

MOTOROLA ANNUAL REPORT 1963



THE COVER: THIS DRAMATIC PHOTOGRAPH OF THE MASSIVE WHITE BRICK TOWER ON MOTOROLA'S ADMINISTRATION BUILDING AND MANY OTHERS IN THIS REPORT WERE TAKEN BY LEONARD ZBIEGIEN, PHOTOGRAPHER IN MOTOROLA'S MILITARY DIVISION.



TABLE OF CONTENTS

HIGHLIGHTS OF 1963 / 2 BOARD OF DIRECTORS / 2

LETTER TO SHAREHOLDERS / 3

FINANCIAL REPORT: BALANCE SHEET / 4

STATEMENT OF EARNINGS / 6 TEN YEAR FINANCIAL SUMMARY / 7

OPERATING DIVISION SUMMARIES / 8-10

PICTORIAL PRESENTATION OF FACILITIES / 11-20

SALES AT RECORD \$377 MILLION, UP NEARLY 9%
OVER \$346 MILLION IN 1962.

OPERATING EARNINGS \$3.21 PER SHARE, UP NEARLY 6%
OVER \$3.03 FOR 1962.

CAPITAL EXPENDITURES \$22,200,000.

TOTAL NEW FACILITIES IN EXCESS OF
600,000 SQUARE FEET.

COMPLETE NEW TRANSISTORIZED PORTABLE
2-WAY RADIO LINE.

INITIAL PRODUCTION OF COLOR TV SETS WITH
MOTOROLA-DEVELOPED PICTURE TUBE.

DOLLAR INCREASE OF 30% IN SEMICONDUCTOR SALES.

NOTEWORTHY PROGRESS IN SALES OF ALTERNATORS
AND IGNITION SYSTEMS.

MILITARY DIVISION SALES HIGHEST SINCE WORLD WAR II.

SIGNIFICANT CONTRACTS FOR INTEGRATED CIRCUITS.

INITIAL INSTALLATION OF SOLID STATE DATA, TELEMEMORY
AND PROCESS CONTROL SYSTEMS.

AEROSPACE ASSIGNMENTS FOR GEMINI RENDEZVOUS
AND APOLLO MOON FLIGHTS.

Board of Directors

FIRST ROW

Matthew J. Hickey, Jr.
Daniel E. Noble
Arthur L. Reese



SECOND ROW

Walter B. Scott
Edward R. Taylor
Edwin P. Vanderwicken
Elmer H. Wavering

NEXT PAGE

Robert W. Galvin



Motorola's businesses are based on the electronic sciences. Since the mid-1950s the electronic sciences have expanded at an accelerating pace. This new knowledge opened many new commercial opportunities.

Starting from that period until recently, Motorola's efforts have been directed to searching for many of the new applications of this expanding electronic science. One of our basic concerns was selecting the most promising of them. As we searched we found many such opportunities. In consumer products, we could look forward to color television. In automotive products, we foresaw new electronic applications in alternators and ignition systems. New techniques in communications and new uses such as hospital communications could strengthen our communication service to society. The advent of the solid state science offered new opportunities in componentry and in the general field of controls. In order to keep abreast of the technologies that were to be learned in the military and space fields, we determined that three separate government products laboratories were desirable. And also, we anticipated potential in aircraft communications/navigation and hearing aids.

Although we elected not to pursue certain potentially promising business opportunities because we did not feel that we could successfully activate each of them, we felt that it was necessary for timing, competitive and growth reasons to reach out and establish ourselves in many such as outlined above.

The important factor that we want to emphasize to the shareholders about these efforts at this time is that in 1963 the corporation turned its attention to the consolidation and firming up of these various efforts as well as the

pruning of a few that no longer fit our objectives. In the course of this consolidating exercise it was evident that one of our military facilities was no longer essential as a separate entity, so we merged our Riverside, California laboratory with our Western Military Center in Phoenix. The aircraft radio business was judged to require either considerable additional investment or consolidation with a company whose products would complement ours. We chose the second course and sold our aircraft radio operations to another firm. The hospital communications activity was moved into our Communications Division. The hearing aid business proved not to fit the Motorola complex. It was sold back early in 1964 to one of the principals from whom it was originally acquired.

However, most of the areas of emphasis, selection, and increased commitment are developing and growing soundly. Although not content with their earnings in all cases, we are confident that each of them ultimately, and most of them shortly, will contribute to a stronger company.

Our Communications Division again enjoyed growth during 1963 and contributed improved earnings. The prospects are for further growth in 1964.

The Automotive Division enjoyed an outstanding sales year in car radio, and firmly established itself in the alternator business. Sales prospects are good for 1964.

The Consumer Products Division suffered from the industry-wide reduction in radio sales and the disappointing year in stereophonic phonographs. Its sales of black and white television were well maintained although somewhat affected by lack of color television to complete the line. The Division's efforts to introduce our new 23" rectangular, short-necked color television tube were delayed because of processing difficulties. The tube is now back in production at an accelerating pace and we hope color television will contribute significantly to both sales and earnings in 1964.

Motorola's contribution to the military and space programs continues to be important to the nation as well as the company. Military sales continue to represent approximately 15% of our activities. The Division operated at an improved earnings level.

The Semiconductor Division again enjoyed significant growth and achieved major advances in device performance as well as in integrated circuit development. Further growth and improved profitability are anticipated.

The company has determined that the general field of controls represents a significant long-term opportunity. Losses will be incurred again in 1964 as we prepare for this future. The losses will be reduced during the year, and the prospects for 1965 are brighter.

Revenues from Motorola's international business improved in 1963 and are anticipated to increase again in 1964.

We expect the corporation will show increases in both sales and earnings in 1964.

FOR THE BOARD OF DIRECTORS



MARCH 13, 1964

PRESIDENT



Motorola, Inc. and Subsidiaries

CONSOLIDATED BALANCE SHEET AS OF DECEMBER 31

ASSETS	1963	1962
<i>Current assets</i>		
Cash	\$ 7,876,905	\$ 6,951,241
Short-term investments, at cost	4,766,123	11,815,863
Accounts receivable		
United States government	12,803,501	10,317,838
Other	59,888,040	60,907,231
Allowance for doubtful accounts	(2,478,099)	(1,621,023)
Costs recoverable under United States government contracts, less progress billings	5,839,035	9,915,619
Inventories, at the lower of average cost or market	49,348,825	42,633,352
Other current assets	<u>2,452,083</u>	<u>2,702,538</u>
<i>Total current assets</i>	140,496,413	143,622,659
Plant and equipment—less depreciation (note 1)	67,283,543	54,783,818
Sundry assets, net	3,206,174	3,889,812
Patents and debenture expense—less amortization	491,284	532,933
	<u>\$211,477,414</u>	<u>\$202,829,222</u>

NOTES TO FINANCIAL STATEMENTS

1/The companies' investment in plant and equipment at December 31, 1963 and 1962 was as follows:

	1963	1962
Land—at cost	\$ 3,127,574	\$ 3,535,240
Buildings—at cost, less depreciation (1963, \$13,719,523; 1962, \$11,316,989)	39,950,000	31,283,655
Machinery and equipment—at cost, less depreciation (1963, \$18,718,554; 1962, \$15,525,093)	21,662,502	17,628,179
Dies, tools, and leasehold improvements—at cost, less amortization	<u>2,543,467</u>	<u>2,336,744</u>
	<u>\$67,283,543</u>	<u>\$54,783,818</u>

Forty-eight per cent (\$448,000 in 1963 and \$219,000 in 1962) of the "investment credit" in respect of acquisition of qualified facilities, obtained under the Internal Revenue Act of 1962 as a credit against the federal income tax liability of the companies, has been applied by them as a reduction of federal income tax ex-

LIABILITIES

Current liabilities

	1963	1962
Current maturities of long-term debt	\$ 1,570,594	\$ 1,567,424
Accounts payable—trade	20,360,029	21,942,506
Federal income taxes, less United States Treasury obligations of \$9,450,950 in 1963 and \$8,282,316 in 1962	—	—
Other taxes	4,109,097	3,681,571
Contribution to employees' profit sharing fund	4,210,417	4,236,647
Product and service warranties	1,237,257	1,178,234
Other	<u>16,650,167</u>	<u>14,212,088</u>
<i>Total current liabilities</i>	<u>48,137,561</u>	<u>46,818,470</u>
Long-term debt (note 2)	<u>42,604,486</u>	<u>44,175,039</u>
Shareholders' equity		
Capital stock, \$3.00 par value.		
Authorized, 6,000,000 shares.		
Outstanding, 4,026,872 shares (net of 3,410 treasury shares) (note 3)	12,080,616	12,080,616
Additional paid-in capital	13,844,820	13,844,820
Retained earnings (note 4)	<u>94,809,931</u>	<u>85,910,277</u>
<i>Total shareholders' equity</i>	<u>120,735,367</u>	<u>111,835,713</u>
	<u>\$211,477,414</u>	<u>\$202,829,222</u>

pense for the respective years; the remaining 52% portion has been deferred to subsequent periods to offset the effect of reduced depreciation allowances arising from the total credit.

2/Long-term debt at December 31, 1963 and 1962 consisted of the following:

	1963	1962
4¾% Debentures due April 1, 1986 (with annual sinking fund requirements commencing in 1967)	\$30,000,000	\$30,000,000
Notes payable		
3¾%, due \$1,000,000 annually to 1965, \$1,500,000 in 1966, and \$500,000 annually thereafter to 1972	6,500,000	7,500,000
4¾%, due \$500,000 annually, 1964-1976	6,500,000	7,000,000
Real estate mortgages	<u>1,175,080</u>	<u>1,242,463</u>
	44,175,080	45,742,463
Less current maturities, included in current liabilities	<u>1,570,594</u>	<u>1,567,424</u>
Noncurrent portion of long-term debt	<u>\$42,604,486</u>	<u>\$44,175,039</u>

3/Under the Employee Share Option Plan adopted in 1960, options may be granted to key employees to purchase Motorola, Inc. shares at not less than 95% of market value at date of grant. The options granted become exercisable two years after the date of grant; they expire at the end of ten years and are contingent upon continued employment by the company or its subsidiaries.

During 1963 options to purchase 39,000 shares were granted and options on 5,500 shares were terminated; no options were exercised. At the year end 90,080 shares were under option, at an aggregate option price of \$6,527,000, of which 45,380 shares were currently exercisable, in the total amount of \$3,393,000; an additional 109,900 shares were reserved for options which may be granted until May 2, 1965.

4/At December 31, 1963 approximately \$32,435,000 of retained earnings was free from dividend restrictions contained in the debenture and note agreements.

5/The companies are obligated under repurchase and other agreements, principally in connection with the financing of sales of products to consumers, and are defendants in suits and claims, which it is believed will have no material effect on the business of the companies.

Motorola, Inc. and Subsidiaries

STATEMENT OF CONSOLIDATED EARNINGS AND RETAINED EARNINGS

YEARS ENDED DECEMBER 31

	1963	1962
SALES AND OTHER REVENUES	\$377,852,809	\$346,881,779
Manufacturing and other costs of sales	275,720,213	250,434,021
Selling, service, and administrative expenses	60,406,904	55,788,368
Depreciation of plant and equipment	8,150,707	7,416,150
Contribution to employees' profit sharing fund	4,210,417	4,236,647
Interest and amortization of debenture expense	2,238,042	2,492,079
<i>Total costs and other expenses</i>	<u>350,726,283</u>	<u>320,367,265</u>
Income before federal income taxes	27,126,526	26,514,514
Federal income taxes	<u>14,200,000</u>	<u>13,308,000</u>
EARNINGS (per share outstanding at end of year: 1963, \$3.21; 1962, \$3.03 plus 25¢ of nonrecurring capital gain from sale of finance subsidiary)	12,926,526	13,206,514
Retained earnings at beginning of year	<u>85,910,277</u>	<u>76,731,535</u>
<i>Total</i>	98,836,803	89,938,049
Cash dividends declared — \$1.00 per share	<u>4,026,872</u>	<u>4,027,772</u>
Retained earnings at end of year (note 4)	<u>\$ 94,809,931</u>	<u>\$ 85,910,277</u>

See accompanying notes to financial statements.

ACCOUNTANTS' REPORT

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

We have examined the consolidated balance sheet of Motorola, Inc. and subsidiaries as of December 31, 1963 and the related statement of earnings and retained earnings for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances. It was not practicable to confirm accounts receivable from United States government departments or agencies by communication with them but we satisfied ourselves as to such accounts by means of other auditing procedures.

In our opinion, the accompanying consolidated balance sheet and statement of consolidated earnings and retained earnings present fairly the financial position of Motorola, Inc. and subsidiaries at December 31, 1963 and the results of their operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

PEAT, MARWICK, MITCHELL & CO.

Chicago, Illinois, February 24, 1964

Ten Year Financial Summary

	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963
SALES AND OTHER REVENUES	\$206,821,801	228,428,063	229,266,055	228,431,385	218,909,968	293,081,127	301,049,185	298,219,845	346,881,779	377,852,809
INCOME BEFORE INCOME TAXES	\$16,523,889	18,740,426	16,936,334	15,756,431	15,171,013	27,756,237	26,548,813	19,900,308	26,514,514	27,126,526
EARNINGS	\$7,572,024	8,490,539	7,966,817	7,824,431	7,356,213	14,171,237	12,633,813	9,517,308	13,206,514	12,926,526
EARNINGS PER SHARE *	\$1.96	2.19	2.06	2.02	1.90	3.59	3.14	2.36	3.03	3.21
WORKING CAPITAL	\$38,308,612	42,892,165	54,936,569	56,425,360	59,585,830	63,336,998	73,790,019	95,078,616	96,804,189	92,358,852
NET INVESTMENT IN PLANT AND EQUIPMENT	\$16,579,531	19,179,992	25,388,866	27,167,597	27,615,287	33,436,676	44,594,599	48,427,446	54,783,818	67,283,543
SHAREHOLDERS' EQUITY	\$50,598,747	56,186,590	61,305,080	66,172,446	71,533,020	83,338,386	97,166,850	102,655,506	111,835,713	120,735,367

* Earnings per share are based on the number of shares outstanding at the end of the respective years, adjusted for subsequent share distributions. Earnings per share shown above for 1962 do not include 25c of nonrecurring capital gain from sale of finance subsidiary.

Operating Division Summaries

COMMUNICATIONS

The Communications Division maintained a position of leadership in its field despite increased competition.

Realignment of the marketing structure in 1962 involving a new sales area headquartered in Atlanta, contributed to the gain by providing more intensive coverage of prospective customers.

Nationwide sales to railroads, trucking companies, airlines and to the Bell and General Telephone companies improved during the year through concentrated sales efforts in these areas.

In applying technological advances to specific market requirements, the Division introduced several significant new products in 1963. New models of the industry's leader—the MOTRAC two-way radio—were developed for operation in the 450 megacycle frequency band along with a series of base stations. The 450 mc frequencies are the least crowded of those available to commercial radio users. A major customer for this new equipment was the Chicago Yellow Cab Company with 500 units.

Important two-way radio contracts during the year included statewide networks for the Iowa Highway Department, the Washington State Highway Patrol, and Washington State Department of Natural Resources. In the public utility field, large systems were delivered to The Detroit Edison Company and Northern Illinois Gas Company.

In 1963, the hospital communications product engineering and manufacturing activities were moved from Minneapolis to the Chicago plant for closer coordination with the companion radio paging and closed-circuit television lines. Motorola gained recognition as the leading full line supplier of hospital communications systems. A nationwide series of hospital symposia during the year was attended by more than 1,000 administrators, architects and consultants.

Installation of systems for an increasing variety of uses highlighted the progress in the closed-circuit television product line. A few of the applications involved: telecasting United Airline flight information in terminals across the nation; watching steel mill blast furnaces; inspecting otherwise hard-to-reach sewers; and counting railroad cars in yard areas.

More progress was made in resolving the intricate problems of traffic control. Motorola radio traffic control systems went on the air in Tampa and Miami, Florida. Existing systems in Los Angeles and Washington, D.C. were expanded.

CONSUMER PRODUCTS

Sales of the Consumer Products Division were approximately the same as 1962 while earnings were reduced as a result of heavy expenditures for the development of the new color television picture tube and the initiation of production at National Video Corporation.

The Division had planned to provide its distributors and their dealers with color television receivers employing the Motorola-designed 23-inch rectangular short-neck picture

tube in the second half of 1963. However, technical problems affecting yields were encountered in getting the tube into production. As a result, output was temporarily suspended and the timetable was delayed by about six months.

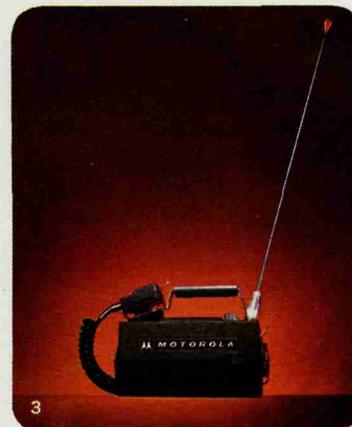
All during this period a most rigorous program of field testing was carried out with satisfactory results, and limited production was resumed at year end. Shipments of color receivers with the new picture tube began trickling out to distributors in January and will increase as production accelerates.

The delay proved costly during 1963, both in terms of engineering expense and lack of color TV sales volume. An indirect effect was the reluctance of dealers to buy other Motorola consumer products until they received delivery of the wanted rectangular tube color sets.

Motorola will continue in 1964 to market color receivers at the lower price ranges with the same 21-inch round tube used by other TV makers, but will be the only manufacturer to deliver 23-inch receivers with the new rectangular color tube for some time to come.

Product innovations in 1963 also included several interesting radio and phonograph developments. Among these were the "Tandem" clock-portable radio, a complete line of FM/AM combination car radios, a cushioned window bench stereo phonograph and a uniquely styled line of FM stereo radios.

A most unusual challenge was presented by The Greyhound Corp.—to provide personal passenger radio listening



Important new products introduced in 1963 include: 1) transistorized 450 megacycle MOTRAC radio; 2) pushbutton radio-telephone; 3) transistorized solid-state "Handie-Talkie" portable radiophone.



Top of Motorola's diverse line of color television sets is this 23-inch color television-stereo phonograph combination in a stunning Triune cabinet by Drexel, with built-in FM/AM stereo radio.

while at the same time overcoming inherent problems of pilferage, sanitation and quality reception. Motorola designed a system and initial installations have been made in Greyhound buses on the east coast.

Decided improvement in sales and profits is anticipated for 1964 with the company becoming an increasingly important factor in color television.

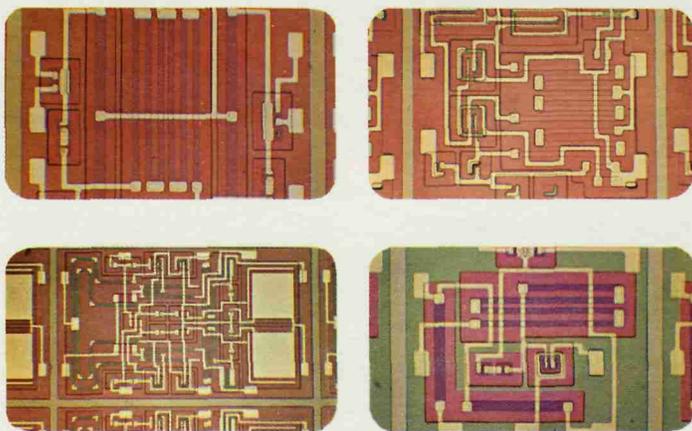
SEMICONDUCTOR PRODUCTS

A 45 percent expansion of physical facilities, 30 percent increase in dollar sales volume, introduction of new products, and significant progress in integrated circuitry summarize the year's results for the Semiconductor Products Division.

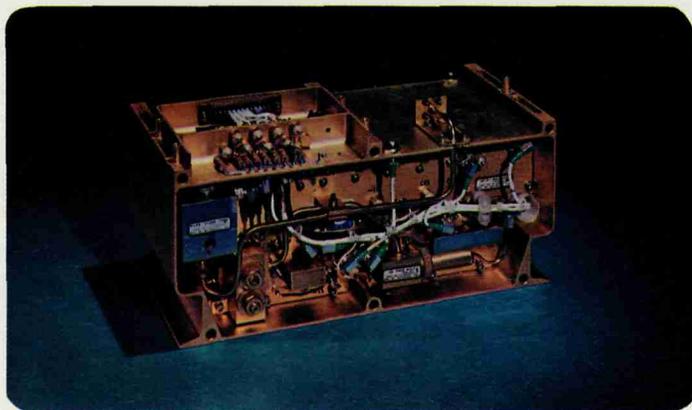
The Division completed more than 400,000 feet of added space designed for the development and production of basic semiconductor materials, semiconductor processing, and manufacture of integrated circuits.

Motorola was one of the few firms in the industry that increased sales volume in 1963. This was largely the result of the continuous research and development activity which produced a large number of new products, enabling the Division to compete in every major product area with as broad a line of devices as that offered by any company in the industry.

Three major new product lines opening up new markets were: 1) the Silicon Controlled Rectifier—a small device



These four examples of the types of integrated circuits being developed by the Semiconductor Products Division help illustrate the progress made in this new art during 1963.



This "box" contains miniaturized circuitry which will enable astronauts to communicate with earth in Apollo moon spacecraft. Number of parts approximates those in five conventional television sets.

with a vast potential in the consumer area, providing infinite control of light and infinite variation of appliance motor speeds; 2) the High Current Rectifier—a versatile device made by a new technique that is helping the Division enter the large "electrical" market which includes such equipment as welding machines and elevators, electroplating equipment and other high-current-usage machinery; 3) the PNP Silicon Transistor—made by a new process (patent applied for) which will give Motorola a leadership position in this portion of the silicon transistor market.

The Division also introduced new lines of varactor diodes, high-frequency silicon RF transistors, and multiple devices with two or more silicon transistors in the same package.

The highlight of the year was the progress made in integrated circuits. In the new building, the Division put into effect its integrated circuitry plans. A major product introduction was Motorola's MECL system of integrated circuits for logic applications. This new series features a complete complement of circuits for designing entire computer systems using the current mode logic scheme.

During the year Motorola also designed, developed and delivered a wide range of both linear and logic integrated circuits and became one of the first manufacturers to supply integrated circuits to military specifications.

As a result of this proven performance and capability, the Division has received a number of significant orders for custom-built integrated circuits, including one order to supply seventeen types of integrated circuits for an advanced computer being developed by Autonetics Division of North American Aviation Company.

MILITARY ELECTRONICS

Activities of the Military Electronics Division during 1963 resulted in the largest volume of sales to the government since the close of World War II. Sales were up more than 15 percent, and profits improved over the previous year.

The Division's role in military and aerospace systems during 1963 was highlighted by participation in programs ranging from manned space flight to communications and surveillance systems for ground troops. Perhaps the best known of these is the challenging Apollo manned lunar exploration. For Apollo, the Division is building a telecommunications system which will provide a link over which astronauts will transmit information to an anxiously awaiting world.

Motorola equipment will play another vital role in the Gemini man-in-space program. This is the program designed as a second step to Mercury and as prerequisite to moon landing.

The Division, too, will provide key equipment for the Saturn vehicle, the launch booster which will carry the Apollo spacecraft on its first thrust into space.

But, while the aerospace programs of the Division are important and challenging, there are others, less well known, which are equally as important and vital to national defense.

Early in the year, the Division received a two-million dollar contract to develop the U.S. Army's new concept in communications called RADA (Random Access Discrete Address). The system is designed to provide, without a central switching station, private line radio communication for many users.

The Air Force installed a Motorola supplied data acquisition and transmission system at its Edwards test center. The system is for use in test flights of various aircraft ranging from the RS-70 to the X-15.

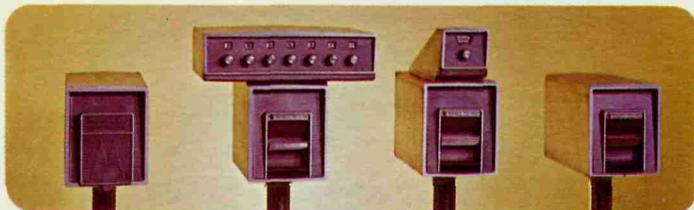
The Division is supplying the Digital Command Guidance System for the Navy's DASH, or drone antisubmarine helicopter.

The decision to concentrate research and engineering effort upon selected applications of microcircuitry and integrated circuits in the areas of space exploration and space tactical systems has placed the Division in a very strong competitive position. Governmental spending in these areas is rising, in sharp contrast to the general trend toward reduction of expenditures.

Since the Division cannot hope to cover the total military electronics field, selectivity is the key to an approach which will enable the Division to identify the most rewarding research and development programs and participate in the new pace-making patterns which are developing under pressure from the rapidly changing technology.



Products for the automotive industry manufactured by Motorola include electronic alternator systems with their companion transistorized voltage regulators (left), transistor ignition systems (upper right), and car radios (lower right).



Flexibility is provided through these variations in the card reader equipment which is part of Motorola's data system concept.

AUTOMOTIVE PRODUCTS

The automobile industry's second successive seven-million car year helped boost the Automotive Products Division to record sales for 1963.

Motorola supplied fully transistorized radios to Ford Motor Company, Chrysler Corporation, American Motors Corporation, Renault, Inc. (U.S.), Checker Motors Corporation and International Harvester Company. Units supplied

to American Motors Corporation included combination AM/FM transistorized radios.

Motorola will begin supplying radios for two new customers in 1964—Volkswagen (U.S.) and The White Motor Company.

In 1963, the Division established an aftermarket distributor organization for sale of electronic alternator systems and transistor ignition systems. The new organization serves the entire United States and Canada through 55 major distributing points.

The alternator product line was expanded during the year giving Motorola a range of systems designed to meet practically any vehicle application. Additions included 30 and 45 ampere alternators featuring an enclosed chamber for protection against high humidity, dust and other adverse atmospheric conditions. The units are especially suited for marine, agricultural, construction and various industrial applications. Also added to the line were heavy duty alternators ranging in capacity from 70 to 120 amps for use in trucks, buses and other heavy equipment.

The Division supplied alternators for original equipment to American Motors Corporation, Checker Motors Corporation and Kaiser Jeep Corporation (Willys).

Alternator systems are now being built for three European manufacturers through Motorola's joint venture in France, S.E.V./Motorola S.A. These companies are Renault in France, BMW in Germany, and AB Volvo Penta in Sweden. A new manufacturing plant has been purchased in Blois, France, for alternator production.

Sales of transistor ignition systems increased during the year. They are being adopted in growing numbers by fleet operators for the reliability and economy advantages they offer.

SOLID STATE SYSTEMS

The Division's second full year of operation brought significant advances.

During the year there were initial installations of control systems for each of the three major product lines. The sales and field engineering organization was strengthened. By year end, the successful performance of the initial installations was creating customer acceptance for the technological and economic advantages of solid state systems.

The three major product lines are: digital supervisory systems for remote monitoring and control in petroleum, gas, water and power industries; digital data acquisition systems for monitoring loading operations at bulk petroleum plants and terminals; and analog control systems for monitoring and control in the continuous process fields such as the chemical, oil refining, petro-chemical, food processing and paper industries.

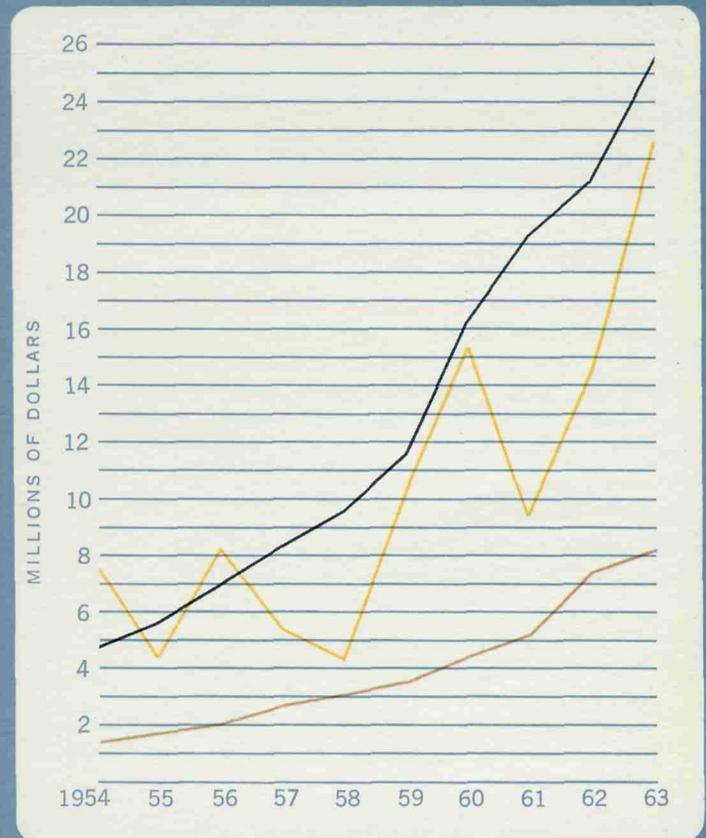
These product lines were designed specifically in recognition of the needs existing among industries where there is a high degree of integrated operations in the processing, distribution and transportation of products.

In 1963, among the companies contracting for Motorola systems were Humble Oil, Gulf Oil, Pittsburgh Plate Glass, Celanese, Cities Service, Monsanto Chemical, Mountain Fuel Supply, Arizona Public Service, American Oil, Natural Gas Pipeline of America and many others.

Facilities

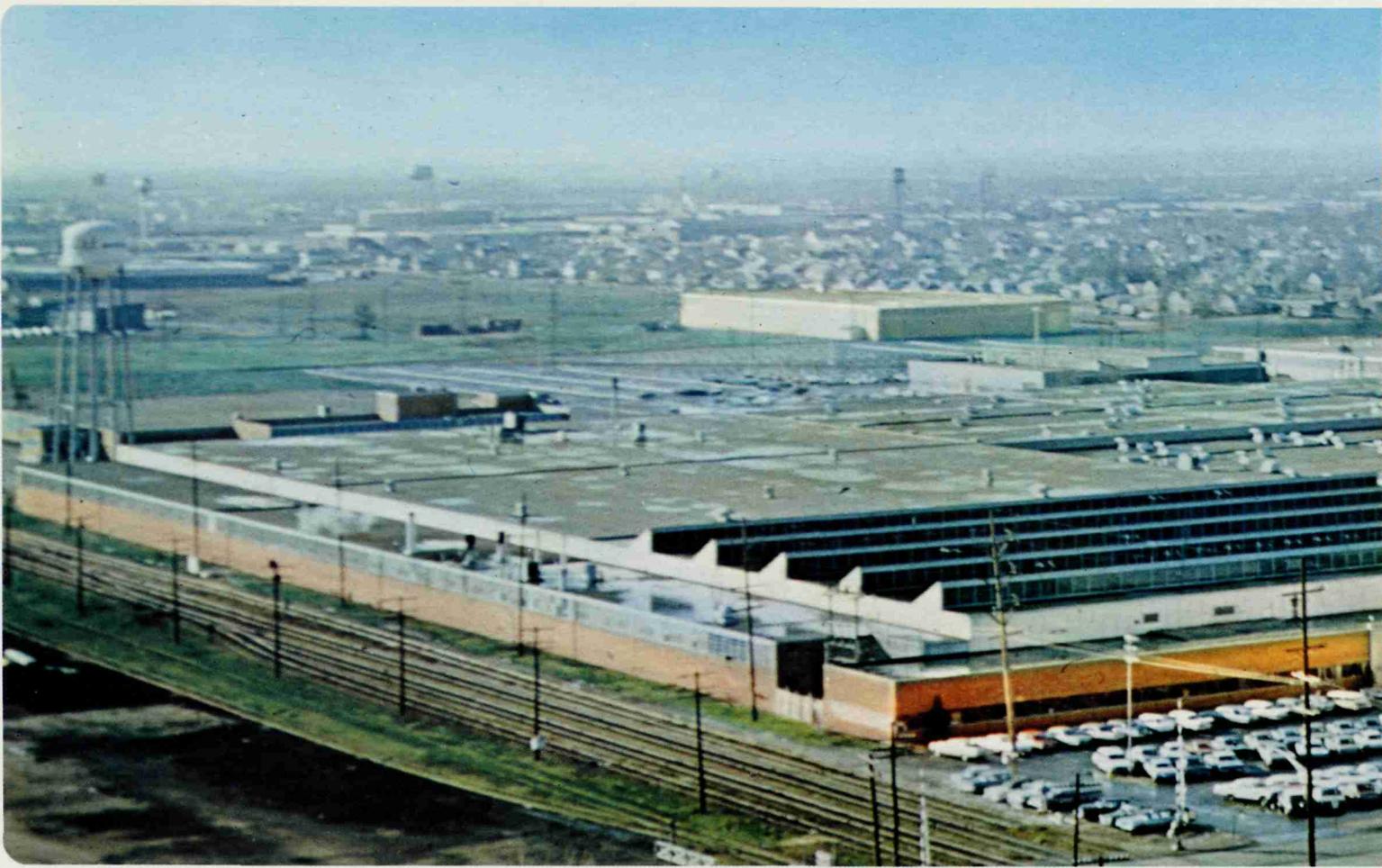
It is helpful in the case of Motorola to view the record of capital expenditures for plant, laboratories and equipment, and the resulting depreciation expense which is incurred as related to company-sponsored research and development expense. Motorola's capital expenditures result from growth of existing businesses but, in even greater degree, from the revolutionary electronic arts which Motorola has been exploring and the policy of the company to diversify into new businesses. Semiconductors, integrated circuits and solid state control systems are examples. Probably the most significant technological revolution in American industry is taking place in these new fields.

From the chart below it is apparent that research and development and depreciation expense, combined, have increased from \$6 million in 1954 to over \$33 million in 1963. Beyond these expenses, there have been losses and costs associated with getting started in the new products and businesses that have grown out of the development efforts. The chart may suggest the fundamental changes in the nature of the company and its physical facilities in the past decade which have originated in great part as the result of the growth of research and development expenditures.



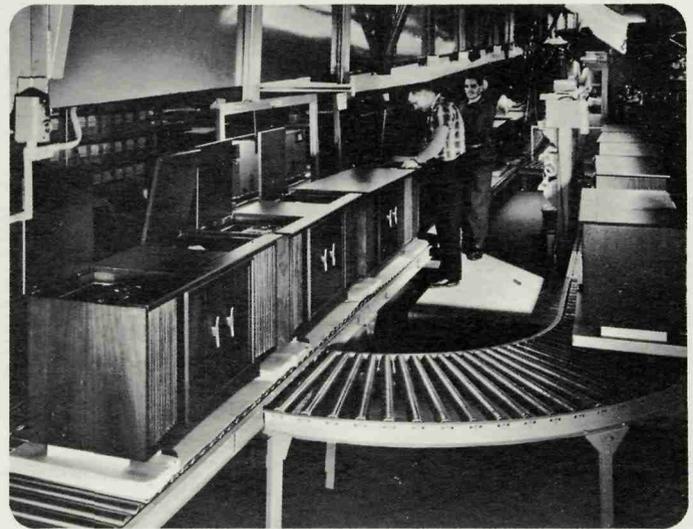
- COMPANY-SPONSORED RESEARCH AND DEVELOPMENT
- CAPITAL EXPENDITURES
- DEPRECIATION

In its 35 years, Motorola has grown to 19,000 people in eight major facilities now encompassing nearly four million square feet. The following pages contain a pictorial presentation of our physical facilities in a manner we hope indicates our growth and our increasing capabilities across a broad range of the electronic arts.

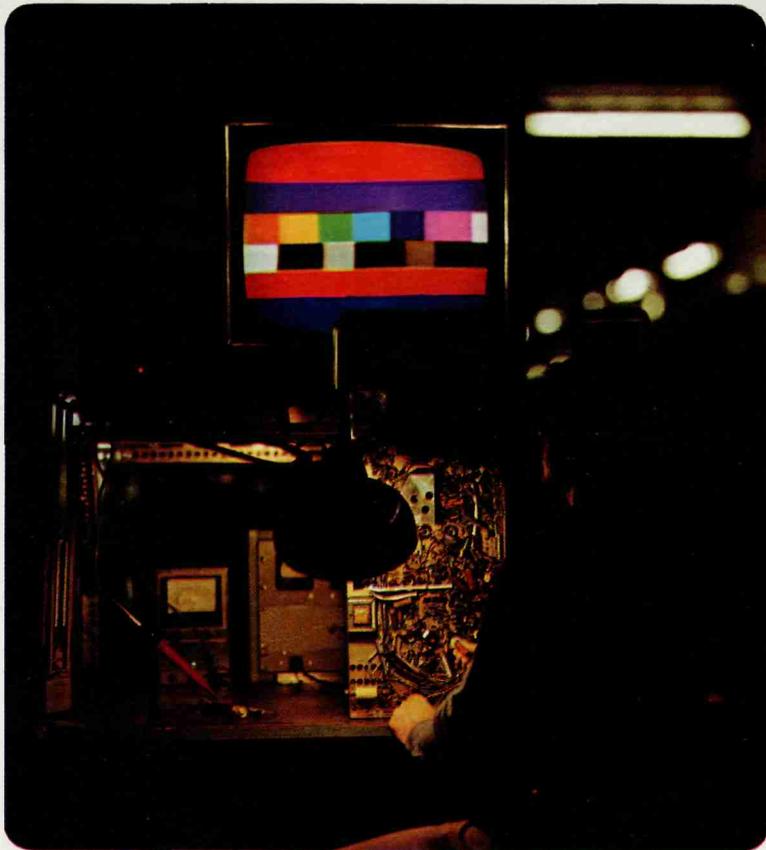


Franklin Park, Illinois

Administrative and manufacturing facilities are combined at this location, covering 907,200 square feet of space. Television receivers and stereophonic high-fidelity phonographs are engineered and produced in this building. Car radios, alternators and transistor ignition systems are engineered here. A modern addition occupied in 1960 serves as administrative and executive headquarters for the corporation and for two operating divisions—Consumer Products and Automotive Products.



An extensive line of stereophonic high-fidelity phonograph consoles is manufactured at the Franklin Park plant. One of the final steps in the process involves visual inspection by experts.



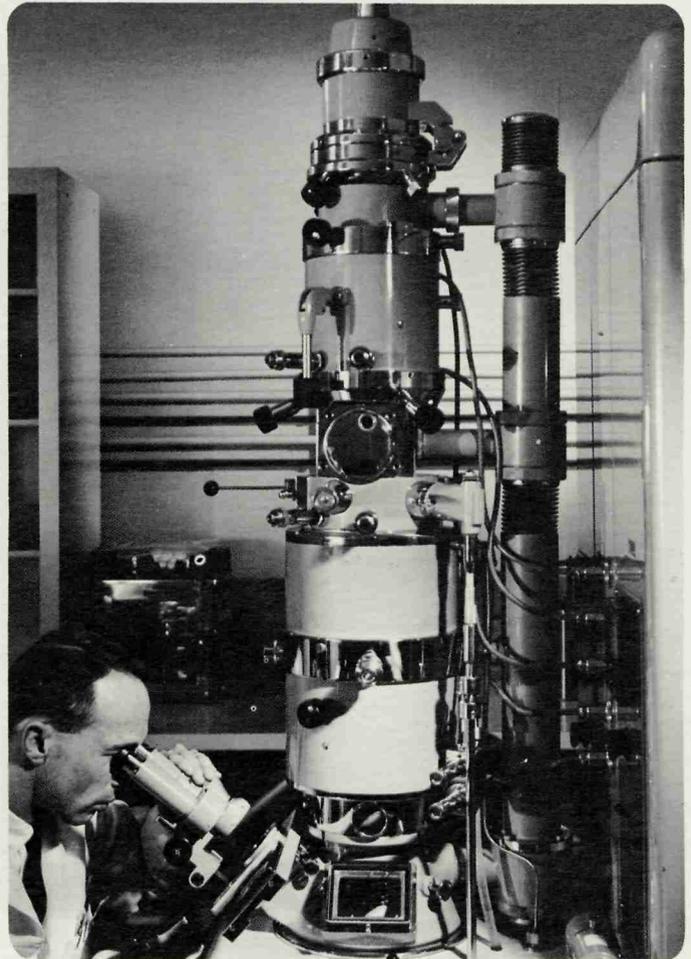
Motorola's exciting color television product line is being manufactured in the company's modern, efficient Franklin Park facility. Here an experienced engineer checks circuit alignment on Motorola set employing company-developed 23-inch rectangular color tube.



Conveyor systems add to efficiency in the production of black and white television sets. "Socks" hold picture tubes while hooks and platforms carry chassis to the lines for assembly. Corrugated boxes containing cabinets automatically roll along perimeter of manufacturing area to the proper stations for final assembly.



Thousands of tiny transistors are manufactured daily in the semiconductor facility.



This important piece of equipment is an electron microscope used to inspect the physical changes in semiconductors caused by process innovations.



Phoenix, Arizona

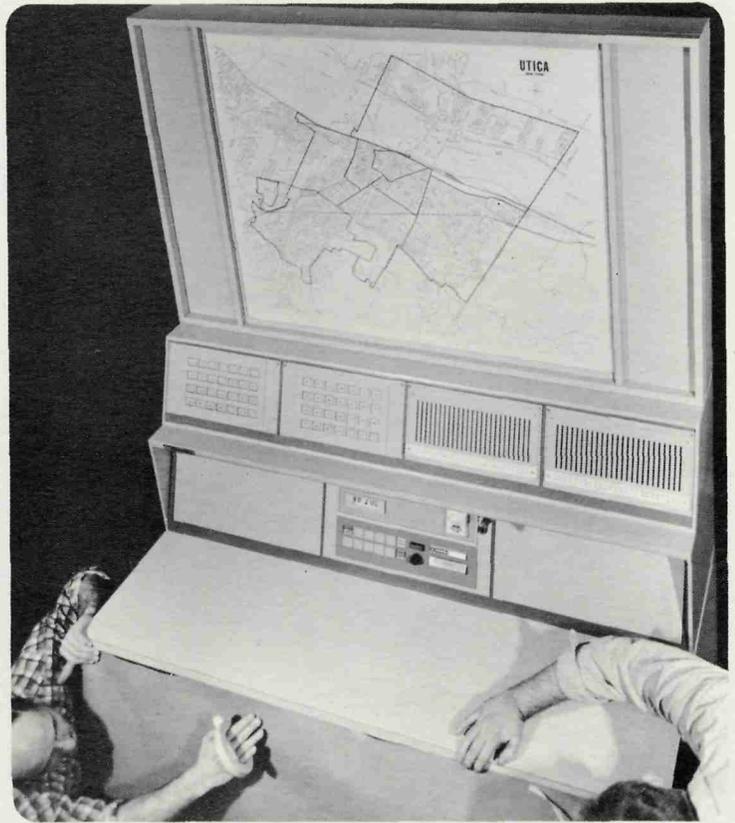
With more than 1,000,000 square feet of space, Motorola's Semiconductor Products Division is producing as wide a range of custom and standard lines of semiconductors as any company in the industry. Three expansions in the past five years have enabled the Division to become the nation's second largest producer of semiconductors.



Carefully controlled conditions enable the Division to manufacture integrated circuits to exacting customer specifications. Here are rows of furnaces where various steps, such as diffusion and oxidation, are performed in sequence on integrated circuit wafers. Temperature, pressures and composition of the gases are strictly regulated.

Chicago, Illinois

Steadily growing Communications Division now occupies 563,800 square feet of space on Augusta Boulevard in Chicago. Designed, engineered and produced here are all two-way radio equipment, closed-circuit television, hospital and radio paging systems, radio traffic control systems and precision measuring instruments.



Communications control consoles such as this one being packaged for shipment to the Utica, New York, Police Department must be designed and built for the exact and distinct functional requirements of the users.



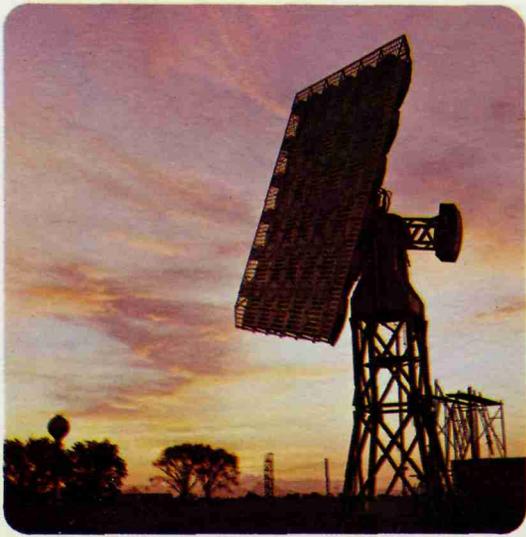


The degree of technical sophistication attained in hospital communications systems requires trained manufacturing skills and constant attention to quality control procedures.



Lightweight 2-way portable radiophones, frequently used in inclement weather by such agencies as police departments, go through dust, cold and rain tests. Rigid standards of reliability are applied to all units.



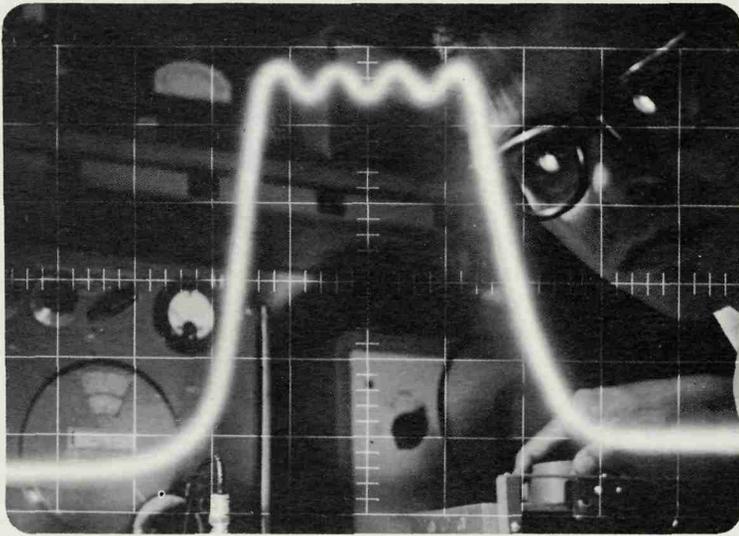


This large antenna—part of the Goddard Range and Range Rate System which tracks objects between the earth and moon with an accuracy of 16 yards and within a speed of 4 inches per second—has already been used officially to track NASA's IMP (Interplanetary Monitoring Platform) satellite.



Division manufacturing facilities are models of efficient operations conducted in controlled environments where the exacting requirements of space and military projects are met in the production of complex electronic equipment and systems.





Application of advanced antenna science to ground, space and airborne equipment requires extensive simulation and testing facilities. Here an advanced solid state multiplexer undergoes critical design tests in the laboratory.



The Chicago Military Center, part of the Military Electronics Division, is operated from this facility consisting of 160,700 square feet of space.

Chicago, Illinois

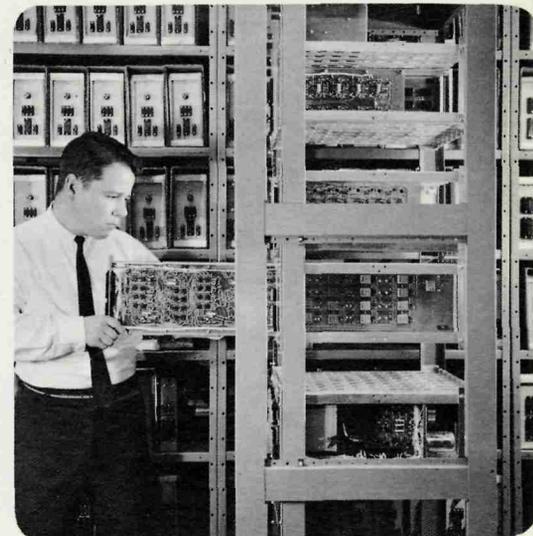
Scottsdale, Arizona

This is Motorola's Military Electronics Division headquarters, a modern 329,000 square-foot facility. The Division develops and produces equipment and systems for Army, Navy, Air Force and NASA programs.

Phoenix, Arizona

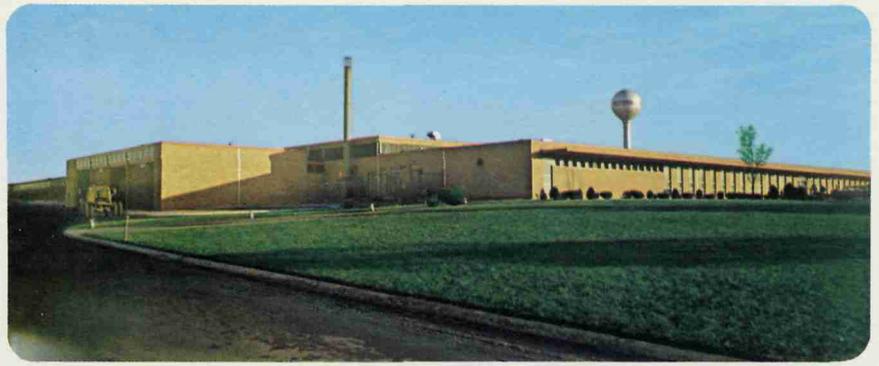


Motorola's history in Phoenix started in this building in 1950. Throughout the 1950's, while serving as a research laboratory, it was the birthplace of many developments in modern electronics, including the power transistor and early work in integrated circuitry. Motorola's newest division—the Solid State Systems Division—is now located here.

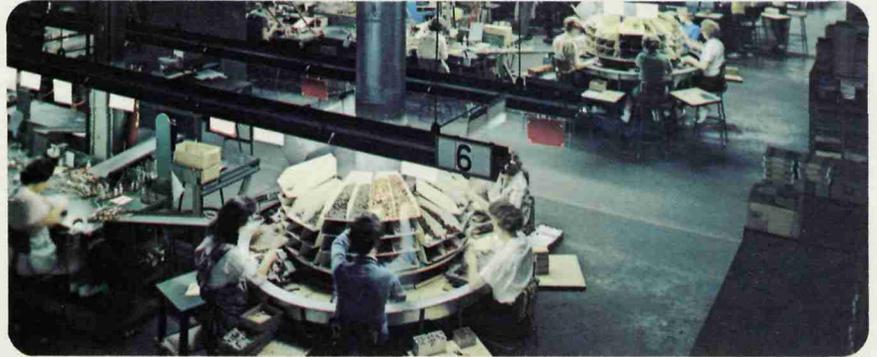


Motorola's flexibility in providing instrumentation and control systems meeting specific and stringent customer requirements is illustrated by the building block approach.

Quincy, Illinois



Manufacturing facilities of the 337,000 foot Quincy, Illinois plant are devoted to car, home, portable and clock radios, and stereophonic high-fidelity phonographs.



Twelve separate turnstiles provide efficiency in assembling circuit panels for radios and phonographs.

Arcade, New York



Manufacturing for both the Automotive and Consumer Products Divisions is conducted at Motorola's Arcade, New York plant. Encompassing 120,000 square feet of space on a 19-acre plot of ground, the Arcade facility produces car radio tuners, alternator and transistor ignition systems.



At this station in the Arcade facility, electronic alternators are given a series of electrical tests to check amperage, voltage, field current and noise levels.



Four housings are made for the electronic alternator through single operation of this 400-ton aluminum die casting machine at the Arcade facility.

The annual meeting will be held on Monday, May 4, 1964. A notice of the meeting, together with a form of proxy and a proxy statement, will be mailed to shareholders on or about April 3, 1964, at which time proxies will be solicited by management.

TRANSFER AGENTS

Harris Trust and Savings Bank
111 W. Monroe St., Chicago 90, Illinois

Chemical Bank New York Trust Company
165 Broadway, New York 15, New York

REGISTRARS

Continental Illinois National Bank and Trust Company of Chicago
231 S. La Salle St., Chicago 90, Illinois

Irving Trust Company
1 Wall St., New York 15, New York

Directors and Officers

BOARD OF DIRECTORS

ROBERT W. GALVIN
MATTHEW J. HICKEY, JR.
DANIEL E. NOBLE
ARTHUR L. REESE
WALTER B. SCOTT
EDWARD R. TAYLOR
EDWIN P. VANDERWICKEN
ELMER H. WAVERING

OFFICERS

ROBERT W. GALVIN
President

DANIEL E. NOBLE
Executive Vice President,
Communications, Semiconductor, Military
Electronics, and Solid State Systems Divisions

ARTHUR L. REESE
Vice President and General Manager,
Communications Division

WALTER B. SCOTT
Vice President,
Consumer and Automotive Production

EDWARD R. TAYLOR
Executive Vice President,
Consumer Products Division

EDWIN P. VANDERWICKEN
Vice President for Finance,
Treasurer, and Secretary

ELMER H. WAVERING
Executive Vice President,
Automotive Products Division

ALEX ARNOLD
Vice President, Controller

ALLEN H. CENTER
Vice President, Public Relations

JOSEPH A. CHAMBERS
Vice President and Manager, Western Center,
Military Electronics Division

JOHN I. DAVIS
Vice President, Consumer Products Engineering

SYLVESTER R. HERKES
Vice President, Consumer Products Marketing

C. LESTER HOGAN
Vice President and General Manager,
Semiconductor Products Division

HOMER L. MARRS
Vice President, Communications Sales

KENNETH M. PIPER
Vice President, Human Relations

WILLIAM J. WEISZ
Vice President, Communications Products

WILLIAM S. WHEELER
Vice President and General Manager,
Military Electronics Division

