 1978.



▲ Two of Codex's advanced data communications products, the 6030 Intelligent Network Processor and the Circuit Quality Monitoring System utilize Motorola 6800 microprocessor technology.

Financial Review

Key elements in Motorola's corporate policy and financial strategy are a strong balance sheet and conservatively stated asset and earnings figures. This policy, we believe, importantly contributed to the recent actions by Moody's Investors Service and Standard & Poors, the major corporate bond rating agencies, in assigning Aa ratings to Motorola's long-term debt. Accordingly, the \$100 million, 30-year public debenture issue sold in October, 1977, was priced to yield 8.027 per cent. This rate at the time was within 0.25 per cent of the then current yield on U.S. Treasury issues of comparable maturity and compares very favorably with the yields of other high-quality corporate bond issues, both for the previous several years and since October.

The debenture sale lengthened the average maturity of Motorola borrowings from three years to ten years, with but modest increase in cost related to current and anticipated short-term interest rates.

Working capital of \$566 million and a current ratio of 2.5:1 further indicate the strength of Motorola's financial position.

Earlier in this report we stated that total borrowings at yearend, long- and short-term, were 26.1 per cent of total borrowings plus stockholders' equity. While this figure is higher than the 19 percent of a year ago, we believe it is still within the bounds of prudence. If marketable securities of \$86 million, largely the result of accumulated profits in Puerto Rican subsidiaries, were offset against borrowings, the yearend debt-to-debt plus equity ratio would be 19.6 per cent vs. 12.9 per cent last year.

Quality of Earnings

Much has been written recently concerning the "quality of earnings" reported by corporations, especially in periods of significant and continuing inflation. While an objective mea-

surement is not practical, we believe the quality of Motorola's reported earnings, and its stated net worth, compares favorably with other corporations. The near total absence of inflation in the value of inventories and the use of accelerated depreciation of fixed assets essentially eliminate from our earnings, as we have previously reported, the type of unreal inflation factor which is of concern to many investors and economists. Additionally, our policy continues to cause appropriate provisions to be made for potential losses from accounts receivable, identifiable future liabilities and inventory valuation. The absence of unfunded vested retirement benefits and the use of a modest 5 percent earnings assumption in determining current retirement fund accruals are other significant elements in Motorola's good "quality of earnings."

Currency Valuations

Despite continuing, almost violent, fluctuations in world currency values, again in 1977 Motorola avoided a net translation loss, recording a net gain of \$2.5 million. Continuous and careful monitoring of the consolidated exposure position in each of the currencies in which we deal, along with the policy of not speculating, and attempting to keep our exposure positions as near neutral as economically and legally feasible, have produced this record, of which we are proud. During 1977 our monitoring

techniques were further strengthened and now cover the anticipation of inter-currency transactions and the consolidation of payments between currencies.

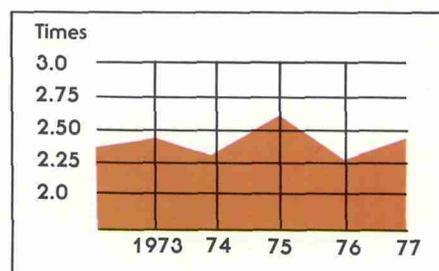
Segment Reporting

Footnote No. 10 to the financial statements contains our compliance with the Statement of Financial Accounting Standards No. 14 (SFAS-14) issued by the Financial Accounting Standards Board in December, 1976. The Statement requires, among other things, information on revenues, operating profit and identifiable assets in industry segments and similar information concerning non-U.S. operations.

Although Motorola continues to regard its operations as being predominantly in one industry—electronic equipment and components—the data required by SFAS-14 is presented for communications products, semiconductor products and automotive products.

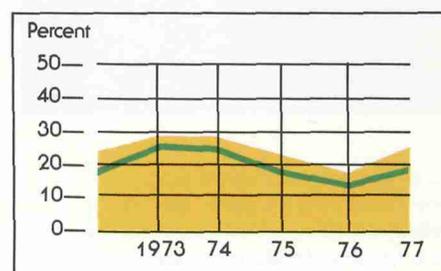
SFAS-14 provides for presentation of segment profit at the "operating" level, before additions or deductions of general corporate expenses, interest expense and income taxes. Certain of these expenses are not uniformly apportionable, related either to revenues or assets. Therefore, any allocation of these expenses to the company's classes of similar products is necessarily subjective, and comparisons to segments of other enterprises may not be meaningful.

Current Ratio*
(As of Year End)



* Current Assets
Current Liabilities

Total Debt to Total Debt plus Equity*
(As of Year End)



■ Total — Net of Marketable Securities
*Long- and Short-Term Debt

Long- and Short-Term Debt plus Stockholders Equity

Consolidated Balance Sheets

(Dollars in thousands)

Motorola, Inc. and Subsidiaries as of December 31	1977	1976
ASSETS		
CURRENT ASSETS		
Cash	\$ 29,981	\$ 22,118
Short-term investments, at cost (approximating market)	85,681	60,972
Accounts receivable, less allowance for doubtful accounts (1977, \$13,513; 1976, \$10,631)	380,156	315,618
Inventories		
Finished goods	133,452	97,521
Work in process and production materials	251,917	232,402
Future income tax benefits	32,190	24,145
Other current assets	36,395	30,690
TOTAL CURRENT ASSETS	949,772	783,466
PROPERTY, PLANT AND EQUIPMENT		
Land	21,183	20,468
Buildings	263,335	246,371
Machinery and equipment	423,099	351,622
Accumulated depreciation	(269,273)	(235,461)
PROPERTY, PLANT AND EQUIPMENT, NET	438,344	383,000
SUNDRY ASSETS, NET	28,617	22,871
TOTAL ASSETS	\$1,416,733	\$1,189,337
LIABILITIES AND STOCKHOLDERS' EQUITY		
CURRENT LIABILITIES		
Notes payable—banks and other	\$ 73,936	\$ 62,708
Current maturities of long-term debt	3,730	1,695
Accounts payable	135,013	116,558
Accrued expenses	131,572	114,895
Income taxes payable	39,638	49,081
TOTAL CURRENT LIABILITIES	383,889	344,937
LONG-TERM DEBT	199,742	101,052
OTHER NONCURRENT LIABILITIES	46,543	37,661
STOCKHOLDERS' EQUITY		
Common stock, \$3.00 par value		
Authorized: 40,000,000 shares		
Outstanding: 1977—30,407,463 shares; 1976—30,365,098 shares	91,222	91,095
Preferred stock, \$100.00 par value issuable in series		
Authorized: 500,000 shares (none issued)	—	—
Additional paid-in capital	153,769	152,932
Retained earnings	541,568	461,660
TOTAL STOCKHOLDERS' EQUITY	786,559	705,687
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	\$1,416,733	\$1,189,337

See accompanying notes to consolidated financial statements.

Statements of Consolidated Earnings and Retained Earnings

(Dollars in thousands, except per share data)

Motorola, Inc. and Subsidiaries, Years Ended December 31	1977	1976
SALES AND OTHER REVENUES	\$1,848,395	\$1,534,881
Manufacturing and other costs of sales	1,138,047	939,105
Selling, service and administrative expense	424,333	353,603
Depreciation of plant and equipment	72,699	57,873
Interest and amortization of debenture discount, expense and premium, net ..	22,901	16,933
Total costs and other expenses	1,657,980	1,367,514
Earnings from continuing operations before income taxes	190,415	167,367
Income taxes	84,150	75,534
EARNINGS FROM CONTINUING OPERATIONS	106,265	91,833
Loss from discontinued operations	—	(2,470)
Net earnings	106,265	89,363
Retained earnings at beginning of year	461,660	393,186
Cash dividends declared (per common share: 1977, \$.880; 1976, \$.735)	(26,357)	(20,889)
Retained earnings at end of year	\$ 541,568	\$ 461,660
EARNINGS PER SHARE FROM CONTINUING OPERATIONS	\$ 3.50	\$ 3.04
Net earnings per share	3.50	2.96
Average shares outstanding (in thousands)	30,393	30,175

Statements of Consolidated Additional Paid-in Capital

(Dollars in thousands)

Motorola, Inc. and Subsidiaries, Years Ended December 31	1977	1976
Balance at beginning of year	\$ 152,932	\$ 143,062
Share option plans	751	8,124
Conversion of 4½% convertible guaranteed debentures	86	1,746
Balance at end of year	\$ 153,769	\$ 152,932

See accompanying notes to consolidated financial statements.

Statements of Consolidated Changes in Financial Position

(Dollars in thousands)

Motorola, Inc. and Subsidiaries, Years Ended December 31	1977	1976
SOURCES OF FUNDS		
Net earnings from continuing operations	\$106,265	\$ 91,833
Add noncash charges		
Depreciation	72,699	57,873
Amortization of deferred debenture discount, expense and premium, net . .	551	225
Funds provided from continuing operations	179,515	149,931
Net loss from discontinued operations	—	(2,470)
Add noncash charge—depreciation	—	985
Funds used by discontinued operations	—	(1,485)
Funds provided from operations	179,515	148,446
Increase in notes payable and current maturities of long-term debt	13,263	9,979
Disposals and other changes of plant and equipment (and tooling), net	7,095	10,951
Increase in long-term debt	98,690	—
Issuance of common stock	964	10,757
Increase in income taxes payable	—	33,155
Other sources, net	23,967	48,522
Total sources of funds	323,494	261,810
USES OF FUNDS		
Increase in receivables	64,538	56,288
Increase in inventories	55,446	39,669
Fixed asset expenditures (includes subsidiary acquired in 1977, \$29)	123,873	97,789
Increase in equipment rented to others, at cost	11,265	5,600
Decrease in long-term debt	—	23,006
Dividends	26,357	20,889
Decrease in income taxes payable	9,443	—
Total uses of funds	290,922	243,241
NET INCREASE IN FUNDS	32,572	18,569
Cash and short-term investments		
Beginning of year	83,090	64,521
End of year	\$115,662	\$ 83,090

See accompanying notes to consolidated financial statements.

Accountants' Report

PEAT, MARWICK, MITCHELL & CO. Certified Public Accountants
222 South Riverside Plaza, Chicago, Illinois 60606

The Board of Directors and Stockholders of Motorola, Inc.:

We have examined the consolidated balance sheets of Motorola, Inc. and Subsidiaries as of December 31, 1977 and 1976 and the related statements of consolidated earnings and retained earnings, additional paid-in capital and changes in financial position for the years then ended.

Our examinations were 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.

In our opinion, the aforementioned consolidated financial statements present fairly the fi-

ancial position of Motorola, Inc. and Subsidiaries at December 31, 1977 and 1976 and the results of their operations and changes in their financial position for the years then ended, in conformity with generally accepted accounting principles applied on a consistent basis.

PEAT, MARWICK, MITCHELL & CO.
February 10, 1978

Notes to Consolidated Financial Statements

1. ACCOUNTING POLICIES: Following is a summary of significant accounting policies used in the preparation of these consolidated financial statements, which policies are in accordance with generally accepted accounting principles.

CONSOLIDATION: The consolidated financial statements include the accounts of the company and all majority-owned subsidiaries. All significant intercompany accounts and transactions have been eliminated in consolidation.

INTERNATIONAL: The company follows the method of foreign currency translation recommended in Statement No. 8 of the Financial Accounting Standards Board. Assets and liabilities expressed in foreign currencies, other than principally fixed assets and inventories, are translated at the approximate period ending rates of exchange; inventories and fixed assets are translated at approximate rates in effect when the assets were acquired. The earnings statements are translated at rates prevailing during the year except for depreciation, amortization and cost of sales, which are translated at historical rates. Gains and losses from currency realignments have been reflected in earnings as incurred.

INVENTORIES: Inventories are valued at the lower of average cost (which approximates computation on a first-in, first-out basis) or market. Market value of work in process and production materials is represented by replacement cost and for finished goods by net realizable value.

INVESTMENT TAX CREDITS: Investment tax credits are recorded as a reduction of income tax expense in the year in which the related assets are placed in service.

PROPERTY, PLANT AND EQUIPMENT: Property, plant and equipment is stated at cost. The cost and accumulated depreciation of items of property, plant and equipment sold, retired or fully depreciated are removed from the related accounts and any gain or loss on disposition is reflected in earnings. Maintenance and repairs are expensed as incurred, while major renewals or betterments are capitalized.

The cost of buildings, machinery and equipment is depreciated generally by the declining balance method, over the estimated useful lives of such assets, as follows: buildings and building equipment, 5-50 years; machinery and equipment, 2-12 years. For income tax purposes, the company has selected the provisions of the Class Life Asset Depreciation Range System (ADR) permitting accelerated depreciation. The tax effect of the difference between book and tax depreciation has been provided as deferred income taxes.

SHARE OPTIONS: When share options are exercised, the proceeds received are credited to the common stock account to the extent of the par value of shares issued, and the excess is credited to additional paid-in capital. The tax benefit that the company receives from disqualifying dispositions by optionees of exercised qualified share options, and from the exercise of non-qualified share options is credited to additional paid-in capital.

EARNINGS PER SHARE: Earnings per share are calculated on average daily shares outstanding.

2. BUSINESS COMBINATION: On May 25, 1977, Motorola exchanged 1,839,957 shares of its common stock for all the common stock of Codex Corporation, a supplier of data communications equipment and systems. This combination has been accounted for as a pooling-of-interests and accordingly, the accompanying consolidated financial statements include the results of operations of Codex for all periods prior to the combination. During the six months ended July 2, 1977, Codex contributed sales and other revenues and net earnings of \$19,445,000 and \$2,423,000, respectively.

Sales and other revenues and net earnings for the year ended December 31, 1976 have been restated as follows:

	Sales and other revenues (Dollars in thousands)	Net earnings
Motorola (as previously reported) . . .	\$1,504,431	\$85,397
Codex	30,450	3,966
Combined (as restated)	\$1,534,881	\$89,363

This combination also caused beginning balances in retained earnings and additional paid-in capital for 1976 to increase by \$6,585,000 and \$3,558,000, respectively.

Prior to the combination, the fiscal year of Codex ended on September 30. The financial information for Codex has been adjusted to conform with the calendar year used by Motorola.

3. INTERNATIONAL OPERATIONS: Net foreign currency exchange gains of \$2,544,000 and \$840,000 are included in earnings for 1977 and 1976, respectively.

The company's equity in net assets of non-U.S. subsidiaries and affiliate at December 31 consisted of the following:

	1977 (Dollars in thousands)	1976
Current assets	\$237,112	\$187,954
Property, plant and equipment, net	93,401	82,390
Current liabilities	(114,393)	(116,735)
Other assets (liabilities), net	(17,722)	(14,764)
Equity in net assets of non-U.S. subsidiaries and affiliate	\$198,398	\$138,845

The company's equity in undistributed earnings of non-U.S. subsidiaries and affiliate included in consolidated retained earnings at December 31, 1977, amounted to \$67,813,000 (\$42,613,000 at December 31, 1976).

Export sales of the company's domestic operations, and sales and other revenues from operations outside the United States accounted for approximately 29% of both 1977 and 1976 consolidated sales and other revenues.

4. LONG-TERM DEBT: Long-term debt at December 31 consisted of the following:

	1977	1976
	(Dollars in thousands)	
Debt outside the United States:		
4½% convertible guaranteed debentures due July 1, 1983	\$ 6,908	\$ 7,016
8% guaranteed sinking fund debentures due March 1, 1987 (net of debentures held by the company for sinking fund payments, none at December 31, 1977; \$1,090 at December 31, 1976)	200	23,910
Notes payable (generally at prevailing prime rates) due in installments to 1991	18,341	13,018
Debt in the United States:		
Commercial paper supported by revolving credit commitments from banks	56,000	30,215
4¾% debentures due April 1, 1986 (net of debentures held by the company for sinking fund payments, \$2,480 at December 31, 1977; \$1,609 at December 31, 1976)	19,020	21,391
8% sinking fund debentures due October 1, 2007	99,702	—
Notes payable bank (outstanding under Codex revolving loan agreement, terminated June, 1977)	—	3,350
9½% industrial revenue bonds due December 1, 1991	—	3,847
Capitalized lease obligations	3,301	—
	203,472	102,747
Less current maturities, included in current liabilities	3,730	1,695
Net long-term debt	\$199,742	\$101,052

The 4½% convertible guaranteed debentures (issued by Motorola International Development Corporation) are convertible into common stock of Motorola, Inc., at the rate of 25.2 shares for each one thousand dollar principal amount, subject to adjustment in certain events, and are guaranteed as to the payment of principal and interest by Motorola, Inc. The debentures are redeemable at various dates at redemption prices reducing from 101.5% to 100% of the principal amount thereof. For the year ended December 31, 1977, \$108,000 in debentures (\$2,245,000 for the year ended December 31, 1976) were converted into 2,720 shares (56,554 in 1976). At December 31, 1977, there were 174,170 shares (176,890 at December 31, 1976) of Motorola, Inc. common stock reserved for issuance upon conversion of these debentures.

The 8% sinking fund debentures due October 1, 2007, are redeemable at various dates at redemption prices reducing from 107.7% to 100% of the principal amount thereof. Annual sinking fund payments are required beginning October 1, 1988 in installments of \$5 million sufficient to retire 95% of the issue prior to maturity. The net proceeds from the sale of the debentures were used to reduce outstanding domestic commercial paper and re-

deem the 8% guaranteed sinking fund debentures (issued by Motorola International Capital Corporation) due March 1, 1987.

On November 10, 1977, the company prepaid all the outstanding industrial revenue bonds (issued by Codex Corporation). In addition, substantially all of the 8% guaranteed sinking fund debentures due March 1, 1987 were redeemed on December 28, 1977 (debentures outstanding at December 31, 1977, have been subsequently redeemed). The premium for prepayment and cost of redemption of the aforementioned issues were not considered material.

The full amount of the revolving credit agreement (\$56 million) extends through March 31, 1980, with \$7 million in equal semi-annual reductions thereafter. Under the terms of the agreement, any borrowings through September 30, 1979, will be at the prevailing prime commercial rate of interest, for the next two years at the prevailing prime commercial rate of interest plus ¼%, and for the last two years at the prevailing prime commercial rate of interest plus ½%. It is the intention of the company to maintain the availability of the revolving credit agreement during 1978, and therefore, the debt is classified as long-term.

The revolving credit agreement restricts retained earnings available for payment of cash dividends. At December 31, 1977, approximately \$237 million (\$157 million at December 31, 1976) of retained earnings was not restricted as to dividend payments. The revolving credit agreement also requires the company to maintain a ratio of consolidated current assets to consolidated current liabilities at not less than 1.75:1.00 and consolidated net working capital (as defined) of not less than \$225 million.

The aggregate maturities and sinking fund requirements for long-term debt during the next five years are as follows:

1978	\$ 3,730,000
1979	3,908,000
1980	18,685,000
1981	18,247,000
1982	18,168,000

The 1980, 1981 and 1982 aggregate maturities and sinking fund requirements each include \$14 million of commercial paper supported by revolving credit commitments.

5. INCOME TAXES: The company provides for income taxes based on earnings reported for financial statement purposes. The components of the provision for income taxes are as follows:

	1977	1976
	(Dollars in thousands)	
Currently payable:		
United States	\$63,336	\$59,069
Other nations	12,232	7,814
State income taxes (U.S.)	7,617	7,014
Total currently payable	83,185	73,897
Deferred	965	1,637
Total income tax expense	\$84,150	\$75,534

Income tax expense differs from amounts currently payable because certain charges are made to earnings in periods other than the periods in which the charges are deducted for tax purposes. The tax effects of these differences are reflected in the

consolidated balance sheets primarily as future income tax benefits. The principal items are as follows:

	1977	1976
	(Dollars in thousands)	
Difference between depreciation recorded for income tax purposes and financial reporting purposes	\$ 4,625	\$ 2,229
Income taxes deferred on profits of Domestic International Sales Corporations	2,411	2,435
(Increase) decrease in:		
Future warranty obligations	(628)	12
Inventory valuations	(7,201)	(89)
Future employee benefits	3,051	(2,533)
Other—net	(1,293)	(417)
Total	\$ 965	\$ 1,637

Total income taxes differ from the U.S. Federal income tax rate of 48%. The principal reasons for this difference are reflected below:

	1977	1976
Statutory U.S. Federal rate	48.0%	48.0%
Increase (decrease) in tax rate resulting from:		
Taxes on earnings in other nations, net of loss operations with no tax benefits and tax holidays	2.4	1.3
Tax benefits arising from tax holiday in Puerto Rico	(4.8)	(4.8)
Investment tax credits	(3.8)	(3.0)
State income taxes	2.1	2.2
Other	.3	1.4
Effective tax rate	44.2%	45.1%

Income taxes have been provided on aggregate earnings of the company's Domestic International Sales Corporations. Income taxes have not been provided on the company's share of certain of the undistributed earnings of non-U.S. subsidiaries. It is intended that these earnings be permanently invested in operations outside of the United States.

At December 31, 1977 certain non-U.S. subsidiaries of the company had loss carryforwards of approximately \$9 million, exclusive of Autovox S.p.A., an Italian subsidiary.

The company's Federal income tax returns have been examined and settled through 1973 by the Internal Revenue Service.

6. SHARE OPTION PLANS: Under the company's employee share option plans, shares of common stock have been made available for grant to employees of the company and certain subsidiaries. The exercise price of options granted may not be less than 100% of market value on date of grant.

The Share Option Plan of 1972 permitted granting of qualified (all of which have been cancelled and replaced with non-qualified options, or have expired) or non-qualified options, exercisable one year from date of grant. Non-qualified options expire ten years from date of grant. Authority to grant options under the 1972

plan was suspended upon implementation of the Share Option Plan of 1977.

The Share Option Plan of 1977 permits the grant of non-qualified options only, which are exercisable in installments commencing one year from the date of grant and expire ten years from such date.

In 1977, outstanding options previously granted to employees of Codex Corporation and its subsidiaries pursuant to the Codex Corporation Qualified Stock Option Plan and the Codex Corporation 1975 Qualified Stock Option Plan were assumed by Motorola. All of the options currently outstanding may be exercised in installments commencing six months after the date of grant, and expire five years from such date.

Information on share options is summarized below:

	1977	1976
Options outstanding beginning of year	1,198,462	1,147,321
Additional options granted	295,765	334,770
Options exercised	(33,870)	(228,463)
Options terminated for discontinued employment	(31,266)	(49,370)
Options expired	—	(5,796)
Options outstanding end of year	1,429,091	1,198,462
Shares reserved for possible future option grants	767,912	32,411
Total shares reserved	2,197,003	1,230,873
Total options exercisable	1,114,572	837,017
Aggregate exercise price of outstanding options	\$67,321,000	\$54,938,000
Aggregate exercise price of exercisable options	\$52,593,000	\$39,106,000

In addition, 5,775 warrants to purchase common stock were exercised by employees of Codex in 1977 (10,653 in 1976).

Options exercised during 1977, including options previously granted to employees of Codex, were at per share prices of \$8.57 to \$46.25 (\$6.93 to \$52.56 in 1976). Options outstanding at December 31, 1977, were at per share prices of \$9.53 to \$63.75.

On January 30, 1978, the company authorized the Compensation Committee to request the mutual cancellation of certain of the company's share options previously granted, and the granting of replacement share options at 100% of market price on date of grant. Qualifying tendered share options will be replaced with share options at the rate of three shares for every four shares offered for cancellation, which are exercisable to the extent, at the times, and in the manner of the cancelled share options. Also, it is the intention of the Compensation Committee that share options for the one share out of every four shares offered for cancellation which were not regranted, will be granted to eligible employees in a new share option grant at the earliest possible date following the regrant.

7. CONTINGENCIES: The company is one of 23 defendants named in a lawsuit commenced on September 20, 1974 by Zenith Radio Corporation ("Zenith") in the United States District Court

for the Eastern District of Pennsylvania. Zenith's complaint alleges conspiracies and other violations of the U.S. antitrust and antidumping laws.

The complaint also challenges, under the U.S. antitrust laws, the purchase by subsidiaries of Matsushita Electric Industrial Co., Ltd. of Japan (collectively with such subsidiaries, "MEI") of certain of the assets and business of Motorola's Consumer Products Division home television receiver business. Prior to the consummation of such purchase, the U.S. Department of Justice, at the request of Motorola and MEI, investigated the antitrust implications of the transaction. During such investigation, the Department of Justice took no legal action to prevent the sale.

For all such alleged violations Zenith claims monetary damages in the aggregate of more than \$300 million (and the trebling of that amount). It seeks judgment against the defendants jointly and individually in that amount plus costs and plaintiff's attorney's fees. It also seeks divestiture by MEI of the assets purchased from Motorola.

In the event a divestiture is ordered or litigation damages are assessed against MEI arising out of such purchase, Motorola has agreed to share to a limited extent certain of the dollar loss, if any, incurred by MEI. The maximum loss for which Motorola could be responsible to MEI under this agreement is \$20 million. Management believes that the company has acted properly throughout and has denied any conspiracy or other violation of law alleged by Zenith.

The company is a defendant in various other suits and claims which arise in the normal course of business and is obligated under repurchase and other agreements principally in connection with the financing of sales.

The company's business under certain United States Government contracts is subject to the provisions of the Renegotiation Act of 1951. Renegotiation has been completed through 1970, and it is the opinion of management that no excessive profits were realized in subsequent years.

The company is contesting a U.S. Equal Employment Opportunity Commission (EEOC) determination on November 4, 1977, that there is reasonable cause to believe that the company has engaged in a pattern and practice of employment discrimination at its facilities in the Phoenix, Arizona area. The company is participating in statutorily mandated conciliation discussions with the EEOC staff. If resolution through those discussions should fail, the EEOC could file suit.

In the opinion of management, the ultimate disposition of these matters will not have a material adverse effect on the business or financial position of the company.

8. DISCONTINUED OPERATIONS: On May 28, 1974, Motorola sold to certain subsidiaries of Matsushita Electric Industrial Co., Ltd., a Japanese corporation, certain of the assets of Motorola's Consumer Products Division home television receiver business. Because of disagreements between the parties, the sales price of the business could not be finally determined until such disagreements (including those applicable to product and service warranty obligations, which were the subject of an arbitration pro-

ceeding) were resolved. All such disagreements were finally resolved in January of 1977, and the loss from discontinued operations from the date of the announcement of the sale (March 12, 1974) to the closing date (May 28, 1974) has been reflected as a non-recurring net loss in the company's 1976 operations.

The 1976 loss from discontinued operations (including the net proceeds from disposition of certain assets not sold to Matsushita) is comprised as follows:

	Pre-Tax	Income Taxes	Net
	(Dollars in thousands)		
Operating losses incurred during the period March 13, 1974 to May 28, 1974	\$(11,878)	\$(5,587)	\$(6,291)
Gain on disposal	1,505	(2,316)	3,821
Loss from discontinued operations	\$(10,373)	\$(7,903)	\$(2,470)

The net gain after tax on the sale and disposition of the assets has been reduced by an estimate of remaining costs applicable to litigation against Motorola brought by Zenith Radio Corporation, which litigation was instituted as a result of the sale to Matsushita.

Income taxes applicable to the gain on disposal vary from the normal corporate Federal income tax rate of 48%, principally because certain assets sold at a gain receive capital gains treatment for income tax purposes, whereas other assets sold at a loss result in a tax benefit at the 48% rate.

9. EMPLOYEE BENEFIT PLANS: As specified in the Motorola Executive Incentive Plan, amended in 1977, the company may provide up to 7% of its annual consolidated pre-tax earnings, as defined, for the payment of cash incentive awards. Awards made in 1978 for 1977 performance and in 1977 for 1976 performance are payable in full or in installments, or may be otherwise deferred at the option of the participant and with approval of the Compensation Committee. Awards granted in 1976 and prior years are payable generally in equal annual installments over a period of five years and are generally subject to the recipient's continued employment. Amounts of \$7,625,000 and \$4,091,000 were provided in 1977 and 1976 for such awards, representing 7% and 4% of earnings from total operations as defined in the respective years. In 1977 awards of \$3,985,000 were made for 1976 performance (\$2,202,000 in 1976 for 1975 performance). Awards for 1977 performance have not yet been determined. At December 31, 1977, \$8,061,000 was available for such awards.

The company and certain subsidiaries have contributory profit sharing plans in which all eligible employees participate. The contributions to profit sharing funds in the United States and other nations, based upon percentages of pre-tax earnings from total operations, as defined, were \$24,062,000 in 1977 and \$18,665,000 in 1976. The company's domestic profit sharing plan was amended effective January 1, 1978, to provide among other things, an increased company contribution which will result in additional company costs in future years.

Prior to January 1, 1978, the company and certain subsidiaries had a voluntary and contributory domestic pension plan. The company's policy is to fund pension costs as accrued: \$6,612,000

in 1977 and \$6,126,000 in 1976. At December 31, 1977 vested benefits were fully funded as determined by the December 31, 1976 actuarial valuation. As amended, effective January 1, 1978, the domestic pension plan is non-contributory and substantially all domestic employees are automatically covered under the plan upon the completion of at least one year of service. Changes in the company's domestic pension plan will result in increased company costs in future years.

In the event that the amount actually payable annually under the plan does not amount to 40% or more of an elected officer's rate of salary at retirement, it is the intention of the company (subject to certain qualifications and conditions) to make supplementary payments so that the total annual payments will aggregate 40% (or 30% in the case of payments to the surviving spouse) of the officer's rate of salary at retirement. The company also provides for annual payments in the amount of 30% of the officer's salary rate to the surviving spouse of an officer who dies while in active employment. The company is accruing for these supplementary payments on a current basis.

In addition, certain foreign subsidiaries have varying types of retirement plans providing benefits for substantially all of their employees. Essentially all of the cost of these plans is borne by the company. Amounts charged to earnings for the plans were \$4,200,000 in 1977 and \$3,100,000 in 1976.

10. INFORMATION BY INDUSTRY SEGMENT AND GEOGRAPHIC AREA: The Financial Accounting Standards Board in December, 1976 issued Statement of Financial Accounting Standards No. 14, "Financial Reporting for Segments of a Business Enterprise" which requires, among other things, that financial

statements for fiscal periods beginning after December 15, 1976 include information about a company's operations in different industry segments, and information about a company's foreign operations. The following disclosures disaggregate elements of the company's financial statements according to the guidelines established by Statement No. 14. However, management in its measurement and review of the company's activities may, from time to time, aggregate or disaggregate operations, or allocate costs among operations as necessary to satisfy internal requirements. In addition, comparisons of the company's product operations to similar operations of other enterprises may not be meaningful.

Motorola operates predominately in one industry, electronic equipment and components. Operations involve the design, manufacture and sale of a diversified line of electronic products, which includes, but is not limited to, two-way radios and other forms of electronic communications; semiconductors, including integrated circuits and microprocessor units; automobile radios, stereo tape players, citizens band radios and other automotive electronic equipment. Within this industry, communications product, semiconductor product, and automotive product sales account for approximately 85% of total revenues from unaffiliated customers.

The company operates manufacturing and distribution facilities outside the United States. No single facility, country or geographic region outside the United States accounts for more than 10% of consolidated sales and other revenues or total assets.

Information about the company's operations in different classes of similar products, as of, and for the twelve months ended December 31, 1977 is summarized below:

	Communications Products	Semiconductor Products	Automotive Products (Dollars in thousands)	Other Products	Adjustments and Eliminations	Consolidated
Sales and other revenues—unaffiliated customers ..	\$821,496	\$551,111	\$196,906	\$277,995	\$ —	\$1,847,508
Interproduct sales and other revenues	1,999	31,189	2,021	5,690	(40,899)	—
Equity in net earnings of 50% owned affiliate	—	—	—	—	887	887
Total sales and other revenues	\$823,495	\$582,300	\$198,927	\$283,685	\$(40,012)	\$1,848,395
Operating profit	\$130,890	\$ 79,977	\$ 11,237	\$ 9,914	\$ (604)	\$ 231,414
General corporate expenses						(18,098)
Interest expense						(22,901)
Earnings before income taxes						\$ 190,415
Identifiable assets	\$571,984	\$389,946	\$144,282	\$193,145	\$(3,550)	\$1,295,807
Investment in net assets of 50% owned affiliate						2,395
Corporate assets						118,531
Total assets						\$1,416,733
Depreciation and amortization	\$ 25,948	\$ 31,498	\$ 8,532			
Fixed asset expenditures	\$ 55,445	\$ 53,137	\$ 9,676			

Information about the company's operations in different geographic regions, as of, and for the twelve months ended December 31, 1977 is summarized below:

	United States	Foreign (Dollars in thousands)	Adjustments and Eliminations	Consolidated
Sales and other revenues—unaffiliated customers . . .	\$1,424,043	\$423,465	\$ —	\$1,847,508
Intergeographic sales and other revenues	244,822	174,627	(419,449)	—
Equity in net earnings of 50% owned affiliate	—	—	887	887
Total sales and other revenues	\$1,668,865	\$598,092	\$(418,562)	\$1,848,395
Operating profit	\$ 201,044	\$ 41,170	\$ (10,800)	\$ 231,414
General corporate expenses				(18,098)
Interest expense				(22,901)
Earnings before income taxes				\$ 190,415
Identifiable assets	\$ 975,822	\$ 346,775	\$ (26,790)	\$1,295,807
Investment in net assets of 50% owned affiliate				2,395
Corporate assets				118,531
Total assets				\$1,416,733

Operating profit was computed as total revenues less operating expenses. In computing operating profit, none of the following items have been added or deducted: general corporate expenses, interest expense, income taxes, and equity in net earnings of a 50% owned affiliate. Identifiable assets are those assets of the company that are identified to classes of similar products or operations in each geographical area, excluding internal receivables. Corporate assets are principally cash and marketable securities, the corporate administrative headquarters, and future income tax benefits. Interproduct and intergeographic transfers are accounted for on an arm's length pricing basis and are consistent with rules and regulations of domestic and foreign taxing authorities.

Sales to United States Federal government agencies aggregated \$194,044,000 during the twelve month period ended December 31, 1977. No other single customer (or group of customers under common control) accounted for 10% or more of the company's sales.

11. LEASE COMMITMENTS: Although the company owns most of its major facilities, it does lease certain office, factory and warehouse space, in addition to data processing and other sundry equipment.

The company classifies and accounts for leases entered into subsequent to December 31, 1976 in accordance with the provisions of Statement of Financial Accounting Standards No. 13, "Accounting for Leases." This statement requires that a lease that transfers substantially all of the benefits and risks incident to the ownership of the property be accounted for as an acquisition of an asset and incurrence of an obligation. Accordingly, certain computer equipment leases have been capitalized. At December 31, 1977, the gross amount of assets recorded under those capitalized leases was \$3,540,000. Associated accumulated

lease amortization was \$260,000. Amortization of property under capital leases is included in depreciation of plant and equipment. The net investment in capitalized leases is included in sundry assets. The company has determined that the effect of retroactive application of Statement No. 13 to leases entered into prior to January 1, 1977 is insignificant.

Total rental expense (including taxes, insurance and maintenance when included in rent) for all non-capital leases (including those with terms of less than one year) reduced by sublease rental income, was \$22,739,000 in 1977 and \$21,159,000 in 1976.

Minimum future obligations on all noncancelable leases with initial terms of one year or more in effect at December 31, 1977 are as follows for the periods ending December 31:

	Capital (Dollars in thousands)	Operating
1978	\$1,242	\$13,578
1979	1,242	9,062
1980	1,242	5,549
1981	884	2,991
1982	—	2,061
Later	—	11,345
Total minimum obligation	4,610	\$44,586
Less executory costs	595	
Net minimum obligation	4,015	
Less amount representing interest	714	
Present value of net minimum obligation	3,301	
Less current portion	767	
Long-term obligation at December 31, 1977	\$2,534	

12. SUPPLEMENTARY DATA: Company funded research and development expenditures, which are charged against operations as incurred, were \$109,729,000 in 1977 and \$96,407,000 in 1976. In 1977, the company further refined its procedures for defining research and development expenditures. Accordingly, 1976 research and development expenditures have been restated.

13. QUARTERLY FINANCIAL DATA (Unaudited): Selected unaudited quarterly financial data for 1977 and 1976 are as follows: (Dollars in thousands, except per share data)

1977	THREE MONTHS ENDED			
	April 2	July 2	Oct. 1	Dec. 31
Sales and other revenues	\$419,164	\$459,696	\$445,664	\$523,871
Gross profit before depreciation (a)	165,807	183,007	161,480	200,054
Net earnings	\$ 24,018	\$ 27,817	\$ 24,291	\$ 30,139
Net earnings per share	\$.79	\$.92	\$.80	\$.99
1976	THREE MONTHS ENDED			
	April 3	July 3	Oct. 2	Dec. 31
Sales and other revenues	\$353,726	\$390,848	\$369,720	\$420,587
Gross profit before depreciation (a)	136,370	154,313	143,322	161,771
Earnings from continuing operations	17,687	23,115	24,054	26,977
Loss from discontinued operations (b)	—	—	—	(2,470)
Net earnings	\$ 17,687	\$ 23,115	\$ 24,054	\$ 24,507
Earnings per share from continuing operations	\$.59	\$.76	\$.80	\$.89
Net earnings per share	\$.59	\$.76	\$.80	\$.81

(a) Profit after manufacturing and other costs of sales exclusive of depreciation expense.

(b) The effect of recognizing the final adjustments on the disposition of the home television receiver business. (See Note 8 of the Notes to Consolidated Financial Statements.)

Peat, Marwick, Mitchell & Co. made a limited review of the 1977 and 1976 quarterly data in accordance with standards established by the American Institute of Certified Public Accountants. Since Peat, Marwick, Mitchell & Co. did not audit the quarterly data for either year, they express no opinion on such data.

14. ESTIMATED REPLACEMENT COST INFORMATION (Unaudited): Requirements of the Securities and Exchange Commission direct the calculation of cost of sales and depreciation expense based on the estimated replacement costs of inventories and fixed assets.

The company's annual review of stated inventory values, confirms level or slightly declining input costs, which coupled with productivity increases traditionally experienced in the electronics industry, indicate that stated costs of inventories and cost of sales approximate a replacement cost basis. Consequently, the company's stated inventory value and cost of sales have not been restated. While the replacement cost of the company's fixed assets would be substantially higher than the stated acquisition cost, and while depreciation charges (straight-line) based on such higher replacement costs would be greater than the 1977 depreciation charge in the consolidated financial statements, management believes (but cannot definitively quantify) that lower costs of operation would result from using newer and more efficient fixed assets and that the savings, which would result from these efficiencies, would at least offset the higher depreciation indicated. Because the SEC's requirements exclude the effect of price level changes on assets and liabilities other than inventories and fixed assets, the data cannot be used to estimate the effect of inflation on the company's operation. Also, because of the inherent subjectivity of the replacement cost disclosure requirements and the consequent differences of interpretation between different companies, management believes that this information has limited significance.

The company's annual report to the SEC on Form 10-K, a copy of which is available upon request, will contain the prescribed SEC disclosure.

MANAGEMENT DISCUSSION AND ANALYSIS OF STATEMENTS OF CONSOLIDATED EARNINGS

1977 versus 1976

Sales and other revenues from continuing operations for the year were \$1,848.4 million compared with \$1,534.9 million in 1976. Substantially all of the 20.4% increase was due to improved unit sales volume.

The sale of communications products increased approximately 20% in 1977 and accounted for more than 40% of the increase in consolidated sales and other revenues. This increase was attributable to an increase in demand with virtually no price increases. Worldwide sales of semiconductor products were up 23% over 1976. This increase was due solely to improved volume, as price decreases made possible because of the continued improvements in productivity, which yield lower unit costs, were passed on to customers. Sales of automotive products increased by approximately 21% reflecting increased demand from the automotive industry.

Manufacturing and other costs of sales increased \$198.9 million (21.2%) in 1977. This increase was consistent with the 20.4% increase in sales and other revenues.

Selling, service and administrative expense increased \$70.7 million (20.0%) over 1976. This increase was consistent with the 20.4% increase in sales and reflected significantly higher employment costs due to both an increase in personnel and increases in certain employee benefits.

Depreciation of plant and equipment increased \$14.8 million (25.6%) over 1976, the result of fixed asset expenditures during the past three years of \$124 million in 1977, \$98 million in 1976 and \$75 million in 1975.

Interest and amortization expense increased \$6.0 million (35.2%) over 1976. This change reflected an increase in both long- and short-term debt and higher interest rates.

The company's overall effective tax rate decreased from 45.1% in 1976 to 44.2% in 1977, due principally to increased investment tax credits.

Net earnings from continuing operations increased \$14.4 million (15.7%) in 1977. This increase reflected level or increased profit margins on the sale of communications, semiconductor and automotive products, offset by start-up costs and operating losses in citizens band radio, watch module and crystal programs, and certain international operations which reduced consolidated profit margins.

1976 versus 1975

Sales and other revenues from continuing operations increased \$198.1 million (14.8%) in 1976. Improved unit sales volume accounted for substantially all of the sales increase.

A \$99 million (28%) increase in sales of semiconductor prod-

ucts in 1976 was solely the result of increased unit volume as an overall decline in average selling prices was experienced. Price declines are typical for these products due to continual improvements in productivity which yield lower unit costs which are, in turn, passed on to the customer. In 1976 the demand for these products also expanded, in part as a result of increased applications of semiconductor devices in areas such as automotive engine monitoring systems, citizens band radios and new high speed microcomputers. Sales of automotive products increased \$36 million (28%) in 1976, a result of the rebound of the automotive industry from the depressed levels of 1975. Only modest price increases were implemented during this period. Sales of communications products increased \$66 million (11%) in 1976, attributable principally to an increase in demand for certain of these products.

Manufacturing and other costs of sales increased \$81.1 million (9.5%) in 1976. This change is slightly less than the sales change, and reflected improved productivity and strengthened cost controls.

Selling, service and administrative expense increased \$34.8 million (10.9%) in 1976 due in part to an increase in sales personnel compared to 1975. This increase was less than the sales increase of 14.8% and reflected the impact of strengthened cost controls which were the result of increased management attention to the internal budgeting process.

Depreciation of plant and equipment increased \$5.0 million (9.4%) in 1976. Interest and amortization expense declined \$4.0 million (19.2%) in 1976 due to reductions in debt and to declining interest rates.

The overall effective tax rate decreased from 47.9% in 1975 to 45.1% in 1976, due primarily to earnings of international operations that were in a loss position in 1975.

Net earnings from continuing operations increased \$46.9 million (104.5%) in 1976 due principally to the earnings contribution of semiconductor and automotive products, which incurred losses in 1975 and returned to profitable positions in 1976.

SALES BY SIMILAR CLASSES OF PRODUCTS

	1977	1976	1975	1974	1973
	(Dollars in millions)				
Communications Products	\$821	\$680	\$614	\$584	\$468
Semiconductor Products	551	447	348	454	419
Automotive Products	197	162	126	144	144

The sales shown in the foregoing table do not include products manufactured by the company and incorporated into other products manufactured and sold by the company. In addition, the sales of Autovox S.p.A., a wholly-owned subsidiary incorporated in Italy, are not included as part of the sales of automotive products reported above.

Ten Year Financial Summary

(Dollars in thousands, except per share data)

Operating Results from Continuing Operations(1)	1977	1976	1975
SALES AND OTHER REVENUES	\$1,848,395	\$1,534,881	\$1,336,793
Manufacturing and other costs of sales	1,138,047	939,105	857,999
Selling, service & administrative expense	424,333	353,603	318,771
Depreciation of plant and equipment	72,699	57,873	52,922
Interest & amortization of debenture discount, expense and premium, net	22,901	16,933	20,953
Total costs and other expenses	1,657,980	1,367,514	1,250,645
Earnings from continuing operations before income taxes	190,415	167,367	86,148
Income taxes	84,150	75,534	41,244
EARNINGS FROM CONTINUING OPERATIONS	106,265	91,833	44,904
RETURN ON SALES	5.7%	6.0%	3.4%
Discontinued operations—profit (loss)	—	(2,470)	—
Net earnings	\$ 106,265	\$ 89,363	\$ 44,904
Per Share Data			
Earnings from continuing operations	\$ 3.50	\$ 3.04	\$ 1.50
Net earnings	3.50	2.96	1.50
Dividends declared88	.735	.70
Balance Sheet and Other Data (2)			
Working capital	\$ 565,883	\$ 438,529	\$ 407,843
Current ratio	2.47:1	2.27:1	2.62:1
Short-term debt	\$ 77,666	\$ 64,403	\$ 54,424
Long-term debt	199,742	101,052	124,058
Stockholders' equity	786,559	705,687	626,456
Less short-term investments	85,681	60,972	38,116
Total invested capital	\$ 978,286	\$ 810,170	\$ 766,822
Return on average invested capital	11.8%	11.7%	5.7%
Return on average stockholders' equity	14.3%	13.8%	7.4%
Yearend employment (approximate)	60,000	56,000	47,000
Average shares outstanding (in thousands)	30,393	30,175	29,864

(1) All periods have been retroactively restated to include the results of operation of Codex Corporation, acquired in 1977 in a business combination accounted for as a pooling-of-interests (See Note 2 of the Notes to Consolidated Financial Statements). In May, 1974, Motorola sold its home television receiver business. Consequently, the 1968 through 1973 operating results have been adjusted to remove the effect of the television business.

(2) All periods have been retroactively restated to include the Codex Corporation. The 1968 through 1973 data has not been restated to exclude the home television receiver business.

1974	1973	1972	1971	1970	1969	1968
\$1,387,994	\$1,213,188	\$906,731	\$719,080	\$672,376	\$668,789	\$560,456
885,775	759,638	609,666	472,234	456,016	439,556	377,994
288,777	242,620	168,118	156,408	124,181	121,530	102,685
44,556	33,819	28,662	25,175	21,865	18,615	15,657
27,682	16,413	10,459	7,808	9,521	11,143	7,784
1,246,790	1,052,490	816,905	661,625	611,583	590,844	504,120
141,204	160,698	89,826	57,455	60,793	77,945	56,336
64,098	72,658	41,181	29,878	33,183	42,274	28,954
77,106	88,040	48,645	27,577	27,610	35,671	27,382
5.6%	7.3%	5.4%	3.8%	4.1%	5.3%	4.9%
(2,184)	(3,477)	4,477	2,202	(6,277)	(1,833)	1,048
\$ 74,922	\$ 84,563	\$ 53,122	\$ 29,779	\$ 21,333	\$ 33,838	\$ 28,430
\$ 2.60	\$ 3.00	\$ 1.70	\$.98	\$ 1.00	\$ 1.40	\$ 1.09
2.53	2.88	1.85	1.06	.77	1.33	1.13
.60	.45	.312	.30	.288	.25	.25
\$ 424,574	\$ 431,405	\$326,315	\$255,478	\$222,395	\$237,560	\$179,387
2.33:1	2.42:1	2.36:1	2.32:1	2.38:1	2.47:1	2.10:1
\$ 90,191	\$ 69,277	\$ 53,950	\$ 48,686	\$ 35,233	\$ 8,949	\$ 36,614
154,960	151,088	81,052	64,530	66,098	90,306	96,601
596,300	529,818	443,259	376,131	345,735	329,486	242,038
26,336	21,982	30,092	4,230	6,070	19,704	27,002
\$ 815,115	\$ 728,201	\$548,169	\$485,117	\$440,996	\$409,037	\$348,251
9.8%	13.3%	10.2%	6.5%	4.9%	8.7%	8.5%
13.6%	17.4%	13.1%	8.3%	6.3%	12.7%	12.8%
51,000	64,000	56,000	49,000	37,000	45,000	41,000
29,658	29,389	28,671	28,048	27,552	25,508	25,150

STOCK PRICE AND DIVIDEND DATA

The table below sets forth the high and low sales price per share for Motorola Common Stock on the New York Stock Exchange and the dividends declared and paid for the periods indicated:

1977	Stock Prices		Dividends		1976	Stock Prices		Dividends	
	High	Low	Declared	Paid		High	Low	Declared	Paid
1st Quarter	\$56.88	\$43.50	\$.210	\$.210	1st Quarter	\$51.00	\$41.25	\$.175	\$.175
2nd Quarter	46.75	36.25	.210	.210	2nd Quarter	59.00	43.50	.175	.175
3rd Quarter	47.25	39.25	.210	.210	3rd Quarter	58.25	51.00	.175	.175
4th Quarter	45.37	33.63	.250	.210	4th Quarter	57.00	47.50	.210	.175
			\$.880	\$.840				\$.735	\$.700

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Officers

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Communications Group
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Communications Distribution Division
Ira W. Walker Vice President and Assistant General Manager
Communications Distribution Division
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Communications Products Division
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Communications Products Division
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Semiconductor Group
Robert R. Heikes Vice President and Assistant General Manager
Semiconductor Group
Earl R. Gomersall Vice President and Director of Manufacturing and
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Pasquale Pistorio Vice President and Director of World Marketing
Semiconductor Group
Gary L. Tooker Vice President and General Manager
Discrete Semiconductor Division
Alfred J. Srein Vice President and General Manager
Integrated Circuits Division

Age
Years of
Service

55 37
51 30
50 25
52 30
48 27
62 26
42 8
50 8
43 9
56 14
52 4
53 26
52 7
62 32
54 26
45 22
61 40
49 11
53 26
51 28
49 21
54 22
51 20
50 6
55 10
49 24
57 29
52 27
55 20
52 8
46 6
42 11
38 16
45 2

Motorola Products

AUTOMOTIVE PRODUCTS DIVISION

Car radios
Stereo tape players
Automotive power amplifiers
Automotive speaker systems
Alternator charging systems
Solid-state ignition systems
Electronic instrumentation
Electronic engine controls
Citizens band radios and antennas

COMMUNICATIONS GROUP

Mobile and portable FM two-way radio communications systems
Radio paging systems
Communications control centers
Signaling and remote control systems
Car telephone systems
Microwave communications systems
Health care communications systems
Precision instruments
Component products
Electronic command and control systems
Mobile data communications systems

GOVERNMENT ELECTRONICS DIVISION

Fixed and satellite communications systems
Space communications systems
Tactical electronics systems
Radar surveillance and display systems
Positioning and navigation systems
Countermeasures systems
Missile guidance systems
Drone control systems
Data security modules
Missile and aircraft instrumentation
Secure communications
Radar mapping service

SEMICONDUCTOR GROUP

MOS and bipolar integrated circuits
Microprocessors
Micro-components and systems
Semiconductor chips
Zener and tuning diodes
RF modules

Power and small signal transistors
Field effect transistors (FETs)
Microwave devices
Optoelectronics
Rectifiers
Thyristors
Varactors
Triggers
Suppressors
Solar energy components
Watch modules

OTHER BUSINESSES

Educational films and materials
CRT display modules
Closed circuit TV systems
Microprocessor test equipment
Information display systems
Industrial process controls
Data communications equipment (modems, multiplexers, network processors, test equipment)
Plasma processing systems

Motorola Worldwide

Major facilities in:

Australia

Melbourne

Belgium

Brussels

Canada

Willowdale, Ontario

Denmark

Frederikssund

France

Angers

Toulouse

Great Britain

Basingstoke and

Stotfold, England

East Kilbride, Scotland

Hong Kong

Kowloon

Israel

Tel-Aviv

Italy

Rome

Japan

Tokyo

Korea

Seoul

Malaysia

Kuala Lumpur

Penang

Mexico

Guadalajara, Jalisco

Mexico City, D.F.

Nogales, Sonora

Puerto Rico

Arecibo

Vega Baja

South Africa

Bramley, Transvaal

Switzerland

Geneva

United States

Arizona

Mesa

Phoenix

Scottsdale

Tempe

Florida

Fort Lauderdale

Illinois

Carol Stream

Chicago

Franklin Park

Lombard

Schaumburg

Massachusetts

Mansfield

Newton

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