Monsanto®

1963 ANNUAL REPORT

MONSANTO CHEMICAL COMPANY

PLAINTIFF'S
EXHIBIT
P-1131

MONS 352075

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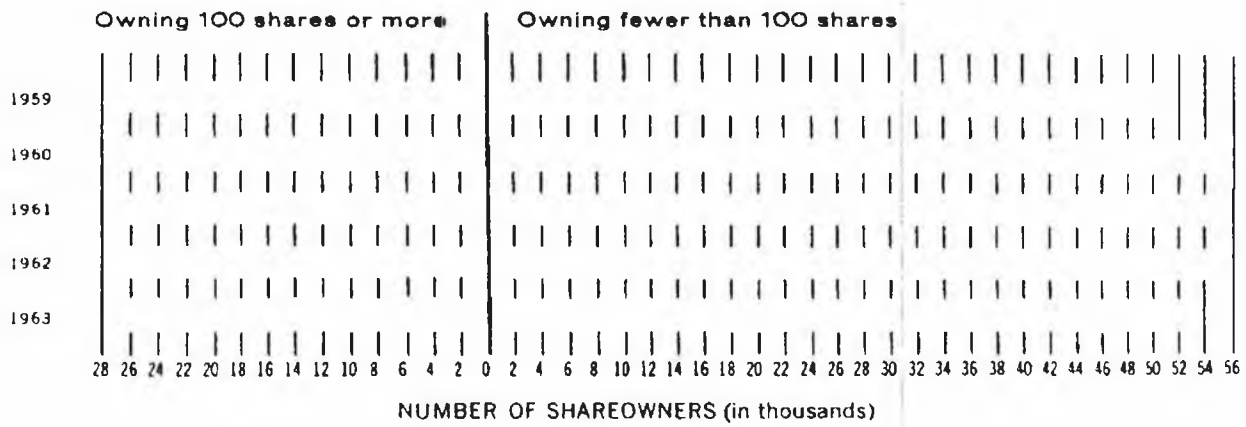
The next Annual Meeting of the shareowners of the Company is to be held on Thursday, March 26, 1964, at the Company's General Offices, 800 North Lindbergh Boulevard, St. Louis County, Missouri. A formal notice of the meeting, together with a proxy statement and form of proxy, is being mailed to each shareowner.

SHAREOWNERS OF RECORD

	1963		1962		1961		1960		1959	
	Number of Shareowners	Number of Shares	Number of Shareowners	Number of Shares	Number of Shareowners	Number of Shares	Number of Shareowners	Number of Shares	Number of Shareowners	Number of Shares
Men	27,760	4,311,187	28,545	4,557,252	28,722	4,723,196	29,953	4,810,770	28,830	4,856,599
Women	24,263	3,593,863	24,657	3,640,656	24,565	3,647,262	24,680	3,682,808	23,629	3,673,086
Joint Accounts	16,844	872,683	17,375	858,686	17,346	852,952	18,173	923,112	16,654	862,573
Charitable Institutions	50	17,957	224	87,445	234	125,849	263	130,699	255	169,421
Educational Institutions	92	111,119	117	178,808	111	154,489	107	151,581	106	92,336
Estates and Trusts	8,284	1,557,168	8,446	1,697,284	8,191	1,875,843	7,755	1,804,416	6,458	1,666,564
Insurance Companies	181	914,390	201	988,887	190	859,916	178	782,364	177	722,566
Brokers and Nominees	1,554	13,152,169	1,133	9,856,764	1,120	9,090,762	1,063	8,666,965	1,312	9,953,829
All Others	1,580	5,433,289	1,754	7,144,365	1,724	6,693,171	1,637	6,242,474	1,254	1,159,883
Total	80,608	29,963,825	82,452	29,010,147	82,203	28,023,440	83,809	27,195,189	78,675	23,156,857



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SUMMARY OF INCOME AND EXPENSES

(In Thousands of Dollars Except Per Share Figures)

	1963	1962
Income:		
From sale of products	$1,192,270	$1,063,195
From licenses, dividends, interest, etc.	13,470	11,731
	1,205,740	1,074,926
Deductions from Income:		
For raw materials, fuel, supplies, etc.	605,848	546,286
For wages and salaries to employes	284,766	254,046
For depreciation, obsolescence, depletion	114,606	97,639
For taxes	100,080	81,565
For interest, principally on long term debt	15,750	15,422
For minority interests in subsidiaries	1,700	1,600
	1,122,750	996,558
Which Left as Net Income	82,990	78,368
Distributed to Shareowners as Cash Dividends	34,978	29,470
Retained for Future Growth	$ 48,012	$ 48,898
Per Common Share Parent Company:		
Net income	$ 2.77	$ 2.70
Cash dividends paid	1.20	1.05
Book value	26.17	24.74
Common Shares Outstanding	29,963,825	29,010,147

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TO THE SHAREOWNERS

In 1963, sales and income were the highest in our history. Disappointing first quarter results were more than offset by gains made in the next two quarters. The final three months pushed both sales and net income to new annual peaks.

Consolidated sales, which totaled $1,192,270,000, were 12 per cent higher than those of the prior year. Net income increased almost six per cent to $82,990,000.

Earnings were $2.77 a share on 29,963,825 shares outstanding, compared to $2.70 a share on 29,010,147 shares the year before. After giving effect to 1963's two per cent stock dividend, the adjusted per-share earnings for 1962 were $2.65.

It is significant to compare the pre-tax income of 1963 with that of 1962. The 1963 figure, which was higher by 13.5 per cent or about $19 millions, reflected a material improvement in operating results. It is unfortunate that less than one-quarter of the increase could be brought down to net.

In 1963, the provision for income taxes increased by about $14.5 millions over that of 1962. This resulted in an effective 1963 tax rate of 48.3 per cent, compared with a 44.5 per cent rate in the previous year. A significant reason for the tax rate increase was the difference in tax treatment of earnings from certain foreign sources required by changes in the tax law. Also, a lower rate of capital spending resulted in a smaller 1963 investment credit. Thus, our gain in net income was limited to approximately $4.5 millions.

Capital outlays for plants, equipment and investments totaled $132,945,000 in 1963. Such expenditures amounted to $178,430,000 the year before.

Cash flow — i.e., earnings before depreciation, obsolescence, depletion, etc. — amounted to $6.59

In 1963, earnings advanced to $2.77 a share from 1962 earnings of $2.70 a share as reported and $2.65 a share after adjustment for the 1963 stock dividend. The increase is accounted for by these factors:

		Earnings a Share
Year 1962 earnings as reported		$2.70
Less adjustment for 1963 stock dividend		.05
		2.65
Additional operating earnings resulting from:		
Higher sales volume	$ .74	
Manufacturing cost savings	.37	
Lower raw material prices	.09	
	1.20	
Reductions in operating earnings caused by:		
Lower selling prices	$.45	
Higher selling, administrative, research, development and other expenses	.35	
Chocolate Bayou shut-down, start-up and idle plant	.05	.85
Increase in operating income		.35
Non-operating items:		
Foreign currency devaluation in 1962	.06	
Less income charges — net	.06	—
		.35
Deduct:		
Higher income taxes, due primarily to the difference in tax treatment of earnings from certain foreign sources	.16	
Lower investment tax credit on property additions	.03	.19
		.16
Less decrease due to common shares issued in 1963 for stock options		.04 .12
Year 1963 earnings as reported		$2.77

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a share in 1963, compared to $5.95 a share in 1962, after adjustment for the 1963 stock dividend.

As in the previous year, a general sales increase was mainly responsible for improved earnings. Yet, a number of additional factors helped determine our final results. These factors and their effects are tabulated on the previous page.

Erosion of selling prices persisted. Yet, the profit decline attributable to this cause was less than 1962's by six cents a share. This gives us hope that the prolonged trend toward lower pricing is slackening.

Although 1963 price declines were costly, their effect was more than compensated for by a combination of increased manufacturing efficiencies and lower raw material prices.

Selling, administrative and research costs were considerably higher than in 1962. More than 40 per cent of the increase is attributable to the inclusion of such costs incurred by subsidiaries acquired during 1962 and 1963. In addition, we chose to accelerate certain marketing and research programs.

The first quarter bore two special burdens to set it apart from the rest of the year. One was production difficulty at the Chocolate Bayou Plant near Alvin, Tex. The other was a downturn in the fiber market.

Despite an apparently smooth start-up at Chocolate Bayou in the fall of 1962, serious operational problems soon developed. As the situation worsened, a three-week shutdown for modification became necessary in February.

Since that first quarter, however, Chocolate Bayou operations have been continuous and relatively trouble-free. All the plant's major products are meeting quality specifications.

Although the long-range trend in fiber sales is upward, short-term fluctuations often occur. A market dip occurring in 1962 lasted through 1963's first quarter. Fiber sales in general and nylon sales in particular suffered reversals. Profits were similarly affected.

Several other 1963 developments merit mention. Among them is the establishment of a new market-oriented division.

Early in the year, a special task force was created to determine whether Monsanto's position in the rapidly growing packaging industry was in need of strengthening. When the findings confirmed such a need, the decision was made to combine those elements of the company concerned with developing, manufacturing and marketing plastics materials for packaging consumer goods. Accordingly, our Packaging Division was formed on October 1.

As a major supplier of detergent chemicals, Monsanto has realized for several years that present detergents feed hard-to-remove residues into rivers and streams, where they continue to foam — harmlessly but annoyingly. As detergent use has increased, so has the problem.

Detergent makers also have been sensitive to this problem and have searched with us and with others for a solution. That solution has come in the form of biodegradables — the so-called "soft" detergents — that leave residues easily decomposed by microscopic organisms found in water.

Monsanto will begin producing biodegradables commercially in 1964. Major detergent companies say they will start using them in proprietary formulations immediately thereafter.

In 1963, the company acquired the remaining 50 per cent interest in Shawinigan Resins Corporation of Springfield, Mass., and a 50 per cent interest in Aiscondel S.A. of Barcelona, Spain.

Among subsidiaries formed during the year was Monsanto Cie. S.A., which will manufacture nylon yarn in a plant under construction at Echternach, Luxembourg. The facility is scheduled to begin its operations in 1965.

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Another new subsidiary, Fabric Services, Inc., will build and operate a plant for the dyeing and finishing of fabrics.

Among important 1963 discoveries was one made in our Central Research Department. It is an economic new way to manufacture a great number of organic compounds electrochemically.

Already the process has been adapted to Monsanto's use by the Chemstrand Company Division. A production unit based on the new technology is being built at Decatur, Ala. It will manufacture adiponitrile, a nylon intermediate, from acrylonitrile starting material. The process is more economical than the one in present use. Monsanto will now be able to derive nylon as well as *Acrilan* acrylic fibers from its own acrylonitrile — which is itself derived from Monsanto's own hydrocarbons.

We have many favorable recollections of 1963, including the vigorous national economy and Monsanto's active participation in it. Yet, the year was indelibly marred by the tragic assassination of President John F. Kennedy on November 22.

We are aware that the new President, Lyndon B. Johnson, faces many difficult challenges. We commend the President when he says: "I happen to believe that a strong, vibrant economy is as essential to our leadership in the free world as military hardware."

Our company has many reasons to be hopeful and confident. We believe the principal one to be the many loyal and dedicated employes working tirelessly for the good of Monsanto. Their valuable accomplishments are gratefully acknowledged.

Sincerely,

Chairman of the Board

President

February 25, 1964
St. Louis, Missouri

COMPARATIVE CONSOLIDATED SALES, INCOME AND EARNINGS A SHARE BY QUARTERS

	1963	1962	Per Cent Increase Decrease
	(In Thousands)		
SALES:			
First quarter	$ 273,671	$ 259,805	5.3
Second quarter	312,660	276,785	13.0
Third quarter	298,069	247,449	20.5
Fourth quarter	307,870	279,156	10.3
	$1,192,270	$1,063,195	12.1
INCOME:			
First quarter	$ 15,556	$ 20,048	*22.4*
Second quarter	24,721	22,979	7.6
Third quarter	20,207	16,912	19.5
Fourth quarter	22,506	18,429	22.1
	$ 82,990	$ 78,368	5.9

	1963	1962	
		Adjusted for 1963 Stock Dividend	As Reported
EARNINGS A SHARE (1):			
First quarter	$ .52	$ .68	$ .69
Second quarter	.82	.77	.79
Third quarter	.68	.58	.59
Fourth quarter	.75	.62	.63
	$2.77	$2.65	$2.70

SHARES OUTSTANDING DECEMBER 31:

1963 29,963,825
1962 29,010,147

(1) Restated for the first three quarters of 1963 to reflect the shares outstanding on December 31.

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1963 OPERATIONAL HIGHLIGHTS

AGRICULTURAL DIVISION

Agricultural chemicals sales were well above 1962 levels. Virtually all plant foods, pesticides and feed additives contributed to the gain. Despite stiffened competition, the division enlarged its share of the total market.

In anticipation of continued growth in demand for farm chemicals, capacities for a number of plant nutrients and pesticides were expanded.

Fertilizer Materials

Sales of fertilizer materials — which include ammonia, ammonium nitrate and related products — rose. The gain was due to greater fertilizer use and to Monsanto's increased commitment of manufacturing and marketing energies in this area.

All three nitrogen plants — at El Dorado, Ark., Muscatine, Iowa, and Luling, La. — increased capacities and operated at design limits. In its first year, the Muscatine ammonia unit underwent process improvements which added to output. A new nitric acid facility was completed at El Dorado. Its output is used to make additional ammonium nitrate.

Retail fertilizer outlets increased in kind as well as in number. Ammonia stations and independent custom blenders were complemented by Monsanto-owned agricultural centers in the Midwest and South and by bulk bin plants in the north central states.

These outlets serve all the farmer's bulk fertilizer needs and some provide soil analyses and application equipment as further conveniences.

Pesticides

Sales of pesticides were up sharply. Record amounts of parathion were applied to save fruit, vegetable and cotton crops from insect destruction. Many growers turned to parathion as insects developed new resistance to other types of insecticides. Monsanto substantially increased its capacity to manufacture parathion.

Monsanto weed killers also were in strong demand. Rice growers with grassy weed problems turned to *Rogue* in such numbers that its sales tripled. *Vegadex* gained in use and benefited some 30 different vegetable crops. *Avadex* and *Avadex* BW wild oat killers made similar gains. *Randox*, particularly in granular form, was applied at record rates to protect corn and soybeans. A new facility being built at Muscatine will double Monsanto's capacity to produce this herbicide.

Two specialty weed killers were added to Monsanto's line. One, *Lambast*, proved effective against lambsquarter weeds that plague California's safflower crop. The other, *Limit*, was equally effective against grass and weeds in Florida's sugar cane. Its use eliminates up to 30 mechanical cultivations per season.

Orders for 2,4-D and 2,4,5-T weed and brush killers increased. A new production unit for 2,4,5-T acid boosted capacity more than 50 per cent.

A best-selling book which made some disturbing charges against weed and insect killers performed one useful service. It reminded the public that pesticides must be tested thoroughly, marketed responsibly and applied discriminately. Monsanto has always said so.

In 1963, Monsanto screened more than 7,000 compounds in its search for better pesticides. Several of the most promising reached field-test status. Monsanto is a leader in developing and introducing patented, specialty herbicides.

Feed Chemicals

There was a modest sales gain in feed chemicals.

Sales of *MHA* protein supplement for poultry and livestock were reduced by a Common Market tariff that curbed broiler imports from the U.S. At the same time, low-cost feed additives from Europe increased competition for domestic business.

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Santoquin, an antioxidant for preserving nutritive values of feeds and dehydrated forage, fared better. Sales of this, the animal feed industry's principal antioxidant, improved considerably.

Blasting Agents

Two factors helped bring about a healthy sales increase in ammonium nitrate-fuel oil explosives. One was expanded use in strip mining and quarrying. The other was an enlarged distribution network.

CHEMSTRAND COMPANY DIVISION

Sales of man-made fibers and yarns climbed to higher levels. Chemstrand's gain exceeded the industry's by a substantial margin.

Acrylic fibers and nylon yarns were involved in major capacity increases. Spandex became the third fiber in the division's product line. Facilities for a fourth fiber — polyester — were planned.

Acrylic Fibers

Acrilan acrylic fiber increased its sales and its share of the total market.

The largest gain was in carpets, as leading manufacturers featured *Acrilan* in their better quality lines. In apparel, too, the Chemstrand fiber made gains, particularly in the sweater market. A whiter, more dyeable *Acrilan* for use in sweaters was introduced. Development of an antistatic fiber for blankets was announced late in the year.

The division's "Wear-Dated" program was continued to the mutual benefit of Chemstrand, its customers and consumers. Under the program, the performance of *Acrilan* is guaranteed in qualifying lines of apparel.

Capacity for *Acrilan* was increased 40 per cent by enlargement of the plant at Decatur, Ala.

Nylon Yarns

Nylon had its best growth in the field of textured yarns for knitwear and in woven stretch fabrics. Especially noteworthy gains were in ski pants, women's slacks, men's sports jackets, swim suits, and play suits for children.

Number one industrial end use for nylon was again tire cord. For the industry, it represented a 1963 market of more than 200 million pounds — a new record. Chemstrand itself made progress in the tire market and in such other important industrial applications as coated fabrics, conveyor belts, automotive seat belts, rope and thread.

In the home furnishings field, carpets and upholstery continued as the largest nylon end uses.

Product improvements that strengthened Chemstrand's market position included deep-dye and ultra deep-dye nylon carpet yarns; and special nylon yarns for automobile seat belts.

At year-end, the division announced plans to produce a wholly synthetic backing for tufted carpeting. Designated *Chemback*, the product is expected to improve the qualities of carpeting and further stabilize raw material prices for the carpet industry.

Nylon capacity was boosted 20 per cent. The expansion was divided between the plants at Pensacola, Fla., and Greenwood, S. C.

Also in 1963, a new nylon unit was completed at Blacksburg, S. C. This plant, which combines warping operations with modern warehousing, provides additional service to customers in the heart of an important textile center.

Polyester Fibers

Plans to produce polyester fibers were announced in the third quarter. Completion of production facilities at Decatur is scheduled for mid-1965.

Fabric Services, Inc., (see page 15) is to become an integral part of Monsanto's program in the polyester fiber field.

Spandex Fibers

Technological problems delayed the marketing of spandex elastic fibers until late in the year. After they were solved, however, the fiber became the third in Chemstrand's commercial line.

Nylon Molding Powders

Facilities to make nylon molding powders were added at Pensacola. The products are to be marketed in 1964.

HYDROCARBONS DIVISION

Sales increased as most manufacturing units of the division operated at new high levels.

Petroleum Chemicals

At Chocolate Bayou, outputs of ethylene, propylene, naphthalene, ethylbenzene, orthoxylene and

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benzene were brought up to desired volume and quality. A major portion of these products is consumed within Monsanto in making plastics and organic chemicals.

Monomers

Demand for acrylonitrile was exceptionally strong as markets for fibers and plastics made from it continued to expand. At Chocolate Bayou, work is under way to double Monsanto's acrylonitrile capacity, using propylene and ammonia as raw materials. In 1965, acrylonitrile from this plant will supplement that now made at Texas City, Tex.

The vinyl acetate monomer unit at Texas City had a smooth start-up in the spring. The product goes to other Monsanto plants to make plastics for a variety of uses.

Production of lactonitrile also began at Texas City. The product is a feedstock for the company's research-developed synthetic lactic acid unit.

Significant process developments contributed to capacity increases and to improved manufacturing costs of acetylene and hydrogen cyanide, important intermediates consumed within the company.

A major efficiency in vinyl chloride manufacturing also resulted from utilization of an oxidative chlorination process based on Monsanto research.

Styrene sales were especially strong to manufacturers of plastics. Ethylbenzene and styrene capacities and efficiencies were increased through technological improvements.

Petroleum Products

Branded product sales of gasolines, lubricants and diesel fuels increased. Gross refinery sales held up well. Price ranges for branded products improved but wholesale refinery prices stayed around 1962 levels.

A five-year program to develop full sales potential for *Lion* brand products in Midsouth marketing areas got under way. Marginally profitable service stations are being eliminated as part of the program.

Distributors and bulk plants for *Lion* products were set up in five new areas of Mississippi and Texas. Installation of octane-blending pumps at all company-owned stations was a customer convenience that helped sales.

Throughput of crude oil at the El Dorado, Ark., refinery increased slightly. It averaged 34,476 barrels daily for the year.

Production and Exploration

Exploration expenditures were down, due mainly to a cutback in overseas commitments. To concentrate on potential reserves closer to its consuming plants, Monsanto has withdrawn from foreign exploration, except in Western Canada.

Net production of crude oil and natural gas liquids was down 6.8 per cent to 7,231,611 barrels. The decrease was due partly to the shift into more fully developed petroleum areas, where new discoveries failed to offset productivity declines at older wells.

Extension of pipelines to shut-in gas wells increased natural gas production to 27.2 billion cubic feet, a 17.6 per cent rise.

Completion of 44 producing wells gave Monsanto a net increase of 18.62 wells in 1963. Included were 13 wildcat discoveries in the United States and Canada.

In 1963, the company acquired several producing properties. Most significant are Mound Company's petroleum assets, purchased September 1. Located primarily on the Gulf Coast, the former Mound wells have a daily production of about 2,500 barrels of oil and 35 million cubic feet of gas.

INORGANIC CHEMICALS DIVISION

Phosphates, detergents and heavy chemicals participated in a 1963 sales increase.

Manufacturing costs were lowered appreciably, with improvements being widely spread — in maintenance, raw material costs, yields and manpower savings. Although prices remained firmer than forecast for most of the year, a few declines near year-end caused some profit erosion.

Phosphorus and Phosphates

The new sodium phosphate plant at Augusta, Ga., which ran smoothly after its first quarter start-up, reached capacity operation in October. Potassium phosphates enjoyed exceptional growth due to their use in liquid detergents.

Among new products marketed in 1963 were a family of leavening agents — *Levn-Lite*, *Stabil* 9 and *Pan-O-Lite* — to improve flours and packaged mixes for cakes, biscuits and pancakes; an improved calcium pyrophosphate for fluoride dentifrices; *Lustre-Phos*, a special calcium phosphate that is

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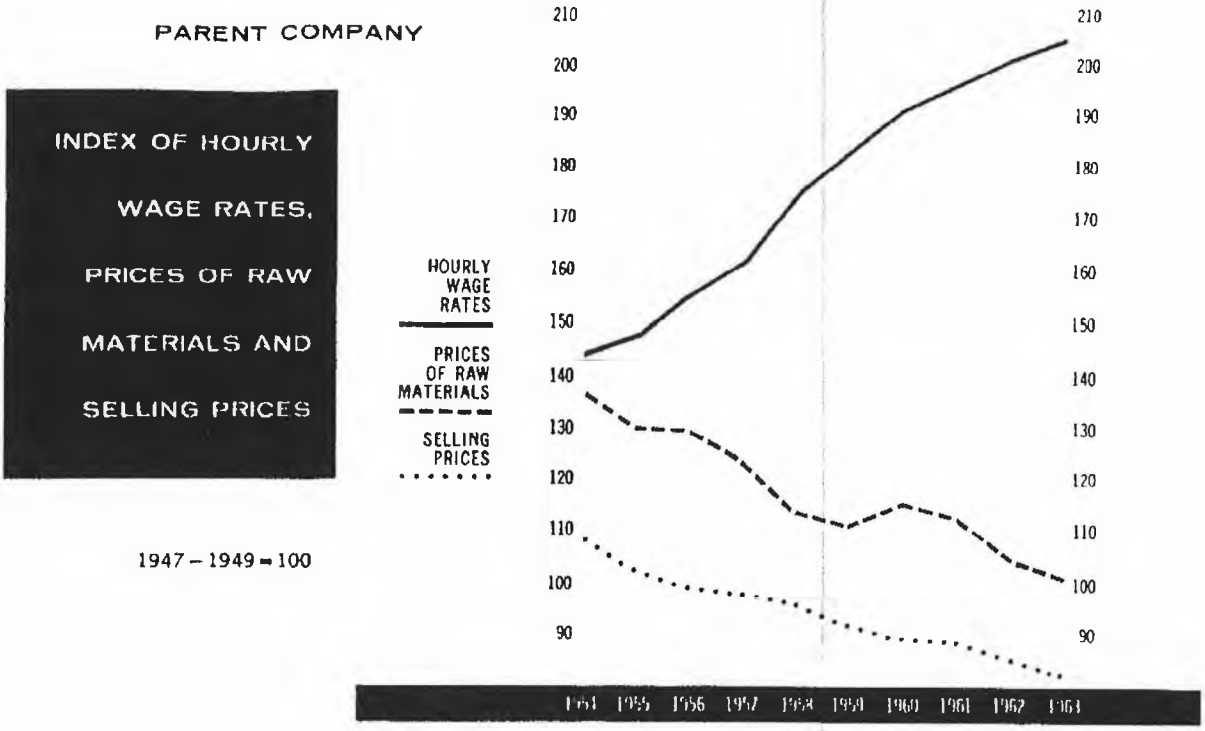

compatible with fluorides used in toothpastes made overseas; and *Phos-Chek*, a phosphate-based mixture dropped from airplanes to bring forest fires under control.

Detergents

Sales of detergent chemicals continued to grow.

Manufacturing facilities for the alkylbenzene soft detergent intermediate (discussed on page 3) are being built at the Chocolate Bayou Plant near Alvin, Tex. These facilities will use a unique process developed by Monsanto research and will have a capacity of 150 million pounds annually.

Sales of *ACL* chlorinated cyanuric acids and salts continued such rapid growth that new capacity was installed at Monsanto, Ill. The new unit added more than 20 million pounds to annual production capability. *ACL* is used by Monsanto customers in dry bleaches, swimming pool disinfectants, scouring powders and other consumer products.

A family of ethylene maleic anhydride resins was introduced. Such resins are major factors in cold-water detergents. They are also useful in photographic emulsions, textile print pastes and drilling muds.

Heavy Chemicals

Sales of heavy chemicals were up sharply, with significant gains in caustic potash and in new silica specialty products. The new silicas are *Santocel* 62, an improved flatting agent for lacquers and enamels; *Santocel* Z, a thickener for plastisols and resins; and 50 per cent *Syton*, the most concentrated colloidal silica on the market.

Monsanto now has an interest in a salt mine on Cote Blanche Island, La. Shipments of salt began there in late fall, with full operations scheduled for late in 1964. The mine will provide salt for Monsanto's use and for customer sales.

Electronic Chemicals

Electronic chemicals, which are used in the manufacture of transistors and other electronic devices, equaled their 1962 performance. Demand for epitaxial silicon wafers was particularly strong. Work began early in 1963 on an expansion of facilities at St. Charles, Mo., for the production of float-zone, polycrystalline and pulled-crystal silicon. New facilities for fabricating epitaxial wafers are being added.

ORGANIC CHEMICALS DIVISION

Sales of the Organic Chemicals Division achieved an all-time peak in tonnage and dollars.

The larger sales, new operating economies and

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firmer prices late in the year combined to restore some of the profits eroded by earlier price competition. Processing improvements at a number of plants resulted in better yields, higher product quality and substantial cost reductions.

Fine Chemicals

Increased sales of bulk aspirin, vanillin and saccharin helped overcome lower sales of phenacetin. Yet, sales of the group were slightly less than those of 1962.

Two major steps were taken in long-range research and development efforts to broaden and strengthen Monsanto's service to the food processing industry: The world's first large-scale plant for synthetic lactic acid began operations at Texas City, Tex. And new facilities at St. Louis increased Monsanto's saccharin capacity by 50 per cent.

Synthetic lactic acid, unlike fermentation acid, is colorless, heat stable and of a very high purity — a combination of properties expected to stimulate many new uses. Already it is used in yeast-raised bakery products to improve their texture and keeping qualities. In addition to lactic acid, cold-water soluble fumaric acid joined Monsanto's line of food acidulants — used to help preserve certain foods and to enhance their tartness.

The division will begin manufacture of sodium and calcium cyclamates late in 1964. These synthetic sweeteners have about one-tenth the strength of saccharin and are used to sweeten low-calorie beverages.

Functional Fluids

Fire-resistant hydraulic fluids — *Skydrol* for aircraft and *Pydraul* for industrial uses — led sales of this group to levels considerably above those of 1962.

Monsanto manufactures a wide variety of synthetic fluids having mechanical, electrical and heat-transfer capabilities beyond those of petroleum, water and other conventional fluids. The Monsanto fluids were given new emphasis early in the year by the establishment of a separate research, development and marketing group to carry out a sustained program to insure Monsanto's leadership in this area. Already this has resulted in several new products, including *Therminol* 77, a fire-resistant heat-transfer fluid for service at temperatures higher than 600° F. Early tests of other developmental products indicate large market potentials, particularly in meeting the lubrication requirements of jet engines.

Intermediates

Sales volume of intermediates exceeded that of 1962. But despite rigorous cost reductions — particularly in phenol manufacture — the profitability of the group was slightly off, mainly because of price declines.

In 1963, a unit for producing larger quantities of higher quality cyclohexanol came on stream at Luling, La. By mid-1964, a new biphenyl unit incorporating an improved process is to be in operation at Anniston, Ala.

Capabilities for chlorine and caustic soda manufacture were increased by about one-half at Monsanto, Ill. Monsanto's entire production of the two chemicals is used within the company.

Paper Chemicals

Favorable acceptance of new *Mersize* TFL, a more efficient fortified rosin size imparting moisture resistance to paper and paper board, helped increase the sales and profits of this group. *Scripset* 530, an additive for paper-surface treatment, began to move in carload quantities. Another outstanding performer was prilled pentachlorophenol, a free-flowing wood preservative.

Concentrated effort to develop a water soluble transparentizer for tracing papers and business forms yielded a material expected to be in production in 1964. Another new product with potentially large volume — a starch modifier to improve the surface of paper — also is in an advanced stage of market development.

Petroleum Additives

An over-all volume increase, which offset lower prices in some segments of the market, enabled this group to equal its 1962 dollar sales.

A multifunctional additive for crankcase oils, *Santolube* 314, was introduced. It is the first of several new Monsanto products being developed for use in "long-driving" oils for high-speed automobile engines and in lubricants for heavy-duty machinery.

The division makes more than 40 additives for automotive fuels and lubricants.

Plasticizers

Sales of plasticizers reached record levels, particularly to makers of vinyl floor covering, acrylic lacquer and vinyl foam. Increased sales and fourth quarter price boosts on certain plasticizers made

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from phthalic anhydride partially offset earlier volume and price weaknesses.

Seven new plasticizers reached commercial status. Each is tailored to impart specific properties to products made of plastics — mainly polyvinyl chlorides.

Resin Materials

A substantial increase in tonnage enabled this group to match its 1962 dollar sales. Although prices declined through most of 1963, late in the year a three-cents-a-pound increase on phthalic anhydride led a move toward firmer pricing. Monsanto initiated additional price increases on maleic anhydride, fumaric acid and their ester derivatives. These materials are used mainly to make polyester resins and surface coatings.

Sales of adipic acid and bisphenol A remained strong. New applications for hydrogenated bisphenol A included automotive undercoatings and corrosion-resistant resins for the manufacture of chemical-processing equipment.

Rubber Chemicals

Sales of rubber chemicals held their 1962 levels.

Research and marketing programs to keep Monsanto in step with the rubber industry's changing technological and commercial needs produced a number of developments. *Santoflex* 13 and *Santoflex* 77, two proprietary antidegradants, were among several chemicals introduced to improve the quality and durability of tires. A Monsanto-designed instrument for continuous analysis of rubber properties during the curing cycle was well received by customers in 1963.

PACKAGING DIVISION

This new division resulted from consolidation of research, manufacturing, development and marketing efforts in the area of plastic materials for packaging use. Such materials are film, sheet and fabricated containers. Present and potential customers include such high-volume users as packagers of foods and beverages, liquid detergents and bleaches, toiletries and cosmetics, and many other household goods.

Technologies brought into the division added vending cups and other disposable low-cost containers to existing lines of blow-molded containers and transparent film and sheet. The latter lines had been produced by Monsanto's former Plax Company Department, which became an important part of the new organization. The highly regarded *Plax* trademark was retained.

The division has plants at Anaheim, Calif.; Deep River, Conn.; Stonington, Conn.; Melrose Park, Ill.; Ligonier, Ind.; Yardville, N. J.; and Sharonville, Ohio. Manufacture and sale of *Vuepak* cellulose acetate sheeting, produced at Springfield, Mass., also are divisional responsibilities.

In 1963, capacity for *Polyflex* polystyrene sheet and film for packaging was increased at Ligonier. New bulk-handling equipment added to the efficiency and economy of several plants.

PLASTICS DIVISION

Sales volume of plastics increased substantially for the third consecutive year.

As a group, the division's products were hard hit by price declines. However, downward price trends of long standing were reversed in a few major product lines. In the second half of the year, the division's plants operated near capacity. Process improvements at several locations increased capacities and yields.

Polyethylene

Increased polyethylene sales volume was more than offset by severe price attrition. Late in the year, however, there was some indication of price firming in a number of markets.

An improved compound was developed for wire and cable jacketing. A new resin for coating milk cartons was introduced.

In 1963, at Texas City, Tex., Monsanto began making high-density polyethylene — used mainly in bottle manufacture.

Polyvinyl Butyral

Steady sales of interlayer for laminated safety glass reflected the automotive industry's high level of activity. Sales of gradient color interlayer (for tinted windshields) were the highest since 1959.

Polyvinyl Chloride

Polyvinyl chloride resins, film and sheeting sold near capacity. Sales to makers of floor tile and electrical insulation showed special strength.

Monsanto initiated a trend-reversing price increase at mid-year.

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Vyram rigid vinyl compounds were introduced in 1963. Such compounds are used to make building materials. Examples include corrugated sheeting, panels, residential siding and pipe. *Vyram*, which has outstanding toughness, weatherability and chemical resistance, extrudes 20 to 30 per cent faster than competitive materials.

Resin Products

Sales of resins were above 1962 levels. Noteworthy gains were made in bonding and adhesive uses such as glass-fiber insulation, clutch facings, battery separators, plywood, and decorative melamine laminates for furniture. Surface coating resins, particularly melamines, shared in the general high level of business. New products included specialty phenolic resins for bonding thermal insulation, improved melamine resins for high-gloss laminates, and a styrene allyl alcohol copolymer resin intermediate for use in surface coatings.

Styrene Polymers and Copolymers

Dollar sales of *Lustrex* polystyrene molding and extrusion materials rose to a new level despite severe price competition. Strong demand by makers of refrigerators and plastic packages was chiefly responsible for the gain. Improvements in the properties of high-impact polystyrene helped increase Monsanto's share of the market.

Lustran styrene copolymers more than doubled their sales. Firm pricing and a high operating level enhanced their contribution to 1963 results. Tough *Lustran* molding and extrusion materials are making especially good headway in the appliance, housewares, automotive, luggage and packaging fields.

Capacity for both *Lustrex* and *Lustran* is to be expanded in 1964.

Building Products Department

Demand for the Building Products Department's *Lustra-Span* corrugated polyvinyl chloride building panel was such that capacity was tripled at Kearny, N. J. An additional production line was installed at Los Angeles.

Introduced on a limited basis in 1963 was the first commercial all-plastic siding in clapboard design for residential buildings. Several additional products are to be marketed through the department's expanding distribution system in 1964.

Gering Plastics Company

Gering's sales rose substantially. Those of vinyl garden hose and *Ger-Pak* polyethylene film for agricultural, construction and industrial uses were especially strong.

Production facilities were added at Anaheim, Calif., to service customers in the West. There are plans to expand production of polyethylene film at Kenilworth, N. J., in 1964.

Specialty flame-retardant polyolefins and polystyrenes, and industrial grades of nylon molding powders grew in acceptance. So did color concentrates, as more customers began in-plant coloring.

Gering added polyvinyl chloride pipe to its line of polystyrene pipe products. Pipe sales more than doubled.

NEW STOCK RECORDS SYSTEM

In September, a newly created stock records office completed a shareowner records system which utilizes electronic computers. It enables Monsanto to establish a closer relationship with shareowners and to handle shareowner mailings with new speed and efficiency. Already the system has been used for the rapid preparation of 82,000 stock certificates, as well as order forms, checks and invoices for the December stock dividend.

As a further service, Monsanto has appointed a second transfer agent — The Boatmen's National Bank of St. Louis. Beginning April 1, 1964, shareowners may have stock certificates transferred either by Boatmen's or by Monsanto's present New York transfer agent.

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RESEARCH

Monsanto's broad and intensive research program helped the company score important successes on many fronts.

In 1963, following a 10-year period in which more than 500 products were introduced by Monsanto, these products contributed over 50 per cent of total sales and more than 60 per cent of gross profit. During the year, 70 new Monsanto products survived screening tests and were sold commercially.

Also in 1963, the company was granted 311 U.S. patents and 1,027 foreign patents.

Expenditures for research, development, patent work and basic engineering totaled $58.4 millions in 1963, compared to $51.6 millions in 1962.

All manufacturing divisions conduct independent research programs and benefit accordingly. Typical rewards of such programs are reported elsewhere in this Annual Report. A few organizations devoted wholly to research merit special comment, however.

Central Research Department

The major product of Monsanto research is knowledge which must be closely guarded because of its proprietary value to the company. Only after proper patent coverage has been assured and only in special instances is such information made public.

Such an instance occurred in 1963, when Monsanto revealed the new electrochemical process discovered in the Central Research Department and discussed on page 4 of this report.

In recent years, Monsanto has materially reduced the time for translating a technological success into a commercial reality. This is due in part to the ever-increasing contribution of the applied mathematics section of Central Research. Modern computers and advanced mathematical techniques permit swift handling of extraordinary masses of data and solve problems which otherwise would require hundreds of thousands of manhours.

During the year, Central Research completed work on several major products, two of which are being introduced by appropriate divisions of Monsanto:

The first is a new vinyl copolymer system precisely tailored for metal coatings markets. Its properties are marked by hardness combined with outstanding toughness and impact resistance. It represents the first fruit of many years of pioneering research in the precise structuring of complex copolymers.

The second product is a new form of silicon (epitaxial wafers) which was brought from the laboratory to interim production in a 16-month period.

In the electronics materials area in 1963, Monsanto established a leading position in the development of new materials, some capable of translating electric energy into light and others capable of detecting light by converting light waves into electrical energy. Monsanto's gallium arsenide is under broad development by the electronics industry as well as by the Department of Defense and the National Aeronautics and Space Administration (NASA).

Devices made of gallium arsenide and the other intermetallic compounds, an area in which Monsanto has made many important fundamental contributions, should permit new advances in the field of communications and in the development of higher speed computers.

Monsanto Research Corporation

Wholly owned Monsanto Research Corporation in 1963 gave technical support to important programs of such government agencies as the Atomic Energy Commission, the Department of Defense and NASA. It also worked on projects holding promise for the civilian economy.

For example, non-military uses are being sought for a plastic composition developed earlier to reduce vibration in hulls of naval vessels. And, in 1963, under contract to the Agricultural Division, the subsidiary developed new sensitizers to improve the performance of Monsanto's ammonium nitrate-fuel oil blasting agents, thereby lowering blasting costs.

Also in 1963, Monsanto Research Corporation built and began testing, for use in orbiting satellites, a thermoelectric generator with ten times the power of a previous model; demonstrated the feasibility of an efficient new battery which extracts power from reactants moving through it on coated tapes; made progress in developing coatings to protect aircraft against high temperatures generated at supersonic speeds; gained ground in its search for a fire-resistant hydraulic fluid for submarines; and pushed forward in its development of a de-icer for aircraft runways.

Monsanto Research Corporation continues to operate Mound Laboratory at Miamisburg, Ohio,

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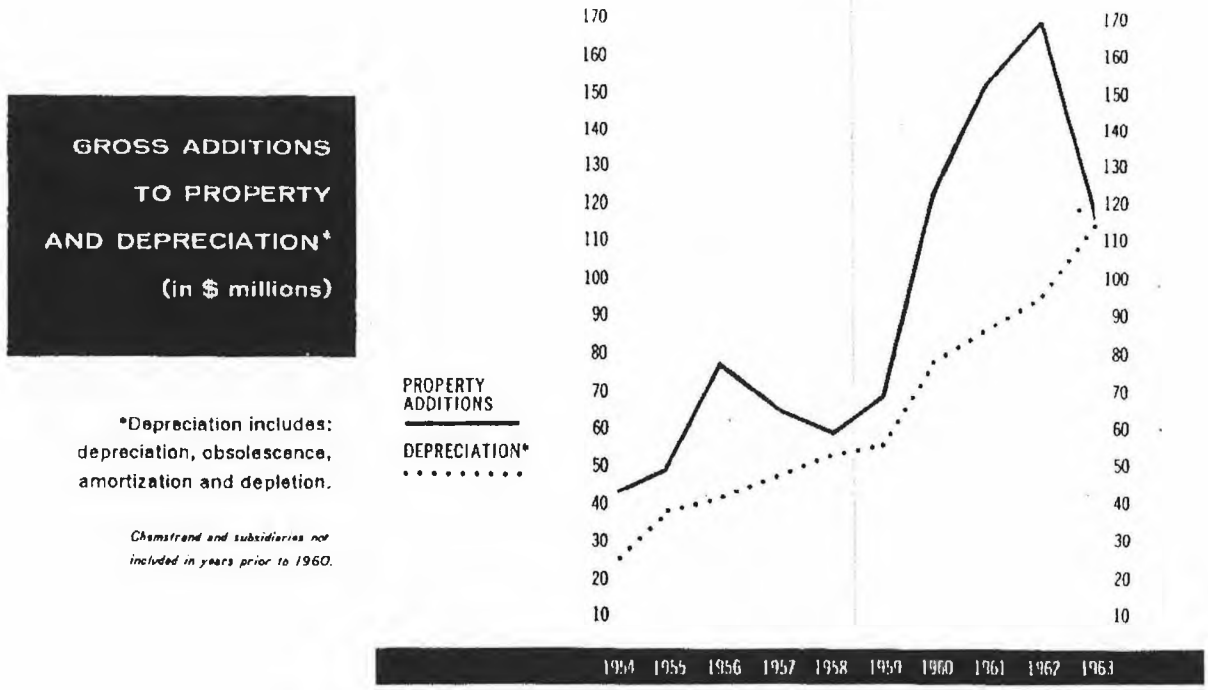

where research, development and special manufacturing are conducted for the Atomic Energy Commission.

The laboratory supplied the power capsule containing plutonium 238 to provide energy for the thermoelectric generator in the Transit satellite launched on September 28. The capsule was the third and largest radioisotope-fuel generator successfully hurled into space. Its power-generation principle originated at Mound.

Chemstrand Research Center, Inc.

Wholly owned Chemstrand Research Center, Inc., continued to make important contributions to Monsanto's technical efforts in the fiber field. In 1963, such contributions included modifications and improvements in *Acrilan* acrylic fiber and nylon, and additional improvements in spandex and polyester fibers. The company also made important discoveries in studies of the crystalline structure of polymers to open the way for new fiber improvements.

INTERNATIONAL OPERATIONS

Export sales set a new record in 1963 as Monsanto continued to market its products in virtually all nations of the free world.

For the past decade, export sales of a significant number of chemicals and plastics have been replaced by overseas production. Yet, the lost business has been more than offset by new sales of exported specialities and raw materials.

Exports of agricultural chemicals continued strong in 1963. *Avadex* wild oat killer was used extensively in Europe, Canada and Australia. Monsanto parathion insecticides continued to receive world-wide recognition for their effectiveness.

The company's line of specialty plasticizers is becoming as well recognized abroad as it is domestically. In 1963, this was reflected in sharp sales increases for these products.

Another example of an increasingly popular specialty product abroad is *Lustran* styrene copolymer. Intensive technical sales effort helped boost sales of this versatile, tough, plastic molding material to a record level.

Overseas interests are monitored in the European area by Monsanto Europe S.A., a wholly owned subsidiary with headquarters at Brussels, Belgium, and in other areas of the world by the Overseas Division. Effective March 1, the Overseas Division will be renamed the International Division.

European Area

Monsanto Chemicals Limited, Monsanto's principal subsidiary in the United Kingdom, increased its sales. Although operating results were up

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sharply, reported income was lower than in 1962, when the company benefited from income tax adjustments. Major gains were in rubber chemicals, oil additives and plastics. Production of a new granular type of bulk aspirin was begun. Construction of facilities to make styrene-acrylonitrile copolymers was started.

Chemstrand Limited, the Monsanto subsidiary making *Acrilan* acrylic fibers in Northern Ireland, substantially improved its sales and profits. In 1963, capacity was enlarged 27 per cent. Additional *Acrilan* expansion is scheduled for 1964 and plans are under way to begin construction of a nylon yarn plant in the United Kingdom, also in 1964. Its annual capacity will approximate 15 million pounds.

Lansil Limited, another Monsanto subsidiary in the United Kingdom, also bettered its sales and earnings of the previous year. The firm produces cellulose acetate flake and filament yarns.

Monsanto Belgium, a division of Monsanto Europe, made strong gains in sales and profits. The division produces *Saflex* polyvinyl butyral interlayer for laminated safety glass at Ghent, Belgium.

At Echternach, Luxembourg, construction of a nylon yarn plant was begun by newly formed Monsanto Cie. S.A. Production is to begin there in 1965. Initial annual capacity will be about 25 million pounds.

Monsanto's French subsidiary, Societe Monsanto, found price weakness a problem. But lower prices were more than offset by higher sales volume. Profits rose accordingly. Already a major producer of styrene polymers and copolymers for the plastics industry, the company added *Mersize*, a finishing chemical for the paper industry, to its line in 1963.

In November, Monsanto purchased a 50 per cent interest in Aiscondel S.A., Spain's largest producer of finished plastic products. At the same time, two other Spanish companies in which Monsanto and Aiscondel each formerly held a 50 per cent interest became Aiscondel subsidiaries. They are Monsanto Iberica S.A. and Etino-Quimica S.A.

Monsanto Iberica brought its major plant on stream in 1963's second quarter. Its products include vinyl chloride, calcium carbide and acetic acid. Etino-Quimica, which had a 1963 sales increase, produces polyvinyl chloride and polystyrene plastics.

At Ashdod, Israel, construction of the acrylic fiber plant of Israeli Chemical Fibres Limited, a subsidiary, is scheduled for 1964 completion.

Western Hemisphere

Sales and profits of Monsanto Canada Limited showed healthy increases. The subsidiary's fortunes are closely identified with the plywood, agricultural, paper, furniture and clothing industries — all major segments of the Canadian economy.

Mexico's industrial activity accelerated in 1963 and Monsanto Mexicana S.A. did well throughout the Latin American Free Trade Area. Sales of polyvinyl chloride were particularly strong and capacity for the product was increased. Compania Industrial de Plasticos S.A., a plastics-fabricating subsidiary of the Mexican company, improved its sales and earnings.

Monsanto Argentina S.A.I.C. held its own despite Argentina's economic and political uncertainties. Sales were above 1962 levels and operations showed a modest profit. If stability returns to Argentina, the subsidiary should recover rapidly.

Sinteticos Slowak S.A., a Uruguayan corporation in which Monsanto has a minority interest, began production of nylon 6 yarn at Montevideo.

Fabrica de Hilazas Vanylon S.A., a Monsanto affiliate which makes and markets nylon 6 yarns in Colombia, increased spinning capacity and prepared to install a new polymerization process. Sales and profits exceeded those of 1962.

Monsanto (El Salvador) S.A., a 50 per cent owned associate company in El Salvador, was formed early

COMPANY NAME

The Board of Directors recommends that the corporate name be changed from "Monsanto Chemical Company" to, simply, "Monsanto Company." It is thought that the word "Chemical" no longer adequately describes the scope of the company's business. In keeping with legal requirements, shareowners will have an opportunity to vote on the proposal at the Annual Meeting on March 26, 1964. If they approve, the change will take effect on or about April 1. Details will be provided in the proxy statement.

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in 1964. It will formulate insecticides, principally parathions, for Central American crops. Its products are to be ready for the 1964 growing season.

Asia-Pacific Area

Monsanto Chemicals (Australia) Limited continued at its 1962 operational level. Late in the year, certain assets of a major Australian distributor of farm chemicals were acquired to aid in the subsidiary's marketing of such products. Meanwhile, new facilities for phenol were being built.

Monsanto's other Australian subsidiary, Australian Petrochemicals Limited, equaled its 1962 results.

In Japan, 50 per cent owned Mitsubishi Monsanto Chemical Company added to its sales and profitability. Its capacity was virtually sold out for much of the year. Meanwhile, construction was begun at a new plant site — the company's third. Located in the Tokyo area, its facilities will include a vinyl calender and other plastics-fabricating equipment.

Mitsubishi Vonnel Company Limited, a Japanese acrylic fiber producer in which Monsanto has a minority interest, operated at capacity throughout 1963. Additional capacity came on stream during the year. Meanwhile, further expansion is in progress.

U S SUBSIDIARIES

Shawinigan Resins Corporation experienced increased sales, with practically all products contributing.

Sales of polyvinyl butyral, which is converted by Monsanto into interlayer for laminated safety glass, were aided by high-volume production of automobiles. Polyvinyl acetate, polyvinyl butyral and polyvinyl alcohol moved well to makers of adhesives, textiles, surface coatings, paper and chemical specialties. Polyvinyl formal, used mainly in wire enamels and coatings, continued to hold a major share of the market.

Shawinigan's line has been expanded to more than 150 products that meet a wide variety of customer requirements. In 1963, polyvinyl acetate facilities were expanded.

Fabric Services, Inc., formed in December, will build a multimillion-dollar plant for dyeing and finishing textiles. Located at Orangeburg, S. C., it is expected to be operating by mid-1965.

ASSOCIATED U S COMPANIES

Domestic companies in which Monsanto has 50 per cent interests are not included in the consolidated financial statements of the parent company and its subsidiaries. They are discussed here as a matter of interest.

Mobay Chemical Company, which again increased its sales, retains a favorable growth position along a broadening market base of isocyanates, urethane intermediate chemicals and polycarbonate resins.

The United States Bureau of Mines 1963 endorsement of rigid urethane foam based on Mobay's "Mondur MR" isocyanate system gave important leverage to developing markets in the mining and commercial insulation fields. At the same time, the building industry responded favorably to a Mobay program to generate interest in rigid urethane foam as a primary structural material.

Flexible urethane foam continued to win favor. For example, its acceptance in furniture and bedding increased at a rate exceeding forecast. Development of a new "heavy" foam is expected to help urethane make additional gains in the huge comfort cushioning and mattress markets.

In 1963, Mobay increased from 50 to 70 million pounds its annual capacity for tolylene diisocyanate, the primary raw material for urethane foams, elastomers and coatings. It also planned a multimillion-dollar expansion to more than double its capacity to produce tough polycarbonate plastics.

Fome-Cor Corporation increased its sales but again showed a loss. Its product — a lightweight laminate of polystyrene foam and kraft paper — was sold mainly to the construction industry.

Polythane Corporation, now in production at Providence, R. I., is moving spandex yarns into the market through Chemstrand. Development work in 1963 resulted in a substantially improved fiber. The corporation's subsidiary in the United Kingdom, Polythane Fibres Limited, is to begin its own spandex production in Northern Ireland in 1964.

PERSONNEL

Monsanto's personnel development program, which encourages maximum realization of employe potential, was again emphasized.

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Management surveys and performance audits guided and strengthened training efforts. Stress was given to personnel performance reviews and to the coaching and counseling of employes.

Group training was emphasized in technical seminars, instrument schools and supervisory courses. Technical and executive development programs included academic and advanced management courses.

Continuing among the safest of chemical companies, Monsanto achieved the best safety record in its history. Its injury frequency was significantly reduced and bettered the industry average by a wide margin.

To accommodate Monsanto's expanding manpower requirements, recruitment activities were intensified at colleges and universities. At the same time, a national program to find well qualified, experienced people was energetically pursued.

University relations and aid-to-education programs were actively maintained through fellowships, scholarships and unrestricted grants. More than a hundred departments in various schools benefited by Monsanto grants supporting undergraduate study in engineering and science and graduate work in research.

Employe relations were excellent throughout the year. Work contracts were satisfactorily negotiated at 11 plants. Five are on a three-year basis; the other six run for two years.

Company growth prompted organizational changes. A new Business Systems Department was formed to appraise company-wide data processing needs and to meet these needs with efficient systems utilizing modern electronic equipment. Richard D. Dunlop, formerly of the Corporate Planning and Control staff, was named director of the new department.

The former Research & Engineering Division was dissolved early in the year, in favor of two separate units — a Central Research Department and an Engineering Department.

The Central Research Department is directed by Dr. Richard S. Gordon, former director of research for the Agricultural Division. The Engineering Department is directed by John S. Hayes, who previously had responsibility for engineering in the Research & Engineering Division.

In September, James E. Crawford Jr. was elected a company vice president and appointed general manager of the new Packaging Division. Mr. Crawford was previously assistant general manager of the Plastics Division.

SALES BY PRODUCT GROUPS

PARENT COMPANY AND ALL SUBSIDIARIES

	1963 %	1962 %	1958 %
Chemical Fibers	26.7	26.3	23.1
Plastics, Synthetic Resins and Surface Coatings	24.8	23.5	20.1
Phosphate Products and Detergents	10.9	11.3	12.6
Intermediates and Plasticizers	9.2	9.8	10.9
Rubber and Oil Chemicals	7.2	7.4	8.6
Agricultural Chemicals	7.1	6.9	5.8
Petroleum Products—Net of purchases	5.7	5.6	8.1
Textile and Paper Chemicals	3.1	3.1	3.1
Pharmaceuticals, Flavors and Condiments	2.9	3.3	4.5
Heavy Chemicals	2.0	2.3	3.1
Other	.4	.5	.1
	100.0	100.0	100.0

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ACCOUNTANTS' OPINION

HASKINS & SELLS
CERTIFIED PUBLIC ACCOUNTANTS

BOATMEN'S BANK BUILDING
SAINT LOUIS 63102

Monsanto Chemical Company:

We have examined the statement of consolidated financial position of Monsanto Chemical Company and its subsidiary companies as of December 31, 1963 and the related statements of consolidated income and paid-in surplus and retained earnings for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the accompanying statement of consolidated financial position and statements of consolidated income and paid-in surplus and retained earnings present fairly the financial position of Monsanto Chemical Company and its subsidiaries at December 31, 1963 and the results of their operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

February 10, 1964

Haskins & Sells

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MONSANTO CHEMICAL COMPANY

STATEMENT OF CONSOLIDATED FINANCIAL POSITION

ASSETS

	1963	1962
	(In Thousands)	
Current Assets:		
Cash	$ 40,896	$ 34,435
Marketable securities, at cost which approximates market	84,667	67,037
Net receivables	198,703	173,924
Inventories	191,579	170,595
	515,845	445,991
Investments and Miscellaneous Assets, at Cost or Less:		
Investment in and advances to associates	29,382	25,552
Miscellaneous investments and receivables	56,256	58,808
	85,638	84,360
Property, Plant and Equipment, at Cost	1,520,813	1,402,062
Less accumulated depreciation and depletion	738,660	632,190
Net property	782,153	769,872
Deferred Charges	32,436	24,639
	$1,416,072	$1,324,862

The above statement should be read in conjunction with pages 22 and 23 of this report.

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AND SUBSIDIARIES

AT DECEMBER 31, 1963 AND 1962

LIABILITIES

	1963	1962
	(In Thousands)	
Current Liabilities:		
Accounts payable and accruals	$ 122,803	$ 126,964
Income taxes	69,041	42,855
Current portion of long term debt (less $1,000,000 debentures in treasury)	10,227	9,346
	202,071	179,165
Notes, Debentures, etc.—Less Current Portion Above	352,801	360,864
Other Liabilities:		
Deferred income taxes	41,335	33,520
Miscellaneous	4,306	3,459
	45,641	36,979
Minority Interests in Subsidiary Companies	31,326	30,268
Shareowners' Equity:		
Common shares—authorized, 35,000,000 shares, par value $2 each; outstanding, 29,963,825 shares in 1963 and 29,010,147 shares in 1962	59,928	58,020
Paid-in surplus	406,243	360,856
Retained earnings	318,062	298,710
	784,233	717,586
	$1,416,072	$1,324,862

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STATEMENT OF CONSOLIDATED INCOME

	1963	1962	Increase Decrease
	(In Thousands)		
Income:			
Net sales	$1,192,270	$1,063,195	$129,075
Other	13,470	11,731	1,739
	1,205,740	1,074,926	130,814
Deductions:			
Cost of goods sold	849,669	762,218	87,451
Selling, administrative and research expenses	176,109	151,724	24,385
Interest	15,750	15,422	328
Minority interests	1,700	1,600	100
Other	2,106	2,679	573
	1,045,334	933,643	111,691
Income Before Income Taxes	160,406	141,283	19,123
Provision for Income Taxes:			
Current	65,043	51,464	13,579
Deferred	12,373	11,451	922
	77,416	62,915	14,501
Net Income	$ 82,990	$ 78,368	$ 4,622

The above statement should be read in conjunction with pages 22 and 23 of this report.

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STATEMENT OF CONSOLIDATED PAID-IN SURPLUS AND RETAINED EARNINGS

	1963	1962
	(In Thousands)	
PAID-IN SURPLUS		
Balance at Beginning of Year	$360,856	$323,055
Additions:		
Excess of approximate market value of common capital stock distributed as a stock dividend over the par value thereof	31,549	21,191
Excess of amounts received over the par value of common capital stock issued under stock option plans	13,798	2,501
Excess of approximate market value over the par value of common capital stock issued for the remaining 50 per cent interests in Plax Corporation and Societe Monsanto Boussois		13,806
Excess of equity in the net assets of Societe Monsanto Boussois over the carrying value of the investment therein		303
Other	40	
Balance at End of Year	$406,243	$360,856
RETAINED EARNINGS		
Balance at Beginning of Year	$298,710	$272,127
Additions:		
Net income for the year	82,990	78,368
One-half of retained earnings at December 31, 1962 of Shawinigan Resins Corporation, a 50 per cent-owned company, which became a wholly-owned subsidiary in April 1963	4,062	
	385,762	350,495
Deduction:		
Dividends on capital stock of parent company:		
Cash – at the rate of $1.20 a share in 1963 and $1.05 a share in 1962	34,978	29,470
Stock – 2%	32,722	22,315
	67,700	51,785
Balance at End of Year	$318,062	$298,710

The above statement should be read in conjunction with pages 22 and 23 of this report.

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FINANCIAL REVIEW

The accompanying financial statements (pages 18 through 21) consolidate all active domestic and foreign subsidiaries in which Monsanto Chemical Company directly or indirectly has more than a 50 per cent interest. The accounts of Shawinigan Resins Corporation have been included in consolidation from the date of acquisition in 1963 of the remaining 50 per cent interest in that company.

The equity in the unaudited 1963 net income of 50 per cent-owned companies was $2,059,000, compared with $2,250,000 in 1962. Dividends of $1,300,000 were received from these companies in 1963 and $1,822,000 in 1962. The equity in the unaudited net assets of such companies at the end of the year was $33,985,000, which exceeded the carrying value of $29,382,000 by $4,603,000.

The Revenue Act of 1962 provides for a credit against Federal income taxes equal to approximately seven per cent of expenditures for machinery and equipment purchased and placed in service during the year, with a corresponding reduction of the depreciable tax base of such property. As a result of this investment credit, the income tax liability of the company and certain of its subsidiaries for 1963 was reduced by $4,670,000, of which $2,242,000 or 48 per cent has been included in 1963 net income. The remainder, $2,428,000, was credited to the reserve for deferred income taxes and will be amortized over the life of the properties to which attributable, to compensate for the reduction of the depreciable tax basis. In 1962, $3,220,000 was credited to income and $3,489,000 was credited to reserve for deferred income taxes resulting from the investment credit.

The use of the sum of the years digits method for computing depreciation on the majority of new assets acquired since 1954 was continued in 1963. The excess of depreciation provided by this method over straight line depreciation increased from $13,755,000 in 1962 to $18,646,000. For income tax purposes only, the company and one of its subsidiaries in 1962 adopted the shorter lives established for machinery and equipment by the United States Treasury Department. The additional depreciation taken for tax purposes reduces the current income tax liability of these companies. Net income for the year, however, is not affected, since an amount equivalent to the reduction in current taxes payable is charged to income to provide for deferred taxes payable in future years.

Charges against income for depreciation, obsolescence and depletion amounted to $114,606,000, of which $111,092,000 was depreciation and obsolescence and $3,514,000 depletion of mines and wells. In 1962, such charges were $94,161,000 and $3,478,000.

Repair and maintenance charges included in operating expenses were $76,628,000 in 1963 and $68,143,000 in 1962.

In certain prior years, provisions were made for income taxes payable in future years resulting primarily from the excess of depreciation and amortization of facilities constructed under Certificates of Necessity for income tax purposes over depreciation for accounting purposes. For the years 1963 and 1962, $4,138,000 and $3,830,000 of such taxes became payable and were charged against the reserve provided in prior years.

Examination of the company's Federal income tax returns has been completed for all years through 1956, and returns for the years 1957 through 1959 are presently under examination by the Internal Revenue Service. Differences in opinion exist between the company and the Service on the tax treatment of certain items of income and expense during this period. The ultimate disposition of the items in question is not presently determinable.

Inventories are generally stated at the lower of cost or market, determined on the first-in, first-out basis. Annual rate of turnover was 4.7 in 1963 and in 1962.

Reserves for doubtful accounts were $5,158,000 in 1963 and $5,014,000 in 1962.

The long term debt of the company and its subsidiaries is shown in the table on Page 23.

In 1963, four quarterly cash dividends of 30 cents each were paid on the common shares. Also, 586,840 common shares were issued on December 23, 1963, in payment of a two per cent stock dividend.

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The company was contingently liable as guarantor of bank loans to 50 per cent-owned companies and others aggregating approximately $7,700,000 at the end of 1963 and $4,200,000 at December 31, 1962.

The changes occurring during 1963 in the two stock option plans authorized by shareowners in 1951 and 1960 for key employes, and in the Second Employes' Stock Plan, authorized by shareowners in 1960 for hourly and salaried employes except participants in the key plans, were:

	1951 Stock Option Plan	1960 Stock Option Plan	Second Employes' Stock Plan
Outstanding 1/1/63	160,961	544,524	271,109
Unoptioned 1/1/63		4,768	89,235
Optioned during year		5,500	
Exercised during year	49,508	57,257	260,073
Cancelled during year			89,235
Terminated during year	1,081	7,601	11,036
Outstanding 12/31/63	112,636*	494,987*	
Unoptioned 12/31/63		7,174*	

*Adjusted for 1963 two per cent stock dividend.

Under the Stock Option Plans, 362 options are outstanding, at prices ranging from $25.03 to $62.00 a share. The prices have been adjusted for stock dividends and, where applicable, for the 1955 three-for-one split.

The three-year Second Employes' Stock Plan, which became effective on June 3, 1960 and terminated on June 30, 1963, provided for the grant to hourly and salaried employes of options to purchase a maximum of 450,000 Monsanto common shares. During the life of the plan, employes purchased a total of 349,729 shares, at prices ranging from $39.25 to $50.50 a share. The prices were the higher of approximately 95 per cent of the New York Stock Exchange average price on the date the options were granted or the highest option price on any earlier date on which options were granted. Payments by employes over the option period were made by payroll deductions on which the company credited interest at a minimum rate of four per cent.

LONG TERM DEBT
(Exclusive of Current Maturities)

	1963	1962
	(In Thousands)	
Parent company:		
3¼% sinking fund debentures, due 1968	$ 8,750	$ 10,000
2.65% debentures, due 1971 (less $2,000,000 in treasury in 1963)	20,000	23,000
3⅜% sinking fund debentures, due 1972	10,000	10,500
3½% promissory notes, due 1972	48,212	55,412
4¾% promissory notes, due 1993	100,000	100,000
3¾% income debentures, due 2002	91,000	91,000
4¼% income debentures, due 2008	50,000	50,000
Shawinigan Resins Corporation:		
4½% debentures, due 1976	4,060	
Monsanto Chemicals Limited (British subsidiary):		
6% debentures, due 1977/82	7,980	8,400
5% debentures, due 1982	9,307	9,800
Other subsidiaries	3,492	2,752
Total	$352,801	$360,864

MONS 352099

TOWOLDMON0014272

MONSANTO CHEMICAL COMPANY

HISTORICAL STATEMENT OF CONSOLIDATED

(In millions)

ASSETS

	1963	1962	1961	1960[1]	1959	10 YEARS AGO 1953	25 YEARS AGO 1938
Current Assets:							
Cash	$ 40.9	$ 34.4	$ 28.9	$ 32.8	$ 25.7	$ 37.8	$10.7
Marketable securities	84.7	67.1	18.6	75.1	93.3	11.3	1.0
Net receivables	198.7	173.9	152.7	124.4	101.6	40.3	3.9
Inventories	191.6	170.6	154.5	153.5	105.5	70.7	9.2
	515.9	446.0	354.7	385.8	326.1	160.1	24.8
Investments, etc	85.6	84.4	90.5	75.4	79.6	28.6	1.2
Property:							
Land	27.7	25.2	23.4	19.2	14.2	6.3	1.8
Buildings	237.0	219.3	195.0	181.0	110.4	58.6	9.6
Machinery and equipment	1,148.3	1,054.5	907.0	795.5	524.1	253.7	28.8
Phosphate deposits	9.6	8.6	8.5	8.1	6.9	4.6	.5
Producing oil and gas properties	89.2	84.8	82.1	79.5	76.6		
Undeveloped oil and gas leaseholds	9.1	9.6	8.9	9.0	10.0		
Accumulated depreciation, etc	*705.4*	*600.9*	*514.8*	*449.4*	*307.7*	*106.9*	*14.9*
Accumulated depletion	*33.3*	*31.2*	*29.3*	*27.2*	*25.6*	*.7*	*.1*
Net property	782.2	769.9	680.8	615.7	408.9	215.6	26.0
Deferred Charges	32.4	24.6	16.3	12.7	10.2	3.6	.2
	$1,416.1	$1,324.9	$1,142.3	$1,089.6	$824.8	$407.9	$52.2

(1) The accounts of The Chemstrand Corporation and subsidiaries are not included in the years prior to 1960.
Italics indicate deduction.

MONS 352100

AND SUBSIDIARIES

FINANCIAL POSITION

(In millions)

LIABILITIES

	1963	1962	1961	1960[1]	1959	10 YEARS AGO 1953	25 YEARS AGO 1938
Current Liabilities:							
Accounts payable and accruals.....	$ 122.8	$ 127.0	$ 109.3	$ 86.4	$ 65.5	$ 33.3	$ 3.6
Income taxes less tax notes.....	69.1	42.9	48.8	46.8	36.1	2.2	.9
Current portion long term debt.....	10.2	9.3	9.2	9.9	1.8		
	202.1	179.2	167.3	143.1	103.4	35.5	4.5
Notes, Debentures, etc......	352.8	360.8	269.2	289.2	209.8	106.8	
Other Liabilities:							
Deferred income taxes.....	41.4	33.5	28.1	31.1	19.0	4.5	
Miscellaneous.....	4.3	3.5	3.4	3.1	1.7	6.7	.4
	45.7	37.0	31.5	34.2	20.7	11.2	.4
Minority Interests in Subsidiaries....	31.3	30.3	23.1	23.1	21.6	19.0	2.3
Shareowners' Equity:							
Preference shares.....						15.0	10.0
Common shares.....	59.9	58.0	56.0	54.4	46.3	26.4	12.4
Paid-in surplus.....	406.2	360.9	323.1	286.7	222.6	100.5	11.3
Retained earnings.....	318.1	298.7	272.1	258.9	200.4	93.5	11.3
	784.2	717.6	651.2	600.0	469.3	235.4	45.0
	$1,416.1	$1,324.9	$1,142.3	$1,089.6	$824.8	$407.9	$52.2

MONS 352101

TOWOLDMON0014274

MONSANTO CHEMICAL COMPANY

HISTORICAL STATEMENT OF CONSOLIDATED INCOME

(In millions except per share earnings)

	1963	1962	1961	1960[1]	1959	10 YEARS AGO 1953	25 YEARS AGO 1938
Income:							
Net sales	$1,192.3	$1,063.2	$932.9	$890.1	$688.0	$375.6	$31.9
Other	13.4	11.7	11.8	10.4	12.3	2.8	.7
	1,205.7	1,074.9	944.7	900.5	700.3	378.4	32.6
Deductions:							
Cost of goods sold	849.7	762.2	672.9	632.7	512.5	267.8	23.5
Selling, administrative, research	176.1	151.7	131.4	126.3	83.4	51.7	4.5
Interest	15.7	15.4	11.6	12.4	7.5	3.8	
Minority interests	1.7	1.6	.4	1.6	1.6	9	.1
Other	2.1	2.7	1.3	.9	1.8	1.8	.5
	1,045.3	933.6	817.6	773.9	606.8	326.0	28.6
Income Before Income Taxes	160.4	141.3	127.1	126.6	93.5	52.4	4.0
Provision for Income Taxes	77.4	62.9	58.4	58.8	40.0	25.4	.9
Net Income	$ 83.0	$ 78.4	$ 68.7	$ 67.8	$ 53.5	$ 27.0	$ 3.1
Per Common Share:							
Adjusted for splits	$ 2.77	$ 2.70	$ 2.45	$ 2.49	$ 2.31	$ 1.67	$ .26
Adjusted for splits and stock dividends	$ 2.77	$ 2.65	$ 2.35	$ 2.35	$ 2.13	$ 1.42	$ .22

(1) The accounts of The Chemstrand Corporation and subsidiaries are not included in the years prior to 1960.

MONS 352102

TOWOLDMON0014275

AND SUBSIDIARIES

OTHER DATA

(In millions except where italicized)

	1963	1962	1961	1960[1]	1959	10 YEARS AGO 1953	25 YEARS AGO 1938
Depreciation, depletion, etc.....	$ 114.6	$ 97.6	$ 86.9	$ 79.0	$ 56.1	$ 24.8	$ 2.6
Book value a share[2].....	*$26.17*	*$24.74*	*$23.24*	*$22.06*	*$20.27*	*$13.94*	*$3.13*
Gross additions to property.....	$ 114.5	$ 168.8	$153.8	$121.3	$ 68.7	$ 28.9	$ 3.4
Employes[3].....	*48,133*	*45,665*	*38,621*	*36,266*	*25,982*	*19,759*	*6,229*
Net working capital.....	$ 313.8	$ 266.8	$187.4	$242.7	$222.7	$124.6	$20.3
Net worth and long term debt.....	$1,137.0	$1,078.4	$920.4	$889.2	$679.1	$342.2	$45.0
Per employe.....	*$23,622*	*$23,615*	*$23,832*	*$24,519*	*$26,137*	*$17,319*	*$7,224*
Parent company:							
Cash dividends on common shares.	$ 35.0	$ 29.5	$ 27.3	$ 23.2	$ 22.4	$ 13.1	$ 2.4
Per common share[2].....	*$1.20*	*$1.05*	*$1.00*	*$1.00*	*$1.00*	*$.83*	*$.22*
Preference shares outstanding.....						*150,000*	*100,000*
Common shares outstanding[2].....	30.0	29.0	28.0	27.2	23.2	15.8	11.2
Number of shareowners.....	*80,608*	*82,452*	*82,203*	*83,809*	*78,675*	*24,415*	*8,501*

(1) Data for The Chemstrand Corporation and subsidiaries are not included in the years prior to 1960.
(2) Adjusted for splits.
(3) Including employes of government plants.

MONS 352103

TOWOLDMON0014276

MONSANTO CHEMICAL COMPANY AND SUBSIDIARIES

SOURCE AND DISPOSITION OF FUNDS

(In Thousands)

	TOTAL	1963	1962	1961	1960	1959[1]
Source of Funds:						
Net income	$351,294	$ 82,990	$ 78,368	$ 68,656	$ 67,807	$ 53,473
Provisions for:						
Depreciation, etc.	434,214	114,606	97,639	86,876	79,038	56,055
Deferred income taxes	23,824	12,373	11,451			
Outside financing:						
4¾% promissory notes	99,593		99,593			
4¼% income debentures	25,000					25,000
Other	1,669	1,669				
Common shares issued under options	41,983	14,532	2,639	9,926	1,040	13,846
Other—net	*8,470*	*5,368*	2,366	*7,918*	*3,273*	4,723
	969,107	220,802	292,056	157,540	145,612	153,097
Disposition of Funds:						
Dividends on common shares:						
Monsanto	137,337	34,978	29,470	27,316	23,159	22,414
Chemstrand	2,500				2,500	
	139,837	34,978	29,470	27,316	25,659	22,414
Plant additions and replacements	627,063	114,502	168,833	153,818	121,253	68,657
Investment in affiliated companies	53,077	18,443	9,597	9,810	9,723	5,504
Retirement of debt	67,171	13,452	17,877	21,928	9,915	3,999
Increase—*decrease* in working capital[2]	61,671	18,042	14,614	5,021	27,479	*3,485*
Increase—*decrease* in cash and securities	20,288	21,385	51,665	*60,353*	*48,417*	56,008
	$969,107	$220,802	$292,056	$157,540	$145,612	$153,097

(1) The accounts of The Chemstrand Corporation and subsidiaries are not included in the year 1959.
(2) Exclusive of cash and securities.
Italics indicate decrease.

MONS 352104

TOWOLDMON0014277

DIRECTORS AND OFFICERS

BOARD OF DIRECTORS

Charles Allen Thomas, *Chairman*	St. Louis
Dillon Anderson	Houston
David R. Calhoun	St. Louis
John L. Christian	St. Louis
Fredrick M. Eaton	New York
John L. Gillis	St. Louis
Carroll A. Hochwalt	St. Louis
Herbert Hoover Jr.	Los Angeles
Robert K. Mueller	St. Louis
Edward A. O'Neal Jr.	New York
Edgar M. Queeny	St. Louis
Charles H. Sommer	St. Louis
Alan H. Temple	New York
Felix N. Williams	St. Louis

EXECUTIVE COMMITTEE

Charles H. Sommer, *Chairman*

John L. Christian	Robert K. Mueller
John L. Gillis	Charles Allen Thomas
Carroll A. Hochwalt	Felix N. Williams

FINANCE COMMITTEE

Edgar M. Queeny, *Chairman*

Dillon Anderson	Herbert Hoover Jr.
David R. Calhoun	Charles H. Sommer
Fredrick M. Eaton	Alan H. Temple

Charles Allen Thomas

Transfer Agents

Morgan Guaranty Trust Company of New York

The Boatmen's National Bank of St. Louis
(Effective April 1, 1964)

Registrars

The Chase Manhattan Bank

St. Louis Union Trust Company

OFFICERS

Charles Allen Thomas	*Chairman of the Board*
Charles H. Sommer	*President*
John L. Christian	*Vice President*
John L. Gillis	*Vice President*
Carroll A. Hochwalt	*Vice President*
Robert K. Mueller	*Vice President*
Edward A. O'Neal Jr.	*Vice President*
Felix N. Williams	*Vice President*
H. Harold Bible	*Vice President*
Edward J. Bock	*Vice President*
James E. Crawford Jr.	*Vice President*
John R. Eck	*Vice President*
Arthur W. Lucas	*Vice President*
Robert M. Morris	*Vice President*
Edwin J. Putzell Jr.	*Vice President*
Tom K. Smith Jr.	*Vice President*
J. Russell Wilson	*Vice President*
Marshall E. Young	*Vice President*
Marlette C. Covert	*Controller*
Edwin J. Putzell Jr.	*Secretary*
Patrick J. Dowd	*Treasurer*
Lloyd R. Cole	*Assistant Controller*
Jack W. Mueller	*Assistant Controller*
Walter C. Thilking	*Assistant Controller*
Earl J. Wipfler	*Assistant Controller*
Charles E. Caspari Jr.	*Assistant Secretary*
John N. Ehlers	*Assistant Secretary*
Rodney Harris Jr.	*Assistant Secretary*
C. Brent Holleran	*Assistant Secretary*
Franklin C. Rehfeld	*Assistant Secretary*
Norvell G. Jones	*Assistant Treasurer*
J. Robert Matlock	*Assistant Treasurer*
Thomas M. Rasmussen	*Assistant Treasurer*
Rolla H. Stocke	*Assistant Treasurer*
George F. Wingard	*Assistant Treasurer*

Regional Vice Presidents

Roy L. Brandenburger Franklin J. Cornwell

Edward W. Gamble Jr.

February 25, 1964

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