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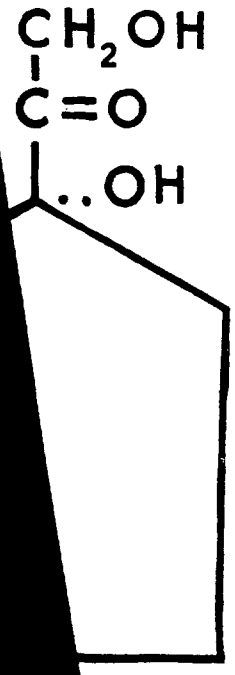
MONSANTO CHEMICAL COMPANY

ANNUAL REPORT



1953

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About Our Cover . . . The steroid group of chemicals, yet to be completely evaluated, holds promise of aid in curing degenerative diseases. Until now the steroids have been found only in nature or synthesized in complex processes from rare chemicals. During 1953, Monsanto scientists succeeded in totally synthesizing one steriod, cortisone, from common chemicals by a much less complicated process. (The chemical structure of cortisone decorates the cover of this report.) This research achievement indicates the possibility of duplicating by synthetic means other promising natural steroids...

The nation's annual per capita expenditure for chemical products is about $125, yet the consumer rarely purchases a "chemical" at the retail counter. But chemicals add materially to the consumer's way of living. Year by year, he will depend more and more on chemicals to maintain and improve his living conditions. To highlight this importance of chemistry, and to briefly illustrate how by "serving industry" Monsanto "serves mankind," we are devoting a part of this Annual Report to the story of Monsanto's service in six areas of primary importance . . . food, clothing, shelter, transportation, communications and health. *For this brief summary see pages 12, 16, 20, 24, 28 and 32* . . .

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1953 ANNUAL REPORT

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December 31, 1953

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DIRECTORS and OFFICERS

BOARD OF DIRECTORS

EDGAR M. QUEENY, *Chairman*	*St. Louis*
CHARLES S. CHESTON	*Philadelphia*
ROBERT R. COLE	*St. Louis*
FRANCIS J. CURTIS	*St. Louis*
FREDRICK M. EATON	*New York*
CARROLL A. HOCHWALT	*St. Louis*
WILLIAM W. SCHNEIDER	*St. Louis*
CHARLES ALLEN THOMAS	*St. Louis*
FELIX N. WILLIAMS	*St. Louis*

EXECUTIVE COMMITTEE

CHARLES ALLEN THOMAS, *Chairman*

ROBERT R. COLE — CARROLL A. HOCHWALT

EDGAR M. QUEENY — FELIX N. WILLIAMS

FINANCE COMMITTEE

CHARLES S. CHESTON, *Chairman*

FREDRICK M. EATON — EDGAR M. QUEENY

CHARLES ALLEN THOMAS

TRANSFER AGENT

Common and Preference Stocks

GUARANTY TRUST COMPANY OF NEW YORK

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of MONSANTO CHEMICAL COMPANY

at December 31, 1953

OFFICERS

EDGAR M. QUEENY	*Chairman, Board of Directors*
CHARLES ALLEN THOMAS	*President*
J. L. CHRISTIAN	*Vice President*
ROBERT R. COLE	*Vice President*
FRANCIS J. CURTIS	*Vice President*
JOHN L. GILLIS	*Vice President*
CARROLL A. HOCHWALT	*Vice President*
FELIX N. WILLIAMS	*Vice President*
DANIEL M. SHEEHAN	*Vice President and Comptroller*
WILLIAM W. SCHNEIDER	*Vice President and Treasurer*
EDWIN J. PUTZELL JR.	*Secretary*
EDWIN J. CUNNINGHAM	*Assistant Comptroller*
JOHN W. LUDWIG	*Assistant Comptroller*
WILLIAM I. WARREN	*Assistant Comptroller*
EARL J. WIPFLER	*Assistant Comptroller*
JOHN F. MARTIN	*Assistant Treasurer*
CHARLES E. CASPARI JR.	*Assistant Secretary*

REGISTRAR:

Common and Preference Stocks

THE CHASE NATIONAL BANK OF THE CITY OF NEW YORK

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MONSANTO'S INCOME AND EXPENSES FOR 1953 AND 1952

	1953	1952
Income:		
From sale of our products	$340,616,526	$266,704,442
From licenses, dividends, interest, etc.	3,731,704	1,049,868
Our total income was	$344,348,230	$267,754,310
Deductions from Income:		
For raw materials, fuel, supplies, etc.	$187,642,594	$140,807,693
For depreciation and amortization of buildings and equipment	22,850,358	13,284,269
For interest on long-term debt	3,313,092	3,283,742
For our parent and subsidiary companies' expenses related	174,135	138,069
	$213,980,179	$157,513,773
Which left	$130,368,051	$110,240,537
Distribution of Dollars:		
To employees	$ 75,901,725	$ 67,425,713
To stockholders as dividends	13,714,176	13,463,240
For taxes	28,081,734	22,724,981
Retained for future growth	12,670,416	6,726,003
Net Income	$ 26,384,592	$ 23,189,243
Net Income from Each Dollar of Sales	7.7¢	8.7¢
Per Share of Common Stock:		
Net income	$ 4.90	$ 4.29
Dividends paid	2.50	2.50
Book value	39.95	37.55
Expended for Property Additions and Replacements	26,822,237	12,655,501
Working Capital	$109,416,336	$ 90,919,553

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FIFTY-SECOND REPORT

TO THE STOCKHOLDERS OF MONSANTO CHEMICAL COMPANY

In 1953, Monsanto Chemical Company's consolidated sales were 28 per cent higher than last year's. Sales for the year, exclusive of the sales of the British and Australian subsidiaries, were $340,616,526.

Income before taxes was 20 per cent more than in 1952 and amounted to $49,444,592. Net income after taxes was $26,384,592. After provision for preference dividends, this equaled $4.90 a common share based on 5,270,051 shares outstanding. This compares to net earnings in 1952 of $4.29 on approximately the same number of outstanding shares.

Even though the sales in 1953 were the highest in our history, we were not selling the capacity of our plants, some of which came into operation during the past year. This was particularly true of the plant at Texas City, Tex., which produces acrylonitrile, a chemical primarily used by The Chemstrand Corporation which we own jointly with American Viscose Corporation. Acrylonitrile sales were well below anticipated amounts because Chemstrand's operations were not at the expected level. The general slackening in business which began in the middle of the year resulted in lower sales of products from several of our other plants during the last six months.

Pre-tax income did not increase at the same rate as sales because of higher wages and other operating costs. Another factor was the large

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amount of amortization of the facilities which we have constructed under Certificates of Necessity. The difference between such amortization and the amount which would have been provided at the rates applied to the uncertified portion of such facilities, was $5,049,306, equivalent to 40 cents a share of common stock, after taxes. Additionally, sales prices tended to be weak and in some cases dropped during the latter part of the year.

Consolidated net sales and net income by quarters for 1953 and 1952 are summarized:

	1953	1952	Increase or *Decrease* Amount	Per Cent
SALES:				
First quarter	$ 85,518,922	$ 63,591,979	$21,926,943	34.5
Second quarter	89,760,049	62,737,313	27,022,736	43.1
Third quarter	82,747,915	62,961,050	19,786,865	31.4
Fourth quarter	82,589,640	77,414,100	5,175,540	6.7
TOTAL	$340,616,526	$266,704,442	$73,912,084	27.7
INCOME:				
First quarter	$ 5,814,223	$ 5,398,196	$ 416,027	7.7
Second quarter	7,689,751	5,702,656	1,987,095	34.8
Third quarter	6,183,986	4,979,508	1,204,478	24.2
Fourth quarter	6,696,632	7,108,883	*412,251*	*5.8*
TOTAL	$ 26,384,592	$ 23,189,243	$ 3,195,349	13.8
Less preference dividends	577,500	577,500		
Earnings for common stock	$ 25,807,092	$ 22,611,743	$ 3,195,349	
Per share of common stock	$4.90	$4.29	$ .61	

Sales and Income of the British and Australian Subsidiaries: In addition to the sales reported above, the British and Australian subsidiaries' sales aggregated $36,458,939, an increase of $2,980,382 over 1952. The unaudited net income of these subsidiaries, applicable to Monsanto Chemical Company's interests, amounted to $1,070,286, and we received dividends during 1953 of $529,015 from Monsanto Chemicals Limited (England) and Monsanto Chemicals (Australia) Limited. These dividends, which are included in "dividends from subsidiary and associated

companies" in the statement of income on page 42, were based on parts of earnings in both 1952 and 1953.

Working Capital: At December 31, working capital amounted to $109,416,336 in comparison to $110,919,553 on the same date in 1952. At the end of the year, current assets were 4.9 times current liabilities, compared to 4.7 at the end of 1952.

Inventories: Total inventories were $61,903,578 on December 31 in comparison to $53,226,476 for the same date last year. For the past two years, the rate of inventory turnover was approximately four times a year.

Investments: Late in 1953, Chemstrand's nylon plant at Pensacola, Fla., started limited production in its fiber-spinning unit. Other units of that plant are expected to start operation during 1954 and the full 50-million-pounds-a-year production level should be reached early in 1955. Shipments to customers have been well received and the quality is good. This is gratifying as nylon represents the major part of our investment in The Chemstrand Corporation.

Chemstrand's Acrilan acrylic fiber plant began operations late in 1952. Its initial production met the specifications of the pilot plant output which consumers had approved. When Acrilan was available in large quantities, defects in its properties, known in the trade as fibrillation, became evident. The production plant was closed while Chemstrand's research department worked intensively to correct the defects. The improved fiber, now being made in the plant at Decatur, Ala., is in customers' plants for evaluation. The preliminary reports are encouraging.

We increased our investment in The Chemstrand Corporation by $7,500,000, bringing it to a total of $22,500,000. American Viscose Corporation has an equal investment.

The statement of The Chemstrand Corporation's financial position is included in the Financial Notes on page 45.

In addition to the Chemstrand investment, we have a 50 per cent interest in Shawinigan Resins Corporation at Springfield, Mass., which is included in "investment in associated companies" in the balance sheet on page 40. During 1953, Shawinigan substantially expanded its production of polyvinyl butyral, a raw material which is used by Monsanto's Plastics Division in manufacturing Saflex, the plastic interlayer for laminating safety glass.

Our investment in unconsolidated subsidiaries continues to include a 66⅔ per cent interest in the common capital shares of Monsanto Chemicals Limited. Our equity in this subsidiary and in its Australian affiliate, Monsanto Chemicals (Australia) Limited, amounted to $10,592,000 as shown by unaudited statements of financial condition at the close of 1953. This compared to an equity of $10,544,000 at the end of 1952. These investments are carried at $978,422 in our balance sheet.

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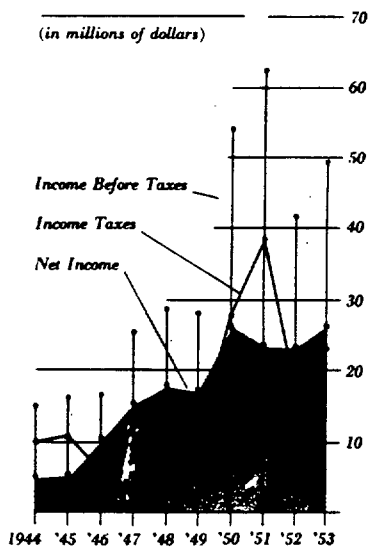
Property Account and Depreciation: During 1953 we integrated and added smaller units to the company's expansion program which had reached a peak in 1952. Details of this program will be found on page 25.

The changes in our property account during 1953 are summarized:

Expended for additions and replacements	$26,822,237
Less property retired and depletion of phosphate deposits	7,604,518
Net increase	$19,217,719

This compares with a net increase of $68,114,908 during 1952.

Comparison of Income and Taxes



We set aside $22,850,358 in 1953 to provide for depreciation, amortization and obsolescence. Included in this figure was $7,906,000 for amortization at the 20 per cent rate of plant facilities constructed under Certificates of Necessity. The net increase in the depreciation reserve account was $15,489,837 because of charges in connection with property retired during the same period which aggregated $7,360,521.

Repair and maintenance costs amounting to $20,941,250 were charged to current operating expenses.

Income Taxes: We paid no excess profits taxes in either 1953 or 1952 since the taxable income was below the excess profits tax base of approximately $45,000,000, partially the result of new capital added in 1952. We provided a small amount for our subsidiary, Detergents, Inc. Monsanto's income taxes for 1953 were $23,060,000, compared to $18,088,000 for the previous year.

Employe Bonus and Stock Option Plans: Bonus awards amounting to $1,317,906 were granted to 612 employes on February 11, 1954, for the year 1953. This amount was 25 per cent more than the amount awarded for 1952 to 504 employes. The 1953 awards comprised 7,055 shares of the company's common stock and $706,111 in cash.

No additional stock options were granted during 1953 under the Stock Option Plan. None of the outstanding options for 94,500 shares, granted in 1951 in lieu of bonuses, was exercised.

Dividends: Four quarterly dividends of 62½ cents each were paid on the common stock again in 1953. Dividends so paid amounted to $13,136,676.

The book value of each share of common stock increased during the year to $39.95 from $37.55.

New Subsidiaries: The remaining outstanding stock of Detergents, Inc., of Columbus, Ohio, was acquired in January. This organization merchandises the controlled-foaming detergent "All," which originally was developed by Monsanto and which is manufactured by our Inorganic Chemicals Division. At a later date, we acquired all of the outstanding

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stock of Eastern Packaging Company, also of Columbus, which had packaged "All" for Detergents, Inc. The subsidiaries were dissolved and made part of Monsanto's Merchandising Division at the beginning of 1954.

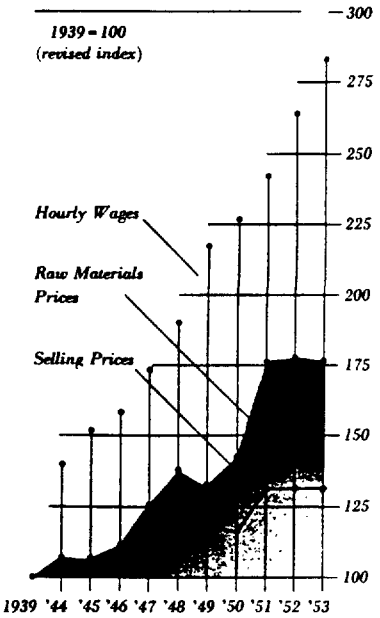
In February, 1953, the company also formed a new subsidiary operation, with nominal capitalization, in the Republic of Panama. Known as Monsanto de Panama, S. A., the new corporation's trading activities are a part of the company's Overseas Division.

The Organization: In March, the Board of Directors regretfully accepted the resignation of William McNear Rand from the board and from the Finance Committee. Mr. Rand, who served the company for more than 30 years, including six years as president, had retired in 1951 but was still a director. His resignation was made necessary by his acceptance of an appointment, tendered by President Eisenhower, as deputy director of the Foreign Operations Administration.

During the year, we were sorrowed by the death of two men who had long been identified with our organization. Vice President Clayton A. Wolfe, director of our Purchasing and Traffic Department, died suddenly of a heart attack on October 20. He had been with Monsanto since 1929. On November 1, Gaston F. DuBois, a guiding spirit of Monsanto since 1904, died of complications of pulmonary emphysema. One of the foremost figures in the chemical industry, Mr. DuBois contributed much to the launching of both Monsanto and the American chemical industry. From 1904 until his retirement in 1945, he held a variety of executive positions including, for four years, the office of president.

In mid-November, after months of study, we announced a change in our organization structure designed to facilitate the company's anticipated growth in the coming years. The new structure, which went into effect January 1, 1954, will further strengthen our already decentralized organization and should provide greater flexibility for growth. Details of these changes will be found in the section, The Organization, on page 33, and in the chart on page 36.

Price, Cost and Wage Index



The International Trade Outlook: Presently, there is much discussion of the problem of foreign trade and foreign aid. The United States' relation to international finance and world trade is a complicated matter. At the present time we are no longer a large creditor nation; payment balances between us and other nations are approximately in equilibrium, excluding the grants and military donations made by this country to others of the free world. But international trade and currency exchanges remain bogged down. Clearly it would be desirable if some way could be found to improve this situation without relying on the exportation of billions of U. S. tax dollars. In approaching the problem there has been a great tendency to make the American tariff a "whipping boy." Many advocates of "Trade, Not Aid" have proposed the removal of American

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tariffs as a solution. The lowering of tariffs alone is not the solution. Nor can tariff reductions improve the situation without far reaching changes in the convertibility of currency, embargoes, quotas, state trading and other more basic aspects of the problem. Such tariff reductions would not materially aid foreign economies and would be very detrimental to many American businesses which are vital to our national security and domestic economy.

Among the ones that would be damaged by the removal or lowering of tariffs is the chemical industry. Chemicals and allied products are the keystones of both national defense and the domestic economy because almost all industrial production relies on their use. For example, in the Korean War alone, 1,586 organic chemicals were used; of these 103 had not been used in World War II. More than 250 groups of chemicals are required in the manufacture of automobiles, not including those used in gasoline and oil. If the chemical industry is crippled by tariff reductions or removals, our defense would be weakened and our peacetime economy would be dangerously impaired.

The historical defenses of this country of time and space, which were important elements in our past military victories, are no longer available to us because of the advances in weapons. Since we will no longer have the time to build a wartime industrial might and train the necessary technologists, we must rely on the onward movement of vital industries, including the chemical industry, in peacetime, so that skilled men and skilled industries will be available when the emergency comes. These assets cannot be stockpiled.

Basic economics underlie the dangers the chemical industry faces. Our company and the American chemical industry are efficient, but foreign producers are efficient, too. European and Japanese wages and almost all other costs are much lower than they are here. Even in instances where our productivity is greater, a foreign manufacturer can produce for less because all elements of American costs are higher due to our higher standard of living. If tariffs serve to equalize the costs, we can compete in our domestic markets. Without tariffs, American producers would suffer and so would our security and domestic economy, since foreign manufacturers would undercut our selling prices to the point that we would be forced to stop making many chemicals.

The growth of an industry which is based on the applications of natural science depends on research, development and engineering. Such is the chemical industry which spends from three to six per cent of its sales dollar on these activities. The large portion of these expenditures is for salaries of the technical people. In Western Europe the salaries paid for similar talent are about one-fourth the present rate in the United States; in Japan the rates are even lower. In Germany, for example, after graduation a man with a Ph.D. degree in chemistry earns but 560 marks

(about $133) a month. We offer graduates with Ph.D. degrees a minimum of $525 a month—almost four times as much. Thus, for the same dollar, our foreign competitors can obtain almost four times the talent we can. This will have a marked influence on our industry, which history has shown to be one of change. Of the products we sell today, 40 per cent were not produced by us 10 years ago.

Even the most ardent free trade advocates will admit that a strong American economy is basic to the security of the free world. It will do no good for this country to try to assist foreign countries if at the same time it damages American living standards or our national security. The answer to the problem of our allies lies not alone in free trade with the United States, nor in continuing aid from our public treasury as the popular slogan implies. In many instances, the foreign governments need economic reform; the practices of most of our allies toward restricting business in their own countries is the stumbling block to their own economic recovery. The restrictions most foreign nations place on international trade, of which their tariffs are only a small factor, have a much greater deterring effect on world trade than our present tariffs.

It would seem then that the real problem that must be studied is the one of America's foreign economic policy in its totality, including the elements of American diplomatic and military commitments around the world, our foreign aid program, international trade and the international currency situation, in addition to tariffs. And in making such studies it should be remembered that our economic system is the most complicated in the world. It isn't possible to make "little changes" in it—all changes of the magnitude of the proposed tariff reductions can have far-reaching repercussions in segments of the economy, far beyond those immediately and directly affected.

It is hoped that when members of Congress examine the situation this year they will keep in mind these vital concepts.

For the Board of Directors,

Charles Allen Thomas –

President

St. Louis, Missouri
March 10, 1954

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Monsanto's Contribution to

F O O D

The quantity, quality and flavor of the food she eats will depend on chemicals, from her first spoonful, all through her life. Chemicals make possible more food (soil conditioners, fertilizers and weed and insect killers improve the farmers' productivity) and preservatives make possible mass production, processing and distribution of perishables. Flavors make ice cream, cake and confections tasty; phosphates make possible ready-mixed self-rising biscuit, cake and pancake flours. Body-building calcium, iron and phosphorus, essential to growth and health, enrich and fortify foods of all types. Feed supplements for poultry and cattle speed meat to market at lower prices . . .

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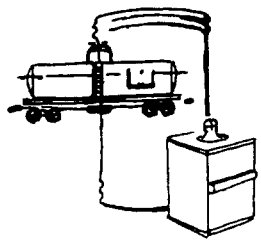

Several factors contributed to the $74 million increase in sales during 1953. Among these were the higher level of general business, particularly during the first half of the year, the completion of several new plants and the development of new uses for old products.

A new use for an old product is typified by tricresyl phosphate. For some time it has been used principally as a plasticizer for modifying the properties of plastics. During 1953, it found use as a gasoline additive. This was a development by scientists of Shell Oil Company who claim that it insures more efficient burning of motor fuel, renders harmless metallic deposits in engines, gives more power to the car and longer life to sparkplugs. Other petroleum companies are adding TCP to their gasoline and our Organic Chemicals Division has increased its production of this product 80 per cent to meet the demands.

A strong interest was demonstrated in the Organic division's Actamer, an improved bacteriostat for soaps and skin preparations which we developed late in 1952, although this interest has not yet been translated into any significant sales.

Skydrol, a fire-resistant synthetic hydraulic fluid for aircraft, continued to grow in popularity. During 1953, a number of major domestic

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and international airlines converted to Skydrol. At the present time, 375 major aircraft in this country are equipped for Skydrol and an additional 350 planes now under construction have Skydrol included in their specifications. Pydraul, a similar fire-resistant hydraulic fluid used in die-casting machines and other hydraulically operated equipment where fire is a hazard, also attracted more interest.



New Krilium Formulations Introduced

The Merchandising Division introduced several new Krilium soil conditioner formulations. One of these is a formulation for treating baseball diamonds and similar recreational areas. In both major and minor league ball parks, tests proved that the increased surface drainage of conditioned soils permitted games to continue which ordinarily would have been postponed because of rain. Another use is for crust control in surface application by growers of row crops. In this instance, Krilium will improve germination and emergence of seedlings for as little as five dollars an acre by preventing soil crusting. Two-year tests completed in mid-year showed that with the use of Krilium in tobacco plant beds growers are able to start crops earlier and raise more plants. In the home garden field, sales of Krilium have been at a very disappointing level, indicating the need for more education in order that consumers can understand this new approach to soil structure improvement.

Plastics and Resins Our Largest Market

The plastics and synthetic resin industry continues to be Monsanto's largest market, accounting for 14.5 per cent of our sales in 1953. Details of our sales, by markets, will be found in the tabulation, "Per Cent of Sales by Major Consuming Industries," on page 51. One of the growing new markets for plastics is the use of Saflex in tube covers on television sets. As TV manufacturers converted to strong, bright tubes to bring out picture detail, it became necessary to find a means of reducing the glare. Glass laminated with tinted Saflex reduces glare effectively while providing a safety factor in the event the picture tube fractures. This use, combined with the increased demand for larger windshields featured in new automobiles, is responsible for the expansion of Saflex production facilities described in the Expansion Section, page 25.

With improvements in the plastic and in customers' molding equipment, increased use of Resinox (phenolic plastic) has been made in large-size moldings such as table model and console type television cabinets. Some of these weigh as much as 35 pounds and can be molded in a single piece in four minutes time, and no finishing operations are

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required. At this time, upwards of 50 per cent of some brands of TV sets are being made of this type of plastic.

Py-ran, a new leavening agent developed for use in self-rising flour and prepared baking mixes, was introduced late in the year. Mixes containing Py-ran assure the housewife greater success with home-baked products. Makers of prepared mixes have expressed considerable interest in Py-ran, a product of the Inorganic Chemicals Division.

Special Textile Chemicals Sales Increase

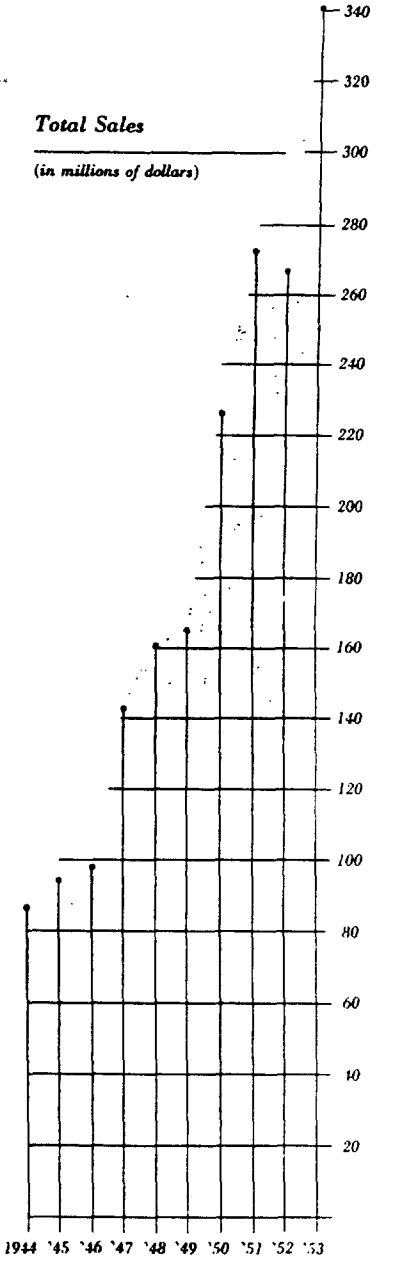
The instability of the textile industry during the past few years has affected sales of the "old-line" chemicals used for textile processing. On the other hand, we have increased our sales of specialty textile chemicals which bring technical improvements to the industry. One of the newest is Stymer LF, a durable synthetic warp size which has solved one of the dry-cleaning industry's biggest problems—how to get rid of water spots on loom-finished solution-dyed acetate fabrics. Stymer LF, manufactured at our Everett, Mass., plant, will not leach out and water-staining of such fabrics has been eliminated.

Sales of styrene monomer to the rubber and plastics industry were reasonably good during the early part of the year, but they declined during the last quarter of 1953 and might drop further in 1954. The steady growth of the "polyester plastics" used in combination with glass fibers for structural applications, including automobile bodies, has continued. This type of plastic uses styrene monomer, phthalic and maleic anhydride and fumaric acid, all products of Monsanto.

The upturn in the West Coast plywood industry increased the sale of our resin adhesives. At the same time we increased our participation in the total sales of specialty resins to plywood makers.

Tariff Reductions Weaken Price Structures

The progressive reduction that has been made on tariffs bore pressure on our Organic Chemicals Division. As foreign chemical producers rebuilt and expanded manufacturing facilities in the last eight years, in many cases with U. S. Government money, they have intensified their drive for more American markets. Because foreign producers' costs are substantially lower, and since in many instances the tariff rates no longer equalize the costs with those in this country, the price structure of several of our products has weakened and in one instance we have idled production facilities since the selling price has dropped below our cost of manufacturing. Because of this pressure, dollar sales of the Organic division were not as high as they should have been.



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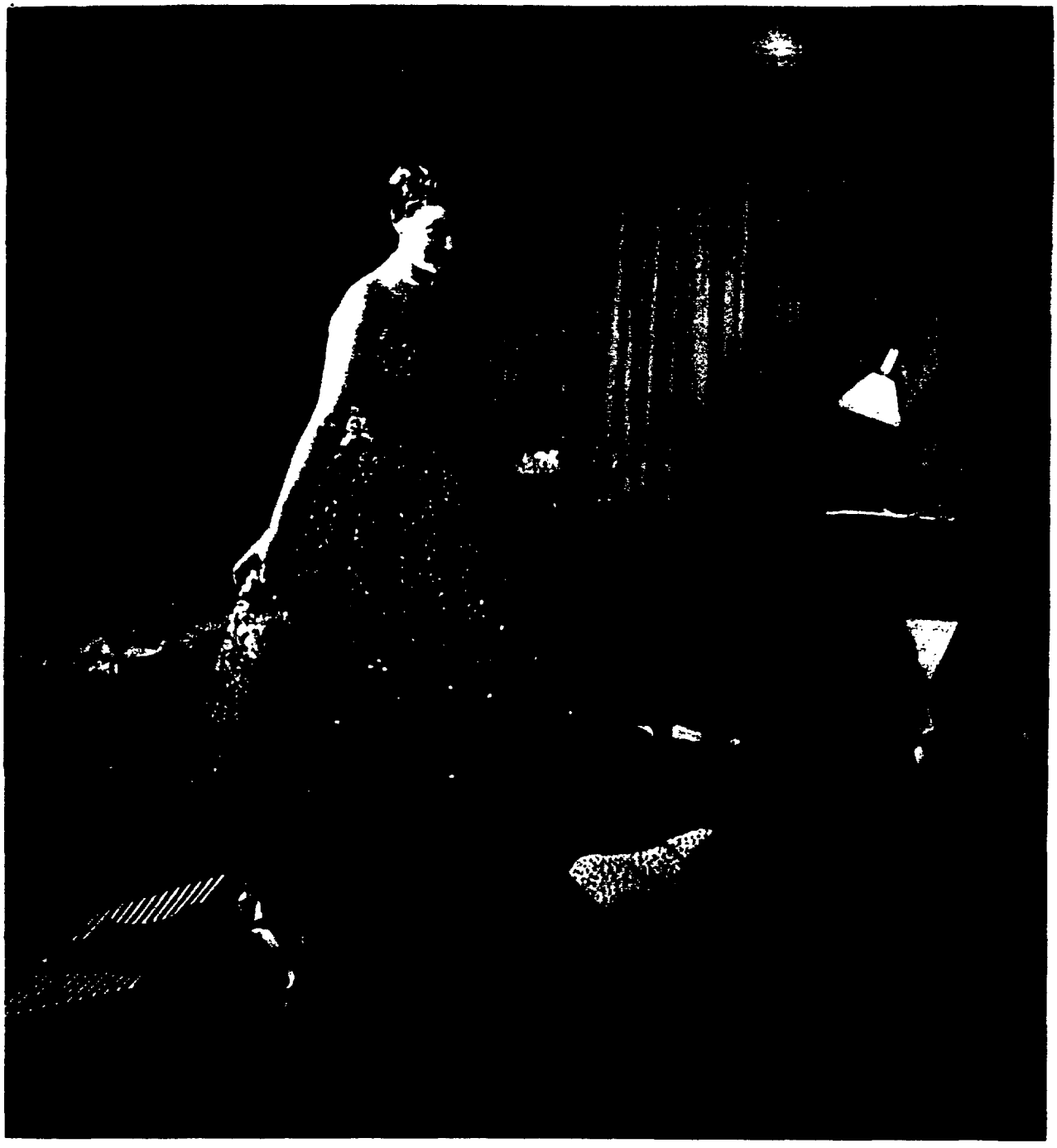

This pretty dress owes its existence to chemicals, but it isn't made from synthetic fibers. The chemical industry's role in synthetic fibers is well-known. Less well-known is that chemistry makes clothes look and feel better, last longer. Sulfuric acid, solvents, lubricants, scouring and penetrating agents transform sheep's wool into yarn. Resins give cottons a crisper, longer-lasting finish; make garments resist wrinkles and shrinkage without changing their appearance. Chemicals aid spinning processes, make yarns stronger, tan leather, add color to clothes. Plastics provide water repellent garments and synthetic detergents get clothes cleaner with less cost and effort...

Monsanto's Contribution to

CLOTHING

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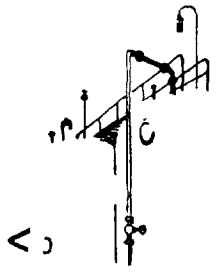

Production levels were relatively stable during the year because month-to-month sales were more consistent. There were no serious labor difficulties or important raw materials shortages. Nevertheless, while operations at many plants were satisfactory, as a per cent of capacity, production throughout the company was lower in 1953 than in 1952 because the total plant capacity was greater.

Cost Reduction Efforts Intensified

Cost reduction efforts were intensified during the year. By improving efficiency of existing operations, employing new techniques, making changes in equipment, improving operator training and applying continuing research and engineering talents to the problem, rising operating costs were partially offset.

Monsanto has had a continuing plan in operation aimed at cost reduction. In an intensified program for 1953, four executives were relieved of their normal duties and temporarily assigned as a cost reduction committee. These men, who had extensive plant operation, accounting and managerial background, visited all plants where they interviewed supervisory personnel, examined the physical plants and discussed manufacturing problems and solutions. There was a full understanding of the urgent need for cost economy and increased efficiency at all supervisory and management levels. At each plant cost reduction goals were established in dollars as well as principle and definite timing was established for each project. Broad areas for cost improvement include better material yields; process improvements; economy in the use of materials, manpower, utilities and supplies; improved materials handling and increased production rates.

Despite these efforts toward cost reduction, the cost of goods sold as a percentage of sales increased. On the one hand, sales prices were dropping; on the other, higher labor costs, increased "idle plant charges"

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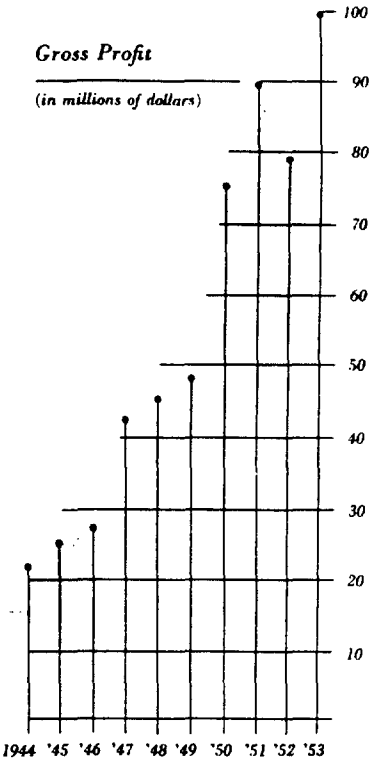

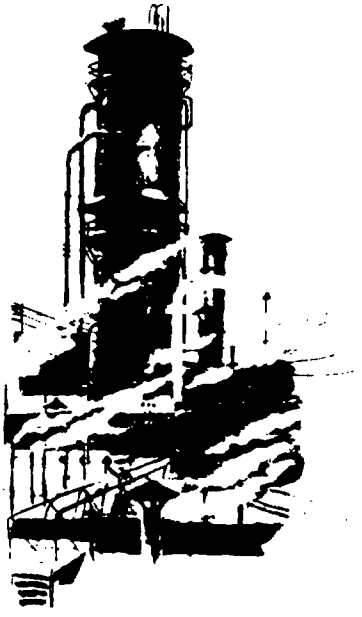

and the higher rate of amortization on those plants built under Certificates of Necessity, were raising costs. The largest source of idle plant charges was for the acrylonitrile plant at Texas City, Tex., as reported in the President's Message on page 5.

Production of Many Products Increased

Production responded to sales requests and achieved several new records in meeting demands for given products. At the John F. Queeny plant, new monthly production levels were established at various times for intermediates including tricresyl phosphate, maleic anhydride, phthalic anhydride, sodium benzoate, benzoic acid, phenol, some rubber chemicals and dibutyl phthalate. The Queeny plant produced 24 per cent more than in 1952. The Springfield, Mass., plant reached new production levels early in the year and then proceeded to set newer ones as sales demands increased toward the middle of the year. The electric furnaces at the Monsanto, Tenn., plant for the production of elemental phosphorus set another all-time production level in May. Among other plants which reached new production heights at times in 1953 were the Norfolk, Va., Carondelet, Mo., Trenton, Mich., and the William G. Krummrich plants.

New Products Made in Commercial Quantities

Monsanto introduced several products in commercial quantities for the first time during the year. Among these were isocyanates for bonding rubber to such surfaces as metal, synthetic textiles, glass and ceramics. Isocyanates are a versatile chemical group which, in other formulations,

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are used to produce porous plastics, new synthetic rubber formulations, intermediates in resin manufacture and textile finishing agents. Fumaric acid was another product which we made available in commercial quantities. It is used principally in the production of resins for surface coatings, inks and polyester plastics. Santolene H, a fuel additive agent which prevents screen and filter clogging in household and industrial oil burners, also went into commercial production. A number of other products also moved from research and interim manufacturing facilities to full production without difficulty.

In addition, new plants which were completed late in 1952 and in 1953 were turned over to production departments to place in operation. All moved into production on schedule without more than normal start-up troubles although in some cases they were not fully utilized because of sales problems.

An 11-day strike during negotiations for a first contract at Port Plastics, Ohio, and a minor walk-out at both the Everett and Queeny plants were the only incidents to mar otherwise good relations with labor unions in our plants. Nine mutually satisfactory labor contracts were negotiated without strikes or other incidents.

Accident Rate Lowest in Our History

Monsanto's accident frequency rate in 1953 reached the lowest point in its history through continuous efforts toward achieving safer operations. Furthermore, the severity rate for 1953 was the lowest in 15 years. Our accident frequency rate of 1.30 accidents per million man-hours worked compares with a general chemical industry rate of 5.10 and an average rate of 8.40 for all industry. The Nitro plant achieved the highest accident-free record in the company's history before a lost-time injury occurred: 5,373,400 accident-free man-hours, almost one million hours more than the previous company record.

Mound Laboratory at Miamisburg, Ohio, won the President's Trophy in the annual company safety contest for the best record in the large plant group. The Trenton plant won a similar award for excellence in the small plant group, for the third consecutive time. Neither plant had a lost-time accident during the year. Eleven other plants operated without lost-time injuries, but worked less man-hours than the two trophy winning plants.

The 1953 and 1952 safety records for the company are:

Year	Hours Worked	Accidents	Frequency	Days Lost	Severity
1953	31,583,224	41	1.30	9,846	.31
1952	30,264,995	46	1.52	25,887	.86

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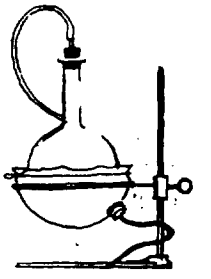
Monsanto's Contribution to

SHELTER

Sheltering the world's growing population on an increasingly better standard is a problem for chemists as well as architects and builders. Chemicals add to the serviceability and beauty of conventional building materials; create new materials. Special resin adhesives make possible billions of square feet of plywood yearly. Penta preserves lumber against decay and termites; synthetic resins seal wood to protect it against weathering; chemicals make paints resist corrosion, flame, water and weather and mildew-proof awnings, tents, leather and varnishes. Plastics bring new color, easier care and longer wear into the home in draperies, furniture, upholstery and other articles . . .





RESEARCH and ENGINEERING

Year after year, research and engineering teams weave more threads into the fabric of our knowledge and increase the importance of chemicals in our daily lives. The constant work by engineers of translating the chemists' laboratory knowledge of making specialized kinds of matter into multi-ton production is basic in the continuing, unprecedented growth of the chemical industry—a growth that averages 10 per cent a year for this industry versus three per cent a year for all industry.

During 1953, a large portion of Monsanto's sales and approximately 40 per cent of our profits came from products we did not manufacture 10 years ago. These are the fruits of research.

Research Protects Investment, Opens New Fields

Our research activities are divided into two major groupings. In order to protect our capital investment against competition, to improve our present processes so we may be more efficient, achieve lower costs and find new uses for the products we now make, we engage in "insurance" research. Research also must develop new products so that the company may continue to grow. This is "investment" research, and more than half our research money is so spent.

One of the significant 1953 research developments was the simplified method for producing cortisone from common chemical raw materials, a project of the Organic Chemicals Division's laboratories. Because of its possible long-range nature, it can be classified as "investment"

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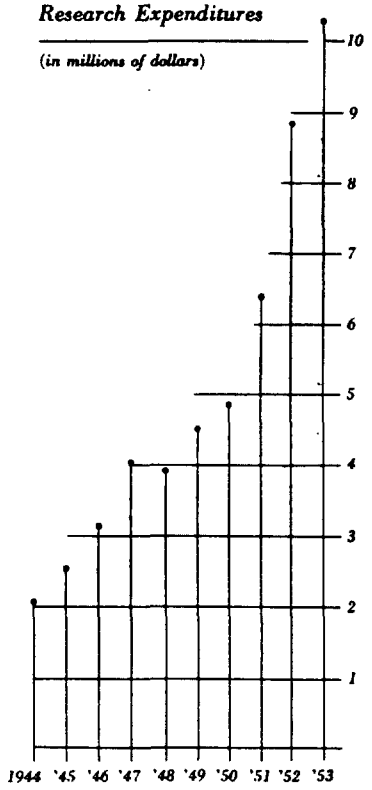
research. Cortisone, one of the newer powerful pharmaceuticals, was originally manufactured from ox bile acids. Later, at Harvard University, Prof. Robert B. Woodward achieved the total synthesis of cortisone in a 60-step process with rare chemicals. Now Monsanto's newly developed procedure makes it possible to produce cortisone from inexpensive, plentiful chemicals, with a much simpler process.

Sodium bisulfite is an "old-line" chemical with a multitude of uses. During 1953, at Monsanto's Everett, Mass., laboratories and in cooperation with Pennsylvania State University in a Monsanto-sponsored research program, a new use was found: controlling the natural fermentation rate of fodder in silos. It is expected that the use of sodium bisulfite for silage control will require doubling our Everett production facilities for this chemical—an excellent example of the value of investing in "insurance" research.

At Springfield, Mass., in addition to providing a high-impact quality polystyrene, the Plastics Division's research department developed a Lustrex formulation for phonograph records with high fidelity characteristics. In cooperation with sugar mill owners in Louisiana, Cuba and Puerto Rico, the division formulated a resinous synthetic polyelectrolyte (Lytron X-886) as an impurity remover for sugar juices. The new product achieves faster settling rates and improves the gathering and removal of sediment from the liquid sugar. Other reformulations which came from the division's research laboratories include: new building wire and semi-rigid electrical insulating compounds from Opalon (polyvinyl chloride) resins; new Opalon resins for injection molding and profile extrusion; new color gradation formulations for Saflex for the larger, curved automobile windshields; new Resinox (thermosetting resin) molding powders for large housings and for heat resistance; a new shell molding resin for foundry use and a wood-waste binding resin.



Research expenditures are exclusive of development, patent, plant engineering, technical service and control laboratory expenses.

Titanium Research Advances

At the Central Research laboratories in Dayton, Ohio, major activities included the acceleration of the program for the production of polyethylene (for details, see Expansion Section, page 25) and the continuing work on extracting and producing titanium. This latter project has been under way for three years in cooperation with the National Research Corporation. Research during the past year has advanced and good progress has been made toward defining the possibilities of an efficient process for metal production.

New products developed in our Seattle, Wash., laboratory, which were turned over to the sales departments during 1953, include resins for

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wood-waste consolidation and for paper impregnation; urea resin hardeners for lumber laminating; hardeners for melamine-urea resins for making plywood and a urea resin catalyst for plywood patching. New formulations were made for phenolic glues for interior and exterior plywood and melamine-urea glues for lumber laminating. At the Santa Clara, Calif., laboratories, four new specialty herbicides were evolved together with several intermediates. In addition, five new formulations were established for wood finishes.

New textile sizes, plasticizers, paper sizing agents and textile finishing agents came from our Everett laboratories. Also experimentally produced there were intermediates, rubber coatings, animal nutrition supplements, therapeutic agents, cleaners and plant growth regulators.

Developed in the Anniston, Ala., laboratories were such products as new detergent bases, specialty solvents, textile conditioners, oil and grease additives, synthetic lubricants, dentifrices; Py-ran, a slow acting stabilized monocalcium phosphate for leavening; HB-20, a new extender plasticizer and SAPP-40, a new grade of sodium acid pyrophosphate for fast acting leavening use.

At Mound Laboratory, Miamisburg, Ohio, which Monsanto operates for the Atomic Energy Commission, one of the developments was a new process for purifying radium. This new contribution by Monsanto scientists is a vast improvement on the process now in use and replaces the most difficult portion of the original Curie process in which the radium is separated from the chemically similar element, barium.

During 1953, 225 United States patents were issued to Monsanto personnel and assigned to the company. In addition, 163 foreign patents were issued to the company and its overseas organizations.

Scientific Education Aid Program

Our program of aid to scientific education, which is benefiting 58 American colleges and universities during the 1953-54 school year, was enlarged and strengthened. More than $275,000 will be spent during that period on undergraduate scholarships, graduate fellowships, grants-in-aid, contributions for research projects, and student and faculty trainees. The ever-increasing need for more youth to start and complete technical education, in order that we will have a constant pool from which to draw necessary scientific talent, underlies these activities.

The two-year atomic electric study project conducted by Monsanto and the Union Electric Company of Missouri has been completed and joint sponsorship ceased during 1953. Monsanto is continuing its studies in this field, believing that there is much yet to be contributed.

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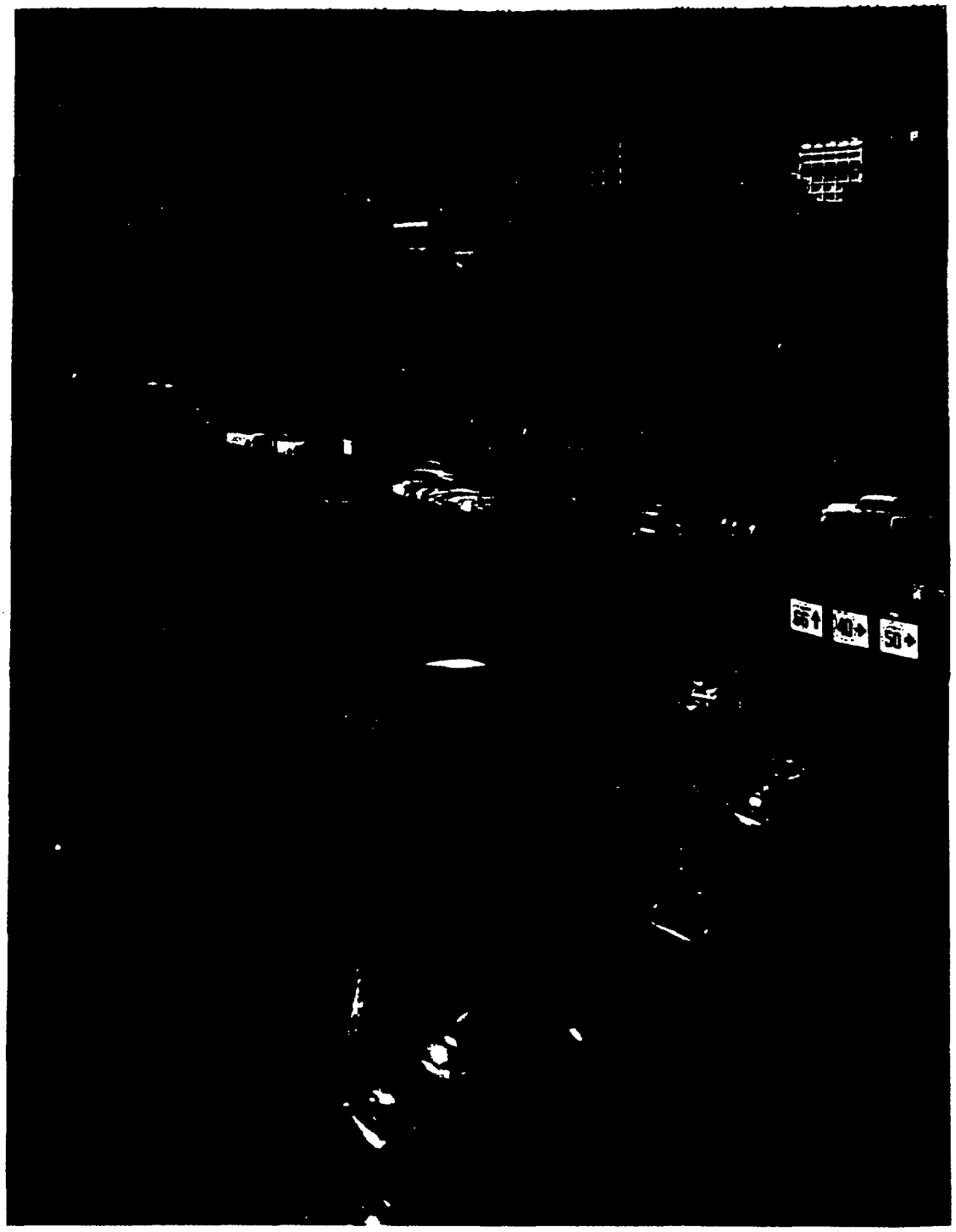

Monsanto's Contribution to TRANSPORTATION

The nation "rolls on rubber"—either chemically-made synthetic rubber or natural rubber—both requiring chemicals for strength, safety, low cost and long life. Engines get more power, operate longer with phosphate-based gasoline additives. Small amounts of chemicals added to oil keep engines cleaner, protect gears, inhibit corrosion, reduce wear. Chemicals keep auto radiators rust-free, make brake linings last longer, plastics make safety glass possible. Virtually flame-proof synthetic hydraulic fluids give more safety in airplanes. And all transportation relies on plastics for efficient electrical insulation . . .

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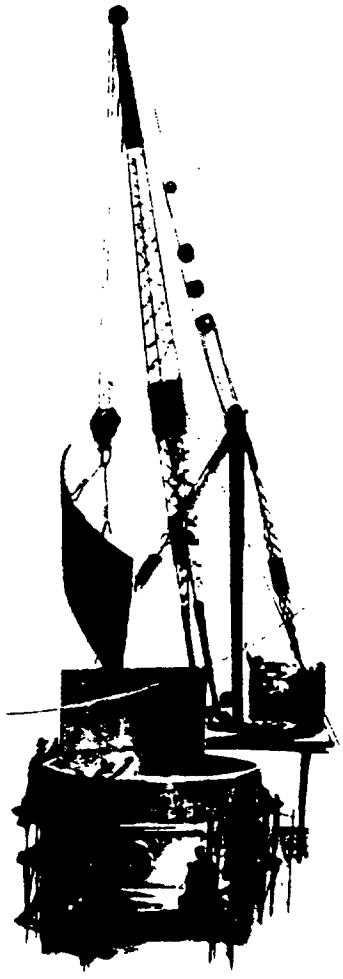
electric furnace at Monsanto, Idaho. In 1953, construction of Monsanto's eighth phosphorus furnace started there, and it is anticipated that the furnace will begin operating in December, 1954. These increased facilities will enable the company to maintain its position as the leading producer of elemental phosphorus.

Laboratory Facilities Expanded

Construction of three new laboratories was started during the year to provide additional research facilities. The application research center at Springfield, Mass., is the largest of the three. This is part of a $1,250,000 technical service and development program in the plastics field. When completed, late in 1954, it will provide working facilities for approximately 125 chemists, engineers and other technically trained personnel who will be assigned exclusively to direct customer service for product and market development.



At Texas City, construction of a new research building will be completed in mid-1954. This will provide additional facilities for research in the field of monomer and petroleum chemicals. We also expect to complete our third research facility by mid-1954. This is a four-story engineering research laboratory at Nitro, W. Va. Designed as a highly versatile installation, this laboratory will be used for process development and engineering research in the fields of rubber and agricultural chemicals, oil additives and synthetic detergents.

Additional Units to Supply Plastics Demands

Among the plastics manufacturing expansions now under way are facilities to increase our capacity of high-impact styrene molding compound by 30,000,000 pounds a year. The improved strength and durability of this new Lustrex material should make it possible for styrene plastics to find applications in new fields. The new units at Springfield will be ready early in 1954.

The Plastics Division completed a 20 per cent expansion in Saflex production facilities at Springfield early in the year and later embarked upon an additional 50 per cent increase. Associated with this was the enlargement of Shawinigan Resins Corporation's facilities for raw material manufacture, reported in the President's Message, page 7.

The use of phenolic resins as binders for sand in shell molding and in laminating applications continues to grow. In 1952, Monsanto began to produce these resins at the Port Plastics, Ohio, plant, and early in 1953 facilities there were substantially increased. Later, we began installing a third production line there as well as increasing the facilities at

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Springfield. The newest additions will increase the company's production capacity for these plastics approximately 15 per cent.

To back up these and other phenolic expansions, Monsanto began adding facilities for a 50 per cent increase in production capacity of formaldehyde. This chemical is one of the basic raw materials for phenolic, melamine and urea resins. The new units, which are located at Springfield, will be completed early in 1954.

New West Coast Plants Operating

A 250-ton-a-day sulfuric acid plant, jointly owned with Tidewater Associated Oil Company, was completed at Avon, Calif., during the year. Monsanto's phenol plant, the first of its kind on the West Coast, also located at Avon, went into operation during the year, ahead of schedule.

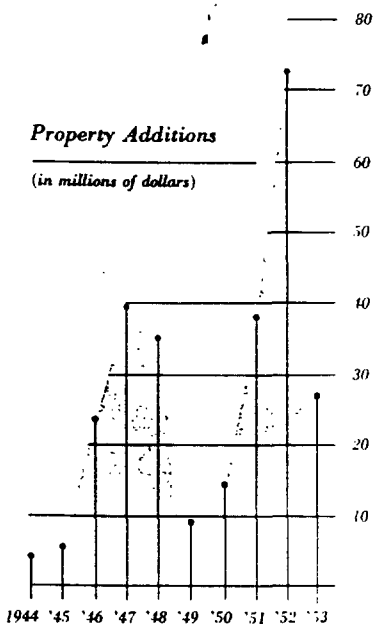
At Texas City, construction was started on a synthetic methanol plant which will be jointly owned with the Heyden Chemical Corporation of New York City. Methanol, known principally for its use as an automobile radiator antifreeze, is necessary for the production of formaldehyde, which is a raw material for other chemicals. Both Heyden and Monsanto are substantial consumers of methanol and by joining in this investment, facilities of adequate size for economic operation were possible. By-product gas from our acetylene operations at Texas City will be used to manufacture the methanol. It is expected that the plant will be in operation late in 1954.

Intermediates and Plasticizers Expanded

Large expansions, which will be in operation by mid-1954, were started at the John F. Queeny plant to increase the production of phthalic anhydride and Santicizer plasticizers. Phthalic anhydride is an intermediate in the production of resins, dyestuffs, plasticizers, perfume bases and pharmaceuticals. The Santicizer plasticizers improve and modify the qualities of plastics, paper and textile coatings, and adhesives.

The addition of new units or the expansion of others inevitably requires increasing service facilities. Among the major projects in this category are larger electric power facilities, a new office-cafeteria-locker-room building and enlarged tank storage at the Queeny plant; a new, large high-pressure boiler at the William G. Krummrich plant; expanded rail facilities at Monsanto, Tenn.; an enlarged boiler plant and a new pilot plant at Nitro; and larger warehouse and office service facilities and increased steam generating capacity at Springfield.

With these new facilities, Monsanto will be able to continue its role in the dynamic chemical industry.



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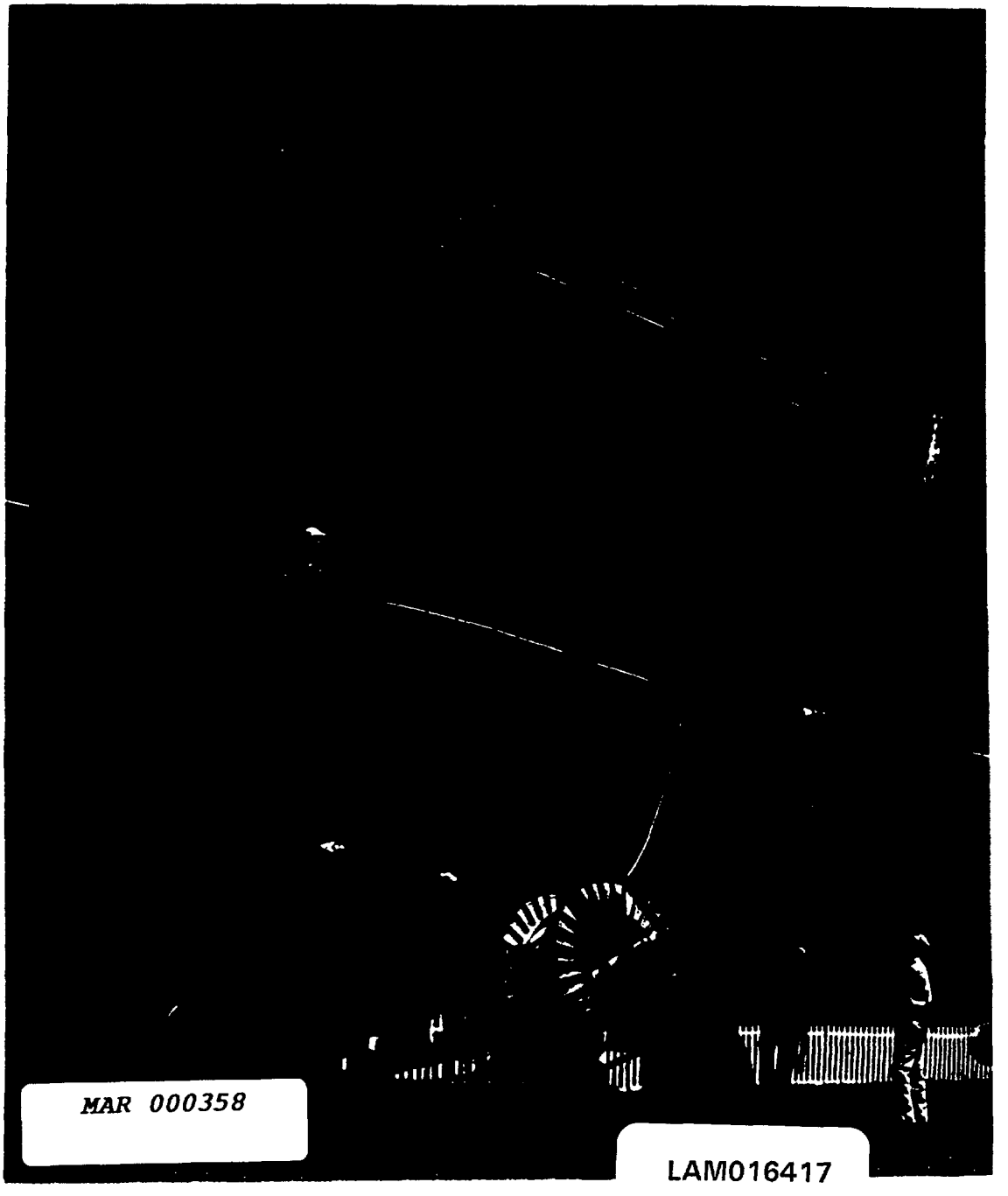
Monsanto's Contribution to

COMMUNICATIONS

The modern miracle of communications makes neighbors of the whole world. Its media could not exist in today's form without chemical products. Plastic insulation safeguards continent-spanning telephone and telegraph cables. Hundreds of molded plastic electronic parts and plastic insulated wires are vital to radio and TV sets and broadcasting studios. Chemicals make photographic film, process the film, provide the surface on which pictures are printed. Paper could not be made as it is without chemical pulping, sizing and other processing agents. Unless the paper was so prepared and inks blended with chemicals, words and pictures could not be printed as they now are . . .



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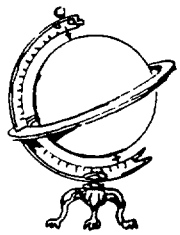

Monsanto's foreign interests include both the sale of American-made products in overseas markets and our investments in associated and subsidiary companies in other countries. The sales of American-made products overseas reached a peak in 1951 and since have decreased as a result of the increasing competition in those markets.

In addition to this increased competition, inconvertibility of most foreign currencies, coupled with currency manipulation by governments and rigidly applied import controls, makes selling American-made products abroad more difficult as time goes on.

All of our foreign manufacturing organizations had increased sales in 1953. Details of these operations include:

ENGLAND: Unaudited reports from Monsanto Chemicals Limited indicate that the 1953 sales of $30,379,000 are the highest in that company's history and that earnings increased to $1,665,000. In the main, our British firm found that the general market tone was extremely encouraging although it reported its competition "still very keen and getting keener." Sales of Lustrex (polystyrene) and of heavy chemicals reached new monthly records during the year. Fine chemicals sales were hurt by a weakened export market for some products, but exports of other chemical products from England to Australia, the Netherlands, the U. S. A., and Sweden were still at a high level.

Because of the higher sales, most of the British plants at Ruabon and Newport worked at near capacity during the year. Two subsidiary activities of Monsanto Chemicals Limited made news during the year: Forth Chemicals Limited, in which Monsanto Chemicals Limited has a one-third interest, began producing styrene monomer, the raw material for Lustrex polystyrene, in May. It was the first time that the monomer had been produced in volume in England. Early in the year, our British subsidiary formed a wholly-owned subsidiary, Monsanto (Soil Conditioners) Limited, and launched the sale of the Merloam formulation of Krilium soil conditioner in England. Tests have shown the soil conditioner to be effective for home gardening in that country, but sales to date have not been large owing in part to the newness of this chemical approach to controlling soil structure.

FRANCE: The new Monsanto-Boussois plant at Wingles began production of Lustrex polystyrene plastic late in 1953, less than a year after the company was founded. Our partner in this company is Compagnies Reunies des Glaces & Verres Speciaux de la France, producers of glass and glass specialties. The new Lustrex plant was built on technology which Monsanto developed in the United States.

AFRICA: Initial prospecting work has been completed in the Sukulu Hills in Uganda by the Tororo Exploration Company Limited in which Monsanto Chemicals Limited has a one-third interest. Indications are that over 200,000,000 tons of soil, which contain workable amounts of phosphate and columbium ores, can be mined. The company is now examining the economics of erecting a treating plant to produce phosphate concentrates for chemical and fertilizer use and to produce columbium, an invaluable element in the manufacture of heat-resisting metal alloys.

CANADA: The general level of business in Canada continued to improve in 1953 and the chemical industry there continued its growth. Monsanto Canada Limited's sales for 1953 increased 31 per cent over 1952. The Canadian subsidiary's growth has kept pace with the increasing chemical markets in that country, which have grown more than 60 per cent since 1945. As part of its program, Monsanto Canada installed a large new petroleum additive plant at Ville La Salle, Quebec. In production at year's end were compounds for special gear lubricants and several types of detergents and inhibitors, all essential to modern high-performance engine oils. These crankcase additives had not been manufactured previously in Canada. Monsanto Canada's wholly-owned subsidiary, Barringham Rubber and Plastics Limited at Oakville, Ont., increased its sales of vinyl chloride film and coated fabrics.

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MEXICO: The business revival which began late in 1952 in Mexico continued and sales of Monsanto Mexicana, S. A. were higher in 1953 than in 1952. In mid-year that subsidiary began operation of a new plant for the manufacture of Opalon, polyvinyl chloride resin and compound. It was the first plant of its kind in Mexico and is designed to accommodate present and foreseeable needs in polyvinyl chloride consuming industries there. This is the third plastic product in Monsanto Mexicana's operations: Lustrex operations started when the plant opened in 1951; Fibestos acetate molding compounds were added in 1952.

ARGENTINA: Sales of the associated company, Monsanto-Atanor Industrias Quimicas Argentinas, S. A. (Buenos Aires), were better and the profits also improved.

JAPAN: Although markets for Ultron vinyl chloride film became more competitive in Japan during 1953, Monsanto-Kasei Kogyo Kabushiki Kaisha improved sales considerably. The use of this clear film over wood and metal frames for greenhouses, as well as for other agricultural applications, has found wide acceptance. The use of Ultron in raincoats and other articles of wearing apparel also is growing, as is Opalon resin for wire and cable coating. In addition to the resin and film which it manufactures, Monsanto-Kasei is producing dioctyl phthalate and Santicizer 160 plasticizers.

INDIA: Sales of our trading organization, Monsanto Chemicals of India Limited, were slightly higher in 1953 than in the previous high year, 1952. The company faced greater difficulty in its operation because of increases in import duties and the currency problems of that nation.

AUSTRALIA: As business conditions in Australia improved, Monsanto Chemicals (Australia) Limited's sales improved, too. At the end of 1953, sales were 16 per cent higher than in the previous year and the earnings also were higher. One of the reasons earnings improved was that in mid-year, the beginning of the Australian Government's fiscal year, general taxes were reduced and the basic corporate tax dropped from 45 per cent to 35 per cent. Krilium soil conditioner underwent extensive testing and experimental use in Australia with government authorities and agricultural and horticultural experts conducting the tests. The results showed that the synthetic soil conditioner could make excellent contributions in that country and the Australian organization has started marketing it, following the pattern set in the United States of selling through wholesale and retail channels. In October, a new Lustrex plant went into operation in Australia—the first one to manufacture polystyrene there—to meet the growing demands of the country's plastics industry.



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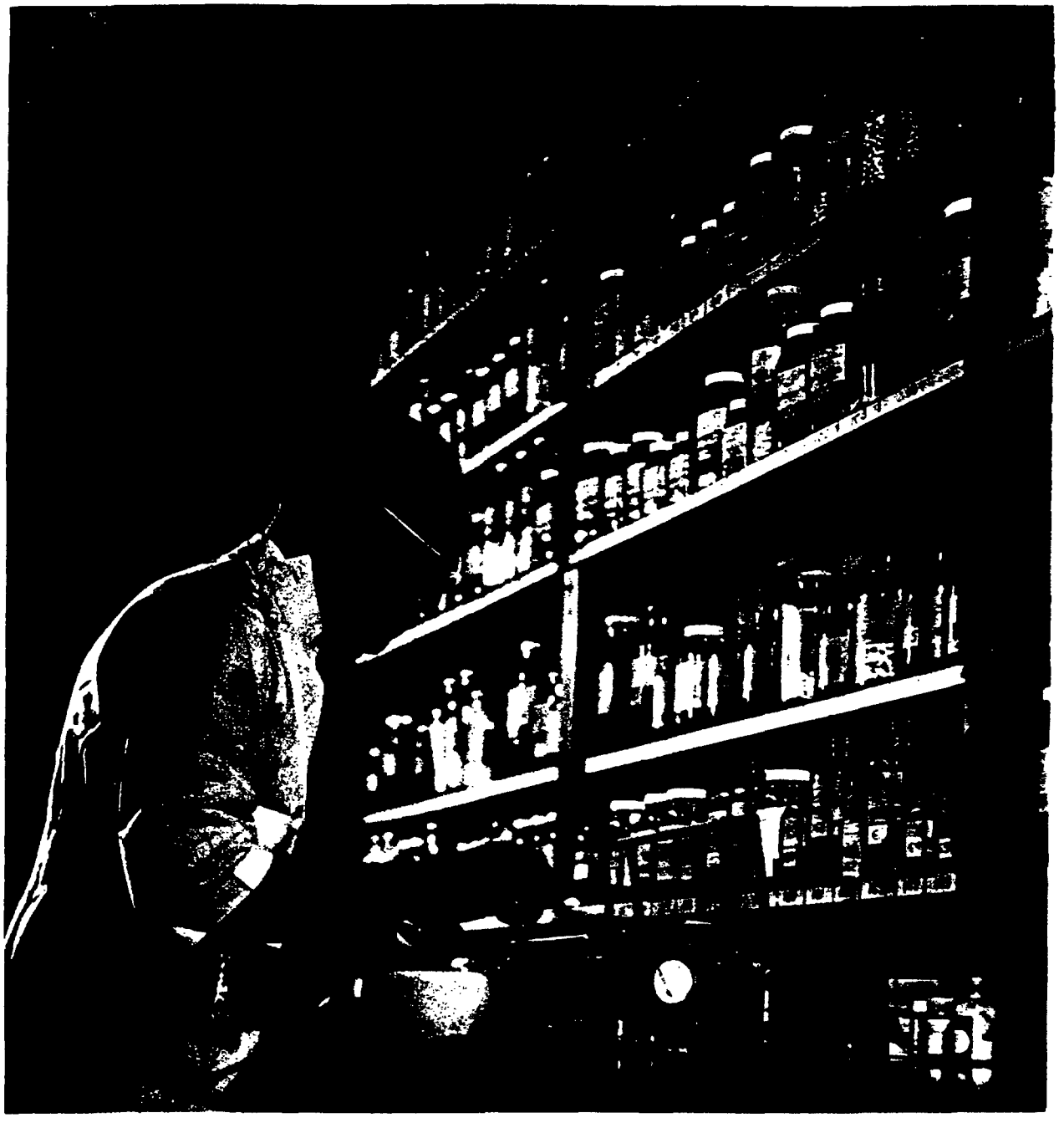

The physician who writes a prescription and the pharmacist who compounds it are the final links in a chain that begins in the chemical industry's research laboratories and ends with soothing mankind's aches and pains. Contributing to this field are such products as saccharin, caffeine, aspirin, phenacetin, sulfa drugs, antihistamines, penicillin, chloromycetin and other miracle drugs, all of which start in the chemical industry. Even commonplace chemicals fill a work-a-day role in the field of health. For example, chlorine and aluminum sulfate are vital, for they purify the water supplies of our cities...

Monsanto's Contribution to

HEALTH

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In 1938, viewing the projected expansion of the company, Monsanto moved from central control of the organization to a decentralized operation which has contributed much to the company's growth. Delegating authority and responsibility down-line, to the place where action should be taken, has developed personnel and brought forth the best manpower to direct our operations. Looking back, we are convinced that the decision was sound.

In order to continue to anticipate organization requirements for the efficient operation of our growing company, we made an intensive study during the year of the organization, its people and requirements for expected growth. In addition to studying our own company, we looked at many others in order to check our experiences against theirs. The study confirmed our belief in the decentralized line and staff organization for a company of our size and type. It reaffirmed many of the principles involving personnel practices and policies which Monsanto's management had adopted through the years.

Decentralization Emphasizes Personnel Development

For example, it emphasized that decentralization should mean not only such physical regroupings as may be necessary to provide smaller organization units, but also the tailoring of complete company components with adequate authority and responsibility so that the performance of management personnel in each group can be fairly and fully measured. This principle, in turn, calls for continuing emphasis on the training and development of capable managerial personnel.

Following the study, a new plan of organization structure was developed and became effective January 1, 1954.

Broadly speaking, the company organization is divided into three general categories of responsibility: the trustee, executive and operating functions. The trustee responsibility to the stockholders is lodged in the Board of Directors which, with its Finance and Executive Committees, will continue to exercise the customary policy direction and long-range planning of the company. The executive administration is now lodged in

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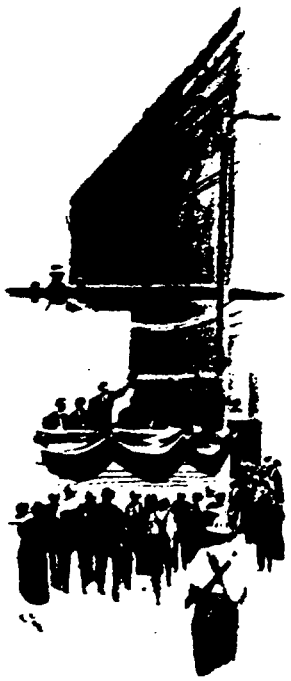
the executive offices, composed of the president, the new position of executive vice president and six other executive officers who have functional responsibility in their respective specialized fields of interest: finance, general counsel, manufacturing, marketing, personnel, and research, development and engineering. Although having no line authority, these officers will, within their respective fields, provide advice and guidance to the operating officers, evaluate the job that has been done, coordinate activities, fill gaps and prevent overlap.

Realignment of divisions is on a product basis and not as a matter of geographical or historical arrangement, to provide a more easily distinguishable grouping of products. The three cardinal principles involved in such regroupings are: first, a division's size is limited only by the diversity of its products, and not by the volume of its manufacture or sales; second, a manufacturing division will have undivided responsibility for the research, development, manufacture and sales of related products; and third, two or more divisions can be financially interested in the same plant site, but a single division shall be responsible for the administration and operation of the plant.



In carrying out these principles, we eliminated three of the former divisions: Merrimac, Texas and Western in order to provide for better integration. The plants of these divisions have been transferred to the remaining operating divisions on the basis of compatibility of products.

Research and Engineering Division Formed

At the same time, a new division, the Research and Engineering Division, was created to further these vital activities of the company. The importance of the research function always has been emphasized in Monsanto; by creating this new division, it is planned to give equal emphasis to the engineering function. The former Central Research Department at Dayton, Ohio; the former General Engineering Department, the engineering sales department formerly operated by the Organic Chemicals Division, the former General Development and Patent Department and the atomic electric project, all of St. Louis, became a part of this newly formed division. Mound Laboratory, which we operate for the Atomic Energy Commission at Miamisburg, Ohio, will report to that division. As a result, the staff departments, which are the service arms of both management and the operating parts of the company, have been reduced from 10 to seven in number.

To fill the positions created, the Board of Directors elected several new officers and reassigned others. All assumed their new positions on January 1, 1954. Robert R. Cole, a member of the Executive Committee since 1948 and a vice president since 1941, became executive vice president. Board Chairman Edgar M. Queeny continues to direct finance activities. Vice President William W. Schneider, who had been director

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of the Law Department, became general counsel. Vice President Felix N. Williams, a member of the Executive Committee, became functional vice president for manufacturing; Vice President John L. Gillis, who had been general manager of the Organic Chemicals Division, became functional vice president for marketing; Vice President Francis J. Curtis, who had been acting as assistant to the president, became functional vice president for personnel; and Vice President Carroll A. Hochwalt, also a member of the Executive Committee, became functional vice president for research, development and engineering.

Charles H. Sommer Jr., who had been general manager of the Merrimac Division, was elected a vice president and became general manager of the Organic Chemicals Division and J. Russell Wilson, who had been director of the General Development and Patent Department, was elected a vice president and became general manager of the Research and Engineering Division. Also elected vice presidents were Robert K. Mueller, general manager of the Plastics Division; Roy L. Brandenburger, general manager of the Merchandising Division and E. A. O'Neal Jr., general manager of the Overseas Division. Vice President J. L. Christian, who had been general manager of the Phosphate Division, became general manager of the Inorganic Chemicals Division and Irving C. Smith, who had been general manager of the Western Division, became assistant to the president and chairman of the Budget Committee.

The Accounting Department continues under Vice President and Comptroller Daniel M. Sheehan; the Advertising and Public Relations Department continues under Howard A. Ma ple; Corporate Secretary Edwin J. Putzell Jr., became director of the Law Department, succeeding Mr. Schneider; Dr. R. E. Kelly continues as director of the Medical Department; E. W. Dwyer became director of the Personnel Relations Department, succeeding Prescott Sandidge who became assistant director of the Purchasing and Traffic Department; Howard J. Heffernan, who had been general manager of sales for the Merrimac Division, became director of the Purchasing and Traffic Department, succeeding the late Vice President Clayton A. Wolfe; and Vice President William W. Schneider also assumed the position of treasurer, succeeding Fred A. Ulmer who retired because of his health.

The new position of regional vice president was created to meet the growing need for top level company representation in geographical areas of the country. Edward W. Gamble Jr., manager of the company's Washington, D. C., office, and Victor E. Williams, director of sales in New York, were appointed regional vice presidents for their respective areas.

The moves thus made, together with all the others necessary to implement the balance of the organization structure, should enable the company to continue its growth with the assurance that the best possible staff always will be on hand to provide the most profitable operations.

ORGANIZATION O

MONSANTO

Monsanto's new organization, effective January 1, 1954, is explained in detail in the section "The Organization," page 33.

Trustee

Executive

FINANCE
Edgar M. Queeny
Board Chairman

GENERAL COUNSEL
W. W. Schneider
Vice President

ACCOUNTING
Daniel M. Sheehan
Comptroller

ADVERTISING AND PUBLIC RELATIONS
Howard A. Marple
Director

LAW
Edwin J. Putzell
Director

Operating

INORGANIC CHEMICALS DIVISION
J. L. Christian
Vice President and General Manager

ANNISTON
CAMDEN
CARONDELET
COLUMBIA
EVERETT
SODA SPRINGS
TRENTON

MERCHANDISING DIVISION
Roy L. Brandenburger
Vice President and General Manager

COLUMBUS

ORGANIC CHEMICALS DIVISION
Charles H. Sommer J
Vice President and General Ma

AVON
KRUMMRICH
QUEENY
N
NORF

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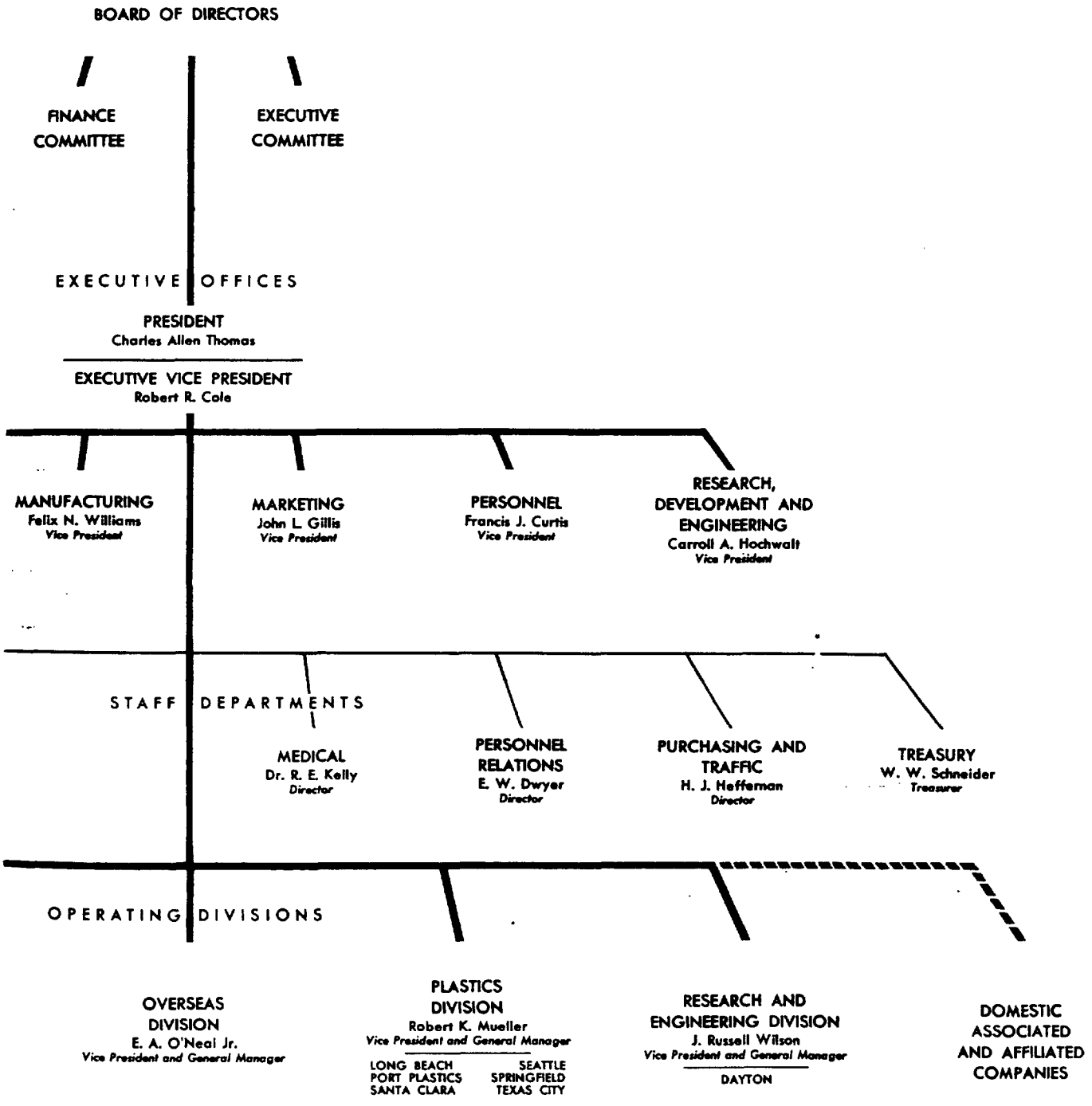
MONSANTO CHEMICAL COMPANY



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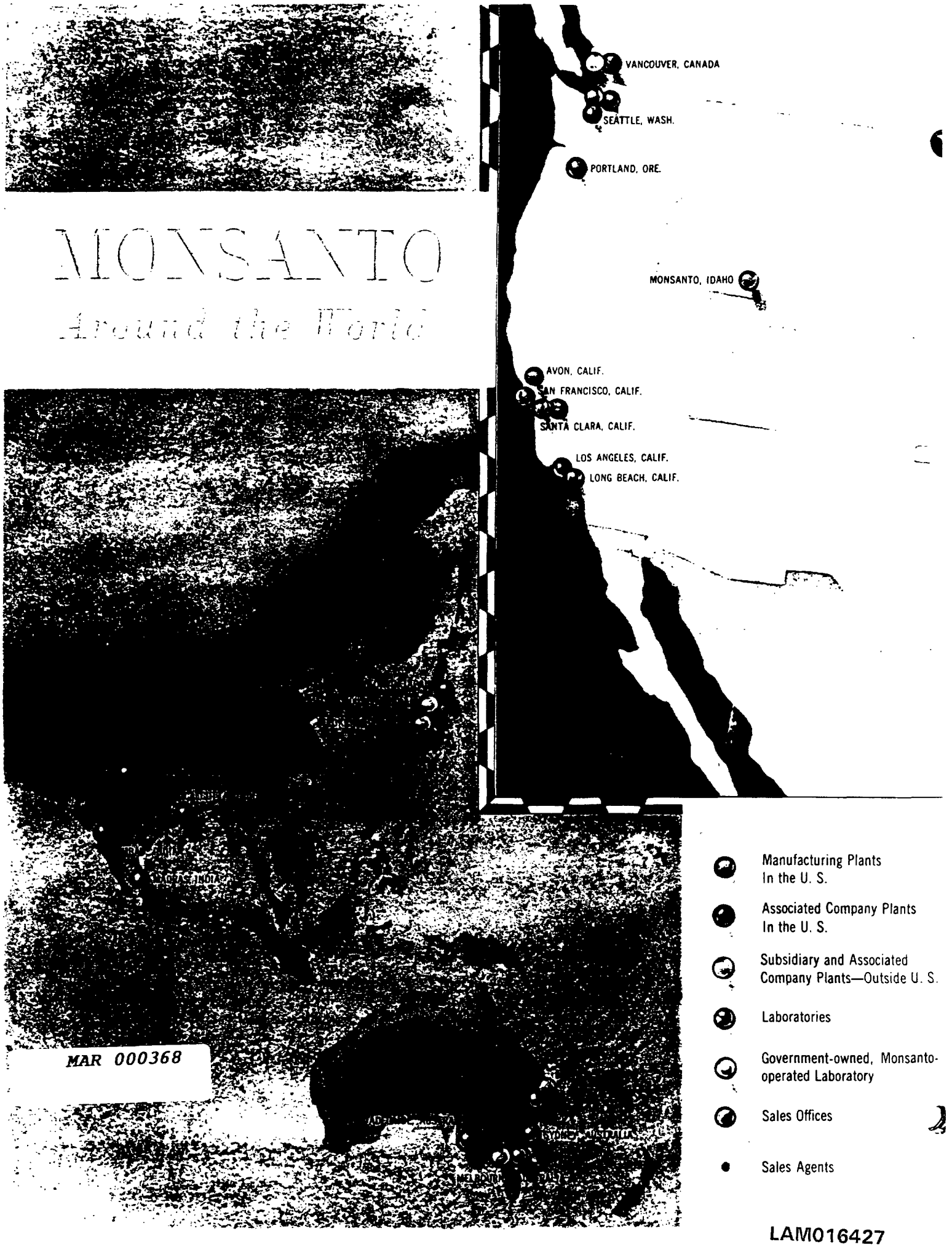

MONSANTO

Around the World

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MONSANTO
CHEMICALS – PLASTICS

MAR 000369

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Statement of Consolidated Financial Condition

ASSETS

	1953	*1952*	Increase *Decrease*
Current Assets:			
Cash	$ 29,658,793	$ 32,419,305	*$ 2,760,512*
Marketable securities:			
United States Government	5,983,923	13,497,635	*7,513,712*
Other	5,277,277	3,974,535	1,302,742
Receivables, less reserves of $600,297 in 1953 and $665,672 in 1952	34,438,957	37,605,821	*3,166,864*
Inventories	61,903,578	53,226,476	8,677,102
Total	$137,262,528	$140,723,772	*$ 3,461,244*
Funds Restricted to Government Contracts	$ 1,257,808	$ 1,505,605	*$ 247,797*
Investments and Miscellaneous Assets:			
Investment in unconsolidated subsidiaries	$ 993,922	$ 988,924	$ 4,998
Investment in associated companies	23,215,000	15,715,000	7,500,000
Common capital stock in treasury held for bonus awards	1,655,405	1,565,886	89,519
Miscellaneous investments, receivables and deposits	1,763,014	1,622,438	140,576
Total	$ 27,627,341	$ 19,892,248	$ 7,735,093
Property:			
Land	$ 5,983,372	$ 5,589,898	$ 393,474
Buildings	51,317,861	48,273,131	3,044,730
Machinery and equipment	227,361,344	211,692,039	15,669,305
Phosphate deposits, less depletion	3,910,447	3,800,237	110,210
Total	$288,573,024	$269,355,305	$19,217,719
Less—Reserves for depreciation, amortization and obsolescence	96,081,084	80,591,247	15,489,837
Net property	$192,491,940	$188,764,058	$ 3,727,882
Patents and Processes	$ 1	$ 1	
Deferred Charges	3,383,470	2,058,200	$ 1,325,270
TOTAL	$362,023,088	$352,943,884	$ 9,079,204

See pages 44, 45 and 46 for notes.

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December 31, 1953 and 1952

LIABILITIES

	1953	*1952*	Increase *Decrease*
Current Liabilities:			
Estimated income taxes	$ 23,724,765	$ 21,454,918	$ 2,269,847
Less—United States Treasury Savings Notes	21,997,875	20,235,906	1,761,969
Net estimated income tax liability	$ 1,726,890	$ 1,219,012	$ 507,878
Accounts payable and accruals	25,139,318	27,524,142	*2,384,824*
Deposits for returnable containers	979,984	1,061,065	*81,081*
Total	$ 27,846,192	$ 29,804,219	*$ 1,958,027*
Employes' Bonus Awards Payable Beyond One Year	$ 1,573,691	$ 1,628,489	*$ 54,798*
Advances on Government Contracts	$ 1,257,808	$ 1,505,605	*$ 247,797*
Long Term Debt:			
2.65% Debentures due November 1, 1971	$ 30,000,000	$ 30,000,000	
3¾% Income Debentures due January 1, 2002	66,000,000	66,000,000	
Canadian subsidiaries	977,500	1,070,000	*$ 92,500*
Total	$ 96,977,500	$ 97,070,000	*$ 92,500*
Reserves:			
Pensions	$ 5,979,575	$ 6,844,758	*$ 865,183*
Employes' bonus—unawarded	725,803	865,905	*140,102*
Total	$ 6,705,378	$ 7,710,663	*$ 1,005,285*
Minority Interests in Subsidiary Companies	$ 2,116,963	$ 2,406,472	*$ 289,509*
Capital Stock and Surplus:			
Preference stock—authorized, 500,000 shares without par value, issuable in series by Board of Directors; outstanding in 1953 and 1952, 150,000 shares of Series C, $3.85 dividend—non-convertible—cumulative and redeemable; at $100 a share	$ 15,000,000	$ 15,000,000	
Common stock—authorized, 6,000,000 shares, par value $5 each; reserved for stock options, 94,500 shares in 1953 and 1952; outstanding, 5,270,051 shares in 1953 and 5,268,189 shares in 1952	26,350,255	26,340,945	$ 9,310
Surplus:			
Paid-in	93,620,099	93,572,705	47,394
Earned	90,575,202	77,904,786	12,670,416
Total	$225,545,556	$212,818,436	$12,727,120
TOTAL	$362,023,088	$352,943,884	$ 9,079,204

See pages 44, 45 and 46 for notes.

LAM016430

Statement of Consolidated Income
for the years ended December 31, 1953 and 1952

	1953	*1952*	Increase *Decrease*
Income:			
Net sales	$340,616,526	$266,704,442	$73,912,084
Dividends from subsidiary and associated companies	697,015	747,289	*50,274*
Canadian exchange adjustment		320,582	*320,582*
Other	3,026,664	2,974,813	51,851
Total	$344,340,205	$270,747,126	$73,593,079
Deductions:			
Cost of goods sold	$241,401,777	$187,555,630	$53,846,147
Selling and administrative expenses	36,205,042	25,309,090	10,895,952
Research expenses	10,267,201	8,851,882	1,415,319
Provision for employes' bonus	1,177,804	620,362	557,442
Interest expense	3,440,099	3,307,728	132,371
Net income applicable to minority interests	174,135	138,669	35,466
Other	2,229,555	3,686,522	*1,456,967*
Total	$294,895,613	$229,469,883	$65,425,730
Income Before Provision for Income Taxes	$ 49,444,592	$ 41,277,243	$ 8,167,349
Provision for Income Taxes:			
Normal and surtax	$ 22,813,000	$ 19,702,000	$ 3,111,000
Excess profits	247,000	*1,614,000**	1,861,000
Total	$ 23,060,000	$ 18,088,000	$ 4,972,000
Net Income	$ 26,384,592	$ 23,189,243	$ 3,195,349

**Indicates deduction.*

See pages 44, 45 and 46 for notes.

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Statement of Consolidated Surplus
for the years ended December 31, 1953 and 1952

	Earned Surplus		*Paid-in Surplus*	
	1953	*1952*	*1953*	*1952*
Balance at Beginning of Year	$ 77,904,786	$68,178,783	$93,572,705	$57,572,705
Additions:				
Net income for the year	26,384,592	23,189,243		
Excess of sales price of 400,000 shares of common stock over the par value thereof at $5 each				36,000,000
Adjustment incident to acquisition of minority interest in subsidiary company			47,394	
Total	$104,289,378	$91,368,026	$93,620,099	$93,572,705
Deductions:				
Cash dividends on capital stock of parent company:				
Preference—Series C—at the annual rate of $3.85 a share	$ 577,500	$ 577,500		
Common—at the rate of $2.50 a share	13,136,676	12,885,740		
Total	$ 13,714,176	$13,463,240		
Balance at End of Year	$ 90,575,202	$77,904,786	$93,620,099	$93,572,705

See pages 44, 45 and 46 for notes.

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Notes to Financial Statements

Principle of Consolidation

The consolidated statements include all subsidiary companies of which Monsanto Chemical Company owns more than 50% of the voting capital stock, except the British subsidiary (Monsanto Chemicals Limited) and its Australian and other subsidiary companies, a Brazilian subsidiary in process of liquidation, a company in India jointly owned with the British subsidiary, a Panamanian corporation, and two wholly-owned non-operating companies carried at a nominal value.

Inventories

Inventories are valued at cost, which is not in excess of market. The valuation of approximately one-third of the inventories at December 31, 1953 has been determined on a last-in, first-out basis and the remainder on a first-in, first-out or an average cost basis.

Commitments and Contingent Liabilities

At December 31, 1953, there were commitments aggregating approximately $11,700,000 in connection with uncompleted additions to property.

Under an agreement dated June 8, 1951, in connection with the construction and operation of plants of The Chemstrand Corporation, a company owned jointly with American Viscose Corporation, Monsanto Chemical Company has obligated itself to pay one-half of (1) all amounts needed by Chemstrand for completion of the Acrilan and Nylon plants over and above the lesser of $110,000,000 or 80% of the total cost of such plants when completed, and (2) all amounts needed by Chemstrand for working capital during the construction of the Nylon plant and all amounts necessary to cause Chemstrand to have not less than $18,000,000 of working capital on the completion date of such Nylon plant. The agreement also obligates Monsanto (1) in case the Nylon plant is not completed on or before April 1, 1954, to pay one-half of any amounts needed thereafter by Chemstrand to pay interest on its Series A bonds until the completion of the Nylon plant, and (2) in case said Nylon plant is not completed on or before April 1, 1976, or the principal of said bonds becomes due prior to completion of the Nylon plant by reason of certain defaults, to pay one-half of any amounts needed by Chemstrand to pay the principal of such bonds.

At December 31, 1953, there were pending against Monsanto sundry suits, claims, etc., all incident to the ordinary course of business. There is no way of determining the ultimate disposition of these matters but, in the opinion of management, losses, if any, over and above amounts provided therefor in the accounts, will not be material.

Debentures

Sinking fund payments of $1,000,000 annually on the 2.65% debentures begin May 1, 1957.

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Stock Options

Under a Stock Option Plan for officers and key employes, 12 options to purchase a total of 94,500 shares of the company's common stock are outstanding. The option prices range from $86.50 to $98.50 a share, representing the closing prices of the stock on the New York Stock Exchange on the dates of grant of the options in the year 1951. None of the options granted has been exercised.

Equity in Affiliates

The company's approximate equity applicable to its investments in affiliates, as shown by their unaudited financial statements at December 31, 1953, was as follows:

Unconsolidated subsidiaries	$10,712,000
Associated companies, 50% owned	18,800,000
Total	$29,512,000

The principal associated company is The Chemstrand Corporation in which Monsanto's investment is $22,500,000, represented by capital stock and subordinated notes. Reference is made to a description of the activities during 1953 of The Chemstrand Corporation in the President's Message appearing on page 6 of this report. Following are statements of The Chemstrand Corporation's financial position:

Statement of Financial Condition at December 31, 1953:

Cash, inventories and other current assets less current liabilities		$ 2,656,742
Plant and equipment, less depreciation of $2,330,269		114,222,965
Funds for completion of plants		22,828,593
Total		$139,708,300
Derived from:		
First mortgage 3½% bonds		$110,000,000
Owners' investment	$45,000,000	
Less—Starting-up costs—net	15,291,700	29,708,300
Total		$139,708,300

Statement of Starting-Up Costs to December 31, 1953:

Research and product development	$ 4,045,745
Administration, advertising and market development	4,958,720
Experimental production and employe training	8,156,413
Depreciation	2,330,269
Total	$ 19,491,147
Deduct—Sales of product	4,199,447
Net	$ 15,291,700

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Notes to Financial Statements (Continued)

Equity in Net Income of Unconsolidated Subsidiaries

The equity of Monsanto Chemical Company in the unaudited net income of unconsolidated subsidiaries for the year ended December 31, 1953 was approximately $1,119,000. Dividends of $508,200 were received from the British subsidiary during the year 1953 and included in dividend income in the Statement of Consolidated Income.

Depreciation, Amortization and Obsolescence

The property accounts at December 31, 1953 include completed facilities constructed under Certificates of Necessity, the certified portion of which amounts to approximately $43,921,000, or about 52% of the total cost of such facilities. The certified portion is being amortized in the accounts at the rate of 20% annually, the same rate allowed for federal income tax purposes, and the remainder of the total cost of such facilities is being depreciated at lower rates.

The total charge to income as provision for depreciation, amortization and obsolescence amounted to $22,850,358 for the year 1953 and $21,184,269 for the year 1952. Included in these amounts are $2,206,000 and $1,562,000 respectively, representing amortization at the 20% rate on facilities constructed under Certificates of Necessity.

HASKINS & SELLS
CERTIFIED PUBLIC ACCOUNTANTS

BOATMEN'S BANK BUILDING
SAINT LOUIS 2

Accountants' Certificate

Monsanto Chemical Company:

We have examined the statement of consolidated financial condition of Monsanto Chemical Company and its consolidated subsidiaries as of December 31, 1953 and the related statements of consolidated income and surplus 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.

In our opinion, the accompanying statement of consolidated financial condition and statements of consolidated income and surplus present fairly the financial condition of the companies at December 31, 1953 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.

HASKINS & SELLS

February 11, 1954

EARNINGS AND DIVIDENDS A COMMON SHARE

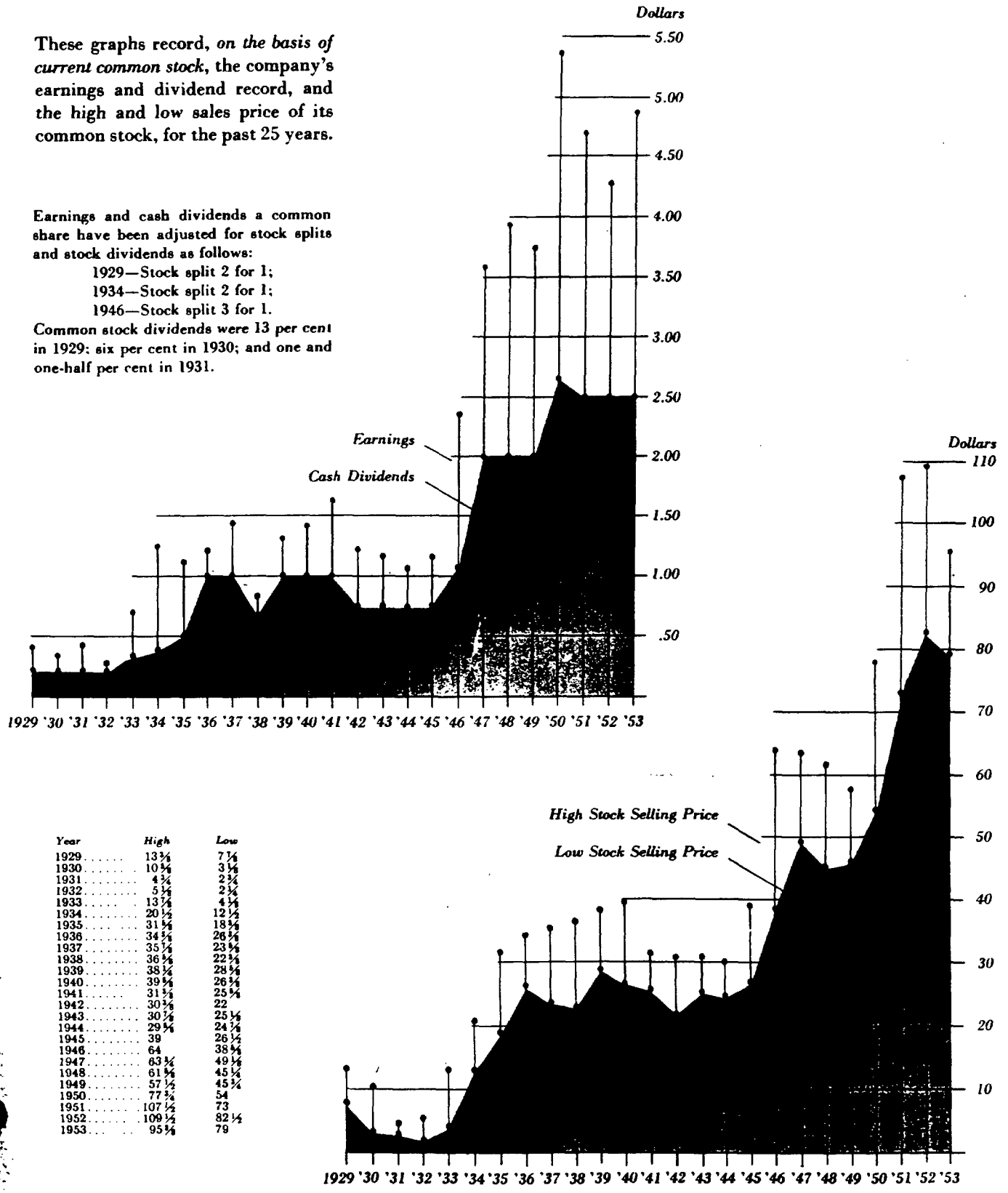
*of Monsanto Chemical Company and Consolidated Subsidiaries**

These graphs record, *on the basis of current common stock*, the company's earnings and dividend record, and the high and low sales price of its common stock, for the past 25 years.

Earnings and cash dividends a common share have been adjusted for stock splits and stock dividends as follows:

1929—Stock split 2 for 1;
1934—Stock split 2 for 1;
1946—Stock split 3 for 1.

Common stock dividends were 13 per cent in 1929; six per cent in 1930; and one and one-half per cent in 1931.



Year	High	Low
1929	13 3/8	7 1/4
1930	10 5/8	3 1/8
1931	4 3/4	2 3/4
1932	5 1/8	2 1/8
1933	13 1/8	4 1/8
1934	20 1/2	12 1/2
1935	31 5/8	18 3/8
1936	34 5/8	26 3/8
1937	35 1/8	23 3/8
1938	36 5/8	22 1/8
1939	38 1/4	28 5/8
1940	39 3/8	26 3/4
1941	31 3/8	25 5/8
1942	30 3/8	22
1943	30 7/8	25 1/8
1944	29 5/8	24 1/8
1945	39	26 1/2
1946	64	38 5/8
1947	63 3/4	49 1/8
1948	61 5/8	45 1/4
1949	57 1/2	45 3/4
1950	77 3/4	54
1951	107 1/2	73
1952	109 1/2	82 1/2
1953	95 5/8	79

**Exclusive of British and Australian subsidiaries.*

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MONSANTO CHEMICAL COMPANY and SUBSIDIARY COMPANIES

(Including British and Australian Subsidiary Companies)

Statement of Consolidated Financial Condition at December 31, 1944 to 1953, Inclusive (In Thousands of Dollars)

ASSETS

	1953	1952	1951	1950	1949	1948	1947	1946	1945	1944
Current Assets:										
Cash and marketable securities	$ 47,564	$ 53,999	$ 41,728	$ 56,904	$ 27,798	$ 20,651	$ 25,187	$ 43,655	$19,813	$13,048
Receivables, less reserves	40,390	41,878	35,866	30,929	20,247	20,309	18,892	15,932	11,905	11,237
Inventories	70,678	62,659	56,101	33,143	33,713	39,419	30,950	20,190	16,532	15,478
Total	$158,632	$158,536	$133,695	$120,976	$ 81,758	$ 80,379	$ 75,029	$ 79,777	$48,250	$39,763
Funds Restricted to Government Contracts	$ 1,258	$ 1,506	$ 1,638	$ 1,634	$ 1,845	$ 2,172	$ 2,339	$ 2,008	$ 1,857	$ 108
Investments and Miscellaneous Assets:										
Investment in associated companies	$ 23,215	$ 15,715	$ 9,215	$ 1,715	$ 725	$ 715	$ 715	$ 715	$ 715	$ 715
Miscellaneous investments, deposits, etc.	5,264	4,635	3,250	2,269	2,268	2,278	1,648	1,598	1,602	1,293
Insurance claims on destroyed plant—Net							3,844			
Estimated post-war tax refund										2,804
Total	$ 28,479	$ 20,350	$ 12,465	$ 3,984	$ 2,993	$ 2,993	$ 6,207	$ 2,313	$ 2,317	$ 4,812
Property:										
Land	$ 6,320	$ 5,910	$ 4,895	$ 4,423	$ 4,229	$ 3,996	$ 3,821	$ 3,406	$ 2,714	$ 2,483
Buildings	58,596	55,418	46,525	41,432	39,419	36,698	27,074	20,457	15,658	14,995
Machinery and equipment	253,654	236,798	175,730	144,531	132,896	123,964	100,820	73,213	55,647	53,519
Phosphate deposits, less depletion	3,910	3,800	3,505	1,899	1,008	942	792	804	818	774
Total	$322,480	$301,926	$230,655	$192,285	$177,552	$165,600	$132,507	$ 97,880	$74,837	$71,771
Less—Reserves for depreciation, amortization and obsolescence	107,629	90,119	79,518	70,488	60,410	54,247	49,579	45,647	42,534	35,364
Net Property	$214,851	$211,807	$151,137	$121,797	$117,142	$111,353	$ 82,928	$ 52,233	$32,303	$36,407
Deferred Charges	$ 3,514	$ 2,211	$ 2,255	$ 1,441	$ 1,612	$ 1,889	$ 1,710	$ 729	$ 349	$ 649
TOTAL	$406,734	$394,410	$301,190	$249,832	$205,350	$198,786	$168,213	$137,060	$85,076	$81,739

LIABILITIES

Current Liabilities:										
Estimated income taxes	$ 25,760	$ 24,120	$ 43,000	$ 29,873	$ 13,772	$ 14,954	$ 13,869	$ 9,722	$13,673	$14,922
Less—U. S. Treasury Savings Notes and British Tax Reserve Certificates	23,586	20,236	8,378	22,353	9,705	6,371	3,755	7,554	12,837	13,810
Net estimated income tax liability	$ 2,174	$ 3,884	$ 34,622	$ 7,520	$ 4,067	$ 8,583	$ 10,114	$ 2,168	$ 836	$ 1,112
Notes payable to foreign banks	412	637	863	1,525	175	302	466	357	428	734
Accounts payable and accruals	28,999	32,017	23,506	17,826	12,153	12,590	14,790	12,067	6,878	6,599
Deposits for returnable containers	980	1,061	1,739	1,443	897	950	1,043	909	957	1,082
Total	$ 32,565	$ 37,599	$ 60,730	$ 28,314	$ 17,292	$ 22,425	$ 26,413	$ 15,501	$ 9,099	$ 9,527
Employes' Bonus Awards Payable Beyond One Year	$ 1,574	$ 1,628	$ 1,608	$ 1,037						
Advances on Government Contracts	$ 1,258	$ 1,506	$ 1,638	$ 1,634	$ 1,845	$ 2,172	$ 2,339	$ 2,008	$ 1,857	$ 108
Long Term Debt	$106,778	$a101,270	$ 30,312	$ 30,375	$ 30,438	$ 30,500	$ 30,500	$b30,000		
Reserves:										
Pensions	$ 5,979	$ 6,845	$ 7,723	$ 8,492	$ 7,627	$ 6,890	$ 6,066	$ 5,327	$ 4,829	$ 4,405
Employes' bonus—unawarded	726	866	1,322	289						
Future taxation	4,263	3,626	4,453	2,452	452					
Contingencies, etc.							29	81	137	100
Total	$ 10,968	$ 11,337	$ 13,498	$ 11,233	$ 8,079	$ 6,890	$ 6,095	$ 5,408	$ 4,966	$ 4,505
Capital Stock and Surplus:										
Minority interests in subsidiary companies	$ 8,589	$ 8,854	$ 8,593	$ 8,075	$ 6,998	$ 4,520	$ 4,315	$ 1,024	$ 883	$ 824
Preference shares of British subsidiary	10,230	10,230	10,230	6,030	6,030	6,030	6,030	1,940	1,940	1,940
Preference stock	15,000	15,000	15,000	24,482	33,012	33,067	9,163	31,682	21,000	21,000
Common stock	26,350	26,341	24,341	23,521	21,380	21,375	21,265	19,019	12,679	12,676
Capital reserve—excess profits tax post-war refund		494	494	494	494	593	584	623		
Paid-in surplus	100,467	100,417	64,409	55,979	34,625	31,615	30,901	6,837	12,931	12,913
Earned surplus	92,955	79,734	70,337	58,658	45,157	39,599	30,608	23,018	19,721	18,246
Total	$253,591	$241,070	$193,404	$177,239	$147,696	$136,799	$102,866	$ 84,143	$69,154	$67,599
TOTAL	$406,734	$394,410	$301,190	$249,832	$205,350	$198,786	$168,213	$137,060	$85,076	$81,739
Net Working Capital	$126,067	$120,937	$ 72,965	$ 92,662	$ 64,466	$ 57,954	$ 48,616	$ 64,276	$39,151	$30,236

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MONSANTO CHEMICAL COMPANY and SUBSIDIARY COMPANIES

(Including British and Australian Subsidiary Companies)

Statement of Consolidated Income for Years ended December 31, 1944 to 1953, Inclusive

(In Thousands of Dollars, Except Earnings a Share of Common Stock and Book Value of Common Stock)

	1953	1952	1951	1950	1949	1948	1947	1946	1945	1944
Net sales	$376,343	$299,136	$305,715	$248,939	$183,951	$180,033	$156,422	$111,424	$104,355	$96,105
Other income	3,155	3,339	2,549	2,251	1,563	2,238	1,454	1,782	1,941	2,123
Excess profits tax refund—Net				2,411						
Insurance recovery—Net						1,097				
Total	$379,498	$302,475	$308,264	$253,601	$185,514	$183,368	$157,876	$113,206	$106,296	$98,228
Cost of goods sold	$268,557	$213,643	$205,820	$167,792	$130,307	$128,666	$109,784	$ 79,945	$ 76,998	$71,932
Selling, administrative and research expenses	50,461	38,231	29,192	23,356	23,014	21,307	17,980	13,001	10,698	8,864
Provision for employes' bonus	1,178	620	2,291	1,714						
Income charges	6,139	7,181	2,606	1,696	2,358	2,272	1,586	880	666	402
Special provision for obsolescence				2,011						
Texas City employe relief							500			
Net income applicable to minority interests	945	498	1,145	732	409	735	499	199	113	87
Provision for income taxes	25,284	19,440	42,814	29,731	12,136	11,793	11,482	8,491	12,202	11,849
Total	$352,564	$279,613	$283,868	$227,032	$168,224	$164,773	$141,831	$102,516	$100,677	$93,134
Transferred to earned surplus	$ 26,934	$ 22,862	$ 24,396	$ 26,569	$ 17,290	$ 18,595	$ 16,045	$ 10,690	$ 5,619	$ 5,094
Per share of common stock	$ 5.00	$ 4.23	$ 4.89	$ 5.44	$ 3.75	$ 4.08	$ 3.70	$ 2.53	$ c1.24	$ c1.11
Cash dividends on common stock	$ 13,137	$ 12,886	$ 12,140	$ 11,800	$ 8,551	$ 8,531	$ 7,992	$ 4,121	$ 2,853	$ 2,826
Provision for depreciation, amortization and obsolescence	$ 24,766	$ 15,112	$ 12,543	$ 13,367	$ 10,128	$ 7,842	$ 5,722	$ 4,510	$ 7,824	$ 7,218
Shares outstanding parent company:										
Preference	150,000	150,000	e150,000	f244,820	330,116	g330,669	h91,632	k316,822	210,000	210,000
Common	5,270,051	d5,268,189	e4,868,189	f4,704,216	4,276,051	g4,274,945	h4,253,019	m3,803,891	1,267,868	1,267,556
Book value of common	$ 41.70	$ 39.29	$ 32.78	$ 29.47	$ 23.77	$ 21.80	$ 19.60	$ 13.01	$ c11.92	$ c11.53
Number of shareholders:										
Common stock	24,415	24,404	19,527	17,427	15,637	15,186	13,999	11,616	10,822	10,560
Preference stock	19	18	17	1,086	3,224	3,147	1,476	5,154	3,257	3,270
British subsidiary:										
Ordinary shares	4,111	4,025	3,438	2,985	3,008	2,292	2,572			
Preference shares	3,249	3,261	3,307	1,565	1,586	1,623	1,644	848	846	852
Total	31,794	31,708	26,289	23,063	23,455	22,248	19,691	17,618	14,925	14,682
Number of employes at end of year, including those in plants operated for United States Government	19,759	19,367	19,031	17,227	15,637	16,343	18,381	15,319	12,658	11,523

The 1953 figures include the unaudited accounts of the British and Australian subsidiary companies.

For comparative purposes, the above income account for the year 1944 has been adjusted to reflect the additional amortization applicable to that year.

Principal changes are accounted for as follows:

a $66,000,000 of 3¼% Income Debentures sold at par. b $30,000,000 of 2.65% Debentures sold at par. c After giving effect to 3 for 1 exchange of stock in 1946. d 400,000 shares of common stock sold to underwriters at $95 a share. e 94,615 shares Series B preference stock converted into 163,973 common shares. f 150,000 shares Series C preference stock sold to 17 purchasers at $100 a share; 79,726 shares Series A preference stock converted into 159,452 common shares; 155,060 shares Series B preference stock converted into 268,713 common shares. g 250,000 shares Series B preference stock sold to underwriters at $99 a share; 10,963 shares Series A preference stock converted into 21,926 common shares. h 224,564 shares Series A preference stock converted into 449,128 common shares. k 316,967 shares Series A preference stock sold at $101.50 a share to holders of rights previously issued to common stockholders; 210,000 shares preferred stock redeemed. m Stock exchanged 3 for 1.

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MONSANTO CHEMICAL COMPANY

Source and Disposition of Funds by years, for the five years ended December 31, 1953

	Total	1953	1952	1951	1950	1949
Source of Funds:						
Net income	$116,508,474	$26,384,592	$ 23,189,243	$23,477,884	$26,220,333	$17,236,422
Provision for:						
Depreciation, amortization and obsolescence	68,275,061	22,850,358	13,184,269	11,058,311	11,992,483	9,189,640
Employes' bonus, less current liability	2,299,494	*194,900*	435,366	1,604,475	1,325,785	
Sale of securities:						
3¼% income debentures due January 1, 2002	66,000,000		66,000,000			
200,000 shares of common capital stock	38,000,000		38,000,000			
150,000 shares 4½% Series C preference (no par)	15,000,000				15,000,000	
Preference stock of Canadian subsidiary company	765,000				765,000	
Other—net	2,139,886				917,356	1,216,530
Total	$308,988,915	$49,040,050	$139,808,878	$36,140,670	$56,220,957	$27,642,592
Disposition of funds:						
Dividends paid:						
Preference	$ 4,486,988	$ 577,500	$ 577,500	$ 577,619	$ 1,198,241	$ 1,261,128
Common	58,513,397	13,136,676	12,885,740	12,139,858	11,800,267	8,550,856
Total	$ 62,700,385	$13,714,176	$13,463,240	$12,717,477	$12,998,508	$ 9,811,984
Plant additions and replacements	161,711,596	26,822,237	72,655,501	38,371,980	14,039,410	9,822,468
Investment in Canadian subsidiary Corporation	22,500,000	7,500,000	6,500,000	7,500,000	990,000	10,000
Increase (decrease) in working capital exclusive of funds invested in marketable securities	7,921,689	7,468,265	3,502,700	(1,018,477)	7,356,995	612,206
Other—net	3,153,237	2,506,854	251,238	2,150,670		
Total	$258,987,907	$58,011,532	$129,372,679	$59,720,650	$34,384,913	$19,496,133
Increase in cash and marketable securities	$ 50,000,008	$ 8,971,482	$ 10,436,199	$ (23,579,980)	$ 21,836,044	$ 8,146,459

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and

(*Exclusive of British and Australian Companies*)

Classification of Sales for Years 1953, 1952 and 1948

	1953	*1952*	*1948*
Plastics, Synthetic Resins and Surface Coatings	$110,043,363	$ 82,581,716	$ 47,823,856
Phosphate Products and Detergents	72,565,358	46,080,333	21,514,464
Intermediates, Plasticizers and Resins	52,508,777	35,742,253	24,342,712
Rubber and Petroleum Chemicals	35,492,753	31,203,632	13,779,899
Pharmaceuticals, Flavors and Condiments	19,961,889	23,218,572	20,740,296
Heavy Chemicals	18,245,581	15,064,104	12,248,891
Insecticides, Herbicides, Wood Preservatives and Agricultural Chemicals	13,461,430	12,199,388	8,595,876
Other Products	18,337,375	20,614,444	12,563,447
Total	$340,616,526	$266,704,442	$161,609,441

MONSANTO CHEMICAL COMPANY

Per Cent of Sales by Major Consuming Industries

For years ended December 31, 1949 to 1953, Inclusive

	1953		*1952*		*1951*		*1950*		*1949*	
		%		%		%		%		%
Plastics and Synthetic Resins	*1*	14.5	*1*	12.8	*1*	13.4	*1*	13.9	*1*	13.5
Rubber	*2*	13.5	*2*	12.6	*2*	11.2	*3*	9.2	*3*	10.0
Soap and Synthetic Detergents	*3*	11.3	*3*	10.6	*3*	10.7	*2*	9.8	*2*	10.7
Paint and Varnish and Printing Ink	*4*	7.6	*5*	6.8	*5*	6.9	*6*	7.7	*4*	7.5
Stone, Glass and Vitreous Products	*5*	5.6	*4*	6.9	*7*	6.1	*5*	7.8	*6*	7.1
Laundry, Cleaning and Polishing Compounds	*6*	5.3	*9*	5.2	*11*	3.9	*13*	3.3	*11*	3.6
Petroleum	*7*	5.3	*7*	5.6	*6*	6.3	*8*	5.7	*8*	6.0
Food	*8*	4.7	*8*	5.3	*8*	5.4	*7*	5.8	*5*	7.2
Textile	*9*	4.7	*10*	4.3	*10*	4.1	*10*	4.0	*10*	3.8
Metal Fabricating	*10*	4.6	*11*	4.2	*9*	4.3	*9*	4.1	*9*	4.1
Pharmaceuticals	*11*	3.6	*6*	6.6	*4*	7.6	*4*	8.2	*7*	6.4
Paper and Printing	*12*	3.6	*12*	3.5	*12*	3.6	*11*	3.6	*12*	3.5
Iron, Steel and Related Products	*13*	2.8	*14*	2.9	*13*	3.1	*14*	2.9	*15*	2.3
Lumber and Timber	*14*	2.5	*13*	3.0	*14*	2.9	*12*	3.4	*13*	3.3
Color and Dyestuffs	*15*	1.8	*15*	1.6	*15*	2.7	*15*	2.8	*14*	2.9
Other		8.6		8.1		7.8		7.8		8.3
Total		100.0		100.0		100.0		100.0		100.0

Numbers in italics indicate order of importance.

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DETAILS OF STOCK OWNERSHIP

Monsanto Chemical Company Common Stock as of November 10, 1953

Classification of Stock Ownership

	Number of Stockholders	*Number of Shares Owned*
Men	8,311	938,998
Women	9,123	912,975
Joint Tenants	1,646	60,017
Employes, Including Officers	587	162,670
Banks	55	211,419
Charitable Institutions	130	46,132
Educational Institutions	87	44,324
Estates and Trusts	3,059	582,072
Insurance Companies	156	254,636
Investment Brokers and Nominees	850	1,874,098
All Others	411	182,710
Totals	24,415	5,270,051

At Dec. 31, 1953, 533 officers and employes were purchasing 8,037 shares of Monsanto's Common Stock under provisions of the company's Stock Purchase Plan.

Range of Stock Ownership

Range	*Number of Stockholders*	*Number of Shares Owned*
1 to 5 shares	1,202	4,753
6 to 10 shares	2,691	25,610
11 to 15 shares	1,114	15,946
16 to 25 shares	3,401	74,276
26 to 50 shares	5,798	240,153
51 to 99 shares	2,345	165,943
100 shares	2,923	292,300
101 to 199 shares	1,421	206,769
200 shares	792	158,400
201 to 299 shares	336	81,387
300 shares	535	160,500
301 to 399 shares	323	112,598
400 shares	147	58,800
401 to 499 shares	115	51,641
500 shares	158	79,000
501 to 999 shares	506	349,114
1,000 shares and over	608	3,192,861
Totals	24,415	5,270,051

Ownership by States and Countries

Location	*Number of Stockholders*	*Number of Shares Owned*	*Location*	*Number of Stockholders*	*Number of Shares Owned*
Alabama	159	50,074	Ohio	1,104	162,272
Arizona	45	2,035	Oklahoma	36	3,769
Arkansas	24	3,988	Oregon	82	9,056
California	1,564	190,783	Pennsylvania	1,347	322,573
Colorado	139	15,601	Rhode Island	472	50,635
Connecticut	1,068	158,970	South Carolina	68	4,769
Delaware	98	30,087	South Dakota	13	1,023
District of Columbia	288	41,096	Tennessee	143	11,012
Florida	281	24,750	Texas	319	39,400
Georgia	195	21,462	Utah	36	2,646
Idaho	14	478	Vermont	62	3,098
Illinois	1,999	340,203	Virginia	201	14,807
Indiana	222	35,435	Washington	119	47,858
Iowa	129	10,486	West Virginia	89	22,213
Kansas	40	2,585	Wisconsin	492	55,979
Kentucky	221	21,040	Wyoming	9	677
Louisiana	79	5,912	Hawaii	22	2,311
Maine	190	14,440			
Maryland	618	82,228	Foreign:		
Massachusetts	3,431	784,526	Argentina	1	6
Michigan	553	76,325	Belgium	1	15
Minnesota	259	45,879	Brazil	1	5
Mississippi	29	3,919	British West Indies	2	304
Missouri	2,552	532,299	Canada	80	35,348
Montana	21	1,822	Cuba	2	26
Nebraska	60	3,760	England	2	500
Nevada	21	2,435	France	2	58
New Hampshire	174	13,103	Holland	1	10
New Jersey	1,008	228,456	Japan	2	48
New Mexico	26	1,458	Mexico	2	65
New York	4,037	1,705,463	Switzerland	2	132
North Carolina	146	25,102	Venezuela	2	40
North Dakota	12	1,196	Totals	24,415	5,270,051

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MONSANTO CHEMICAL COMPANY, St. Louis, Missouri

Serving Industry . . . Which Serves Mankind

MONSANTO
CHEMICALS – PLASTICS

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