

1962 ANNUAL REPORT

MONSANTO CHEMICAL COMPANY

MONS 352036

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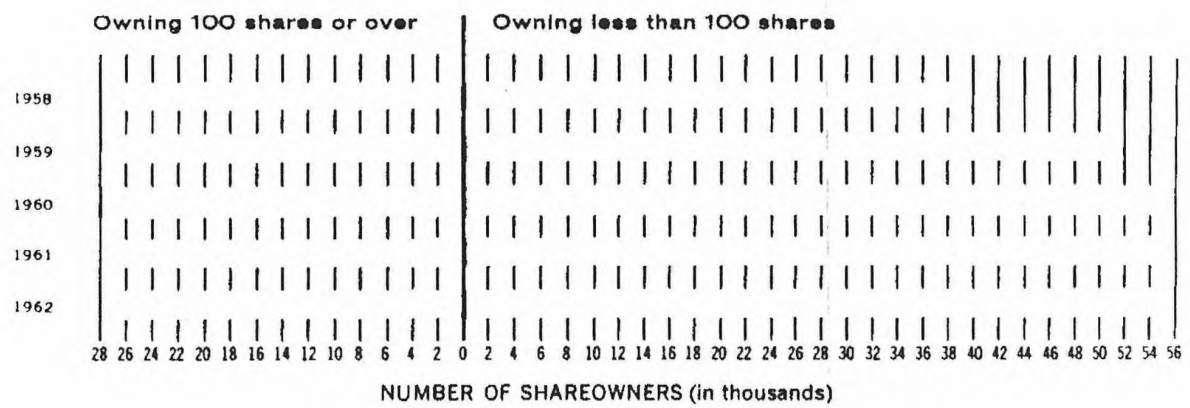
CONTENTS

	Page
Summary of Income and Expenses	1
Message	2
1962 Operational Highlights	5
Sales by Product Groups	17
Statement of Financial Position	18
Statement of Income	20
Statement of Paid-in Surplus and Retained Earnings	21
Financial Review	22
Accountants' Opinion	24
Source and Disposition of Funds	25
Comparative Financial Data	26
Board of Directors	30
Directors and Officers	32

The next Annual Meeting of the shareowners of the Company is to be held on Thursday, March 28, 1963, 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

	1962		1961		1960		1959		1958	
	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	28,545	4,557,252	28,722	4,723,196	29,953	4,810,770	28,830	4,856,599	24,990	4,752,196
Women	24,657	3,640,656	24,565	3,647,262	24,680	3,682,808	23,629	3,673,086	21,460	3,678,163
Joint Accounts	17,375	858,686	17,346	852,952	18,173	923,112	16,654	862,573	11,973	724,561
Charitable Institutions	224	87,445	234	125,849	263	130,699	255	169,421	265	179,961
Educational Institutions	117	178,808	111	154,489	107	151,581	106	92,336	114	131,892
Estates and Trusts	8,446	1,697,284	8,191	1,875,843	7,755	1,804,416	6,458	1,666,564	5,260	1,954,219
Insurance Companies	201	988,887	190	859,916	178	782,364	177	722,566	169	772,671
Brokers and Nominees	1,133	9,856,764	1,120	9,090,762	1,063	8,666,965	1,312	9,953,829	1,126	8,989,736
All Others	1,754	7,144,365	1,724	6,693,171	1,637	6,242,474	1,254	1,159,883	1,070	1,073,201
Total	82,452	29,010,147	82,203	28,023,440	83,809	27,195,189	78,675	23,156,857	66,427	22,256,600



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SUMMARY OF INCOME AND EXPENSES

(In Thousands of Dollars Except Per Share Figures)

	1962	1961
Income:		
From sale of products	$1,063,195	$932,916
From licenses, dividends, interest, etc.	11,731	11,755
	1,074,926	944,671
Deductions from Income:		
For raw materials, fuel, supplies, etc.	546,286	478,296
For wages and salaries to employes	254,046	223,790
For depreciation, obsolescence, depletion	97,639	86,876
For taxes	81,565	75,092
For interest, principally on long term debt	15,422	11,579
For minority interests in subsidiaries	1,600	382
	996,558	876,015
Which Left as Net Income	78,368	68,656
Distributed to Shareowners as Cash Dividends	29,470	27,316
Retained for Future Growth	$ 48,898	$ 41,340
Per Common Share Parent Company:		
Net income	$ 2.70	$ 2.45
Cash dividends paid	1.05	1.00
Book value	24.74	23.24
Common Shares Outstanding	29,010,147	28,023,440

MONS 352038

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TO THE SHAREOWNERS

In 1962, Monsanto's sales exceeded one billion dollars for the first time in the company's history, representing more than a threefold increase in a decade. Net income also advanced to a new peak.

Consolidated sales totaled $1,063,195,000; net income was $78,368,000. Both were 14 per cent higher than in the previous year. The full comparison for 1962-1961 is shown on the preceding page.

Earnings were $2.70 a share on 29,010,147 shares outstanding, compared to $2.45 a share on 28,023,440 shares the year before. After giving effect to 1962's two per cent stock dividend, the adjusted per-share earnings for 1961 were $2.40.

Cash flow — i.e., earnings before depreciation, obsolescence, depletion, etc. — amounted to $6.07 a share in 1962, compared to $5.44 a share in 1961, after adjustment for the 1962 stock dividend.

During the year, new shares were issued for three purposes: 561,955 were issued for the two per cent stock dividend; 355,771 were issued in connection with the acquisition of the remaining 50 per cent stock interests in Plax Corporation and Societe Monsanto Boussois; 68,981 were issued to employes exercising options.

While increased sales volume contributed to improved earnings, several other factors materially affected final results. In the table on this page these various factors are listed with their effects.

Declining selling prices again challenged Monsanto, as they have the chemical industry

Per-share earnings advanced from $2.45 in 1961 to $2.70 in 1962. The increase of 25 cents a share was accounted for by these factors:

	Cents a Share		
Additions to earnings resulting from:			
Higher sales volume			83
Lower raw materials prices			28
Manufacturing cost savings			25
			136
Reductions in earnings caused by:			
Lower selling prices		51	
Higher selling, administrative, research and other expenses		34	
Chocolate Bayou start-up costs		12	
Income charges — net:			
Higher interest costs	6		
Foreign currency devaluation	6		
Other	4	16	113
Increase in earnings from operations			23
Add investment tax credit on property additions			11
			34
Less decrease due to common shares issued in 1962			9
Increase in earnings			25

MONS 352039

TOWOLDMON0014216

generally. Among products affected by major price reductions were plastics, resin materials and their derivatives, phosphates and acrylic fibers. But lower raw material prices and increased manufacturing efficiencies more than offset such reductions. For Monsanto again succeeded in building substantial new economies into its manufacturing operations.

Two unusual and significant items that reduced the year's earnings were the costs of starting up the new Chocolate Bayou Plant near Alvin, Tex., and devaluation of Argentine and Canadian currencies.

An important factor which increased income was the reduction in income taxes resulting from the investment credit provided for by the 1962 federal tax law. This tax reduction is explained in the Financial Review, which begins on page 22.

Capital outlay for plants and equipment and for property of companies acquired for cash was greater in 1962 than in any prior year. Expenditures totaled $168,833,000, compared to $153,818,000 in 1961.

Completion of the big Chocolate Bayou Plant ranks high among 1962's principal events. Its December dedication signaled the start of a new era of Monsanto self-sufficiency in important raw materials. From petroleum feedstock, the new facilities will turn out petrochemicals economically and efficiently.

Construction of two other Monsanto plants at new sites also was completed during the year. One, at Muscatine, Iowa, began producing anhydrous ammonia in November. The other, a phosphate plant at Augusta, Ga., started making materials for detergents at year end.

By Dec. 31, the number of domestic plants owned and operated by Monsanto had increased to 37.

Full ownership of Plax Corporation — previously an associate company in which Monsanto and Emhart Manufacturing Company each owned a 50 per cent interest — was acquired in September. Plax now operates as a Monsanto department. Acquisition of this prominent producer of plastic packaging materials — blown bottles and transparent sheets — is one of several recent moves that carry Monsanto products closer to end users. Others occurring in 1962 were the formation of the Building Products Department and the broadening of our program to sell branded farm chemicals through a network of distributor outlets.

In addition to this domestic strengthening, several moves are under way to consolidate and improve Monsanto's position abroad in light of current and prospective changes in world-wide economic conditions. Our deep European roots trace back to 1920. Thus, when the day of the Common Market dawned, we were ready with production facilities in several key countries. And, as the whole perspective of international trading areas widens further, we are favorably positioned to share in the benefits.

Plans for the formation of Monsanto Europe were crystallized late in the year. Its chief responsibilities include managing the growth and consolidation of our wholly owned companies in Western Europe and assisting other companies in the area in which we have interests. The new organization is a Belgian corporation with headquarters in Brussels.

As part of its further development plans in the Common Market countries, Monsanto has entered into an agreement for gradual disposition over a period of years of its 40 per cent stock interest in Sicedison S.p.A., of Italy, to Societa Edison, owner of the remainder of Sicedison's outstanding shares. However, Monsanto will continue for a number of years to maintain a substantial financial interest in Sicedison and its expanding chemical activities.

Monsanto's total marketing effort was further intensified in 1962, symbolizing our mission of service to customers in virtually every major

MONS 352040

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industry of the free world. Backing up our marketing program are the classical necessities of research and engineering capabilities and production efficiencies.

Despite the new U.S. trade expansion act and other recent actions of the government which may raise new problems for business, there are several compensating factors on the national scene. We sense an increased awareness in government that business must have a favorable climate if it is to contribute fully to the security and economic health of the nation. Adoption of liberalized tax depreciation policies by the United States Treasury Department and the new investment credit provide appropriate examples.

Vice President and Director William W. Schneider retired on the last day of the year. One of few executives who served under every president of this company, Mr. Schneider joined Monsanto Chemical Works in 1921 as an assistant in the Legal Department. At the close of his Monsanto career, he was a member of the Board of Directors and of the Executive and Finance Committees. As vice president of finance and law, he was also Monsanto's general counsel. Mr. Schneider has been one of our company's most able leaders and one of its most devoted servants. Monsanto has been truly enriched by his contributions.

Our gratitude to employes goes far beyond management echelons, however. It is abundantly clear that attainment of our first billion-dollar sales year is not simply a managerial achievement. Credit is properly shared by the thousands of Monsanto men and women whose joint efforts made this milestone a reality.

Monsanto's year is reviewed in more detail on the pages following this letter.

Sincerely,

Chairman of the Board

President

February 25, 1963
St. Louis, Missouri

COMPARATIVE CONSOLIDATED SALES, INCOME AND EARNINGS A SHARE BY QUARTERS

	1962	1961	Per Cent Increase Decrease
	(In Thousands)		
SALES:			
First quarter...	$ 259,805	$219,354	18.4
Second quarter	276,785	246,322	12.4
Third quarter...	247,449	229,338	7.9
Fourth quarter.	279,156	237,902	17.3
	$1,063,195	$932,916	14.0
INCOME (1):			
First quarter....	$ 20,048	$ 15,508	29.3
Second quarter	22,979	19,079	20.4
Third quarter...	16,912	15,545	8.8
Fourth quarter.	18,429	18,524	.5
	$ 78,368	$ 68,656	14.1

	1962	1961	
		Adjusted for 1962 Stock Dividend	As Reported
EARNINGS A SHARE (2):			
First quarter.....	$ .69	$ .54	$ .55
Second quarter.....	.79	.67	.68
Third quarter.....	.59	.54	.56
Fourth quarter.....	.63	.65	.66
	$2.70	$2.40	$2.45

SHARES OUTSTANDING DECEMBER 31:

1962.....29,010,147
1961.....28,023,440

(1) Restated for the first three quarters of 1962 to include a proportionate share of the seven per cent investment credit.

(2) Restated for the first three quarters of 1962 to reflect the shares outstanding on December 31.

MONS 352041

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1962 OPERATIONAL HIGHLIGHTS

Reviewed in this section of the Annual Report are the 1962 activities and achievements of Monsanto and of those companies in which Monsanto has significant investments.

AGRICULTURAL CHEMICALS DIVISION

Combined sales of fertilizer materials, pesticides and animal feed supplements rose to new levels.

Meanwhile, at home and abroad, Monsanto helped press man's search for new ways to boost farm productivity. Assistance was given to a wide range of private organizations and government agencies of the free world in studies of how best to apply chemicals to food production. Eleven Monsanto pesticides are now being field tested in 15 foreign nations.

Fertilizer Materials

Despite some temporary price weakness, plant food materials — ammonia, ammonium nitrate, urea and related products — matched their strong 1961 sales performance.

At Muscatine, Iowa, a new 200-ton-per-day ammonia plant came on stream in November to serve a fast-growing fertilizer market in the Corn Belt. The plant will supply more than 100 anhydrous ammonia stations which carry the Monsanto trademark to Midwestern farmers. Such stations, together with Monsanto dry fertilizer blending plants, help serve all bulk fertilizer needs at the retail level.

Pesticides

Unlike the year that preceded it, 1962 was one of relatively low rainfall. The dry weather helped check insect pests. Consequently, insecticides were less in demand.

Nevertheless, because the demand for proprietary weed killers was robust, total 1962 sales of pesticides equaled those of 1961.

Sales of *Randox*, a herbicide that combats broadleaf and grassy weeds, gained substantially as distribution was broadened and grower confidence in the effectiveness of the weed killer continued to mount. First use of *Randox* by Florida sugar cane growers also helped sales.

Two other herbicides, *Avadex* BW and *Rogue*, were successful in their initial season of commercial use. The first, a modification of regular *Avadex* herbicide, helps rid barley and wheat fields of wild oat. The other kills the grasses that invade rice crops.

Also added to Monsanto's line in 1962 was PCNB, a soil fungicide. It is particularly effective against seedling blight, a serious threat to cotton.

Feed Supplements

Sales of feed chemicals were higher than ever.

Biggest gain was registered by *Santoquin*, an antioxidant that preserves the nutritive value of feeds and dehydrated forage for poultry and livestock. New uses include protection of feed-grade Vitamin A, fishery by-products and pet food.

MHA protein supplement had a large sales increase. Its use in growing broiler chickens for market increased. New business resulted from the discovery that *MHA* can be used effectively in formulating lower cost feeds for laying hens.

Feed-grade urea also sold better than in 1961.

Blasting Agents

Sales of ammonium nitrate for blasting use climbed to a new peak. A successful move into the business of supplying nitrate-fuel oil formulations through special mixing stations was largely responsible for the gain. More applications are being developed.

MONS 352042

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CHEMSTRAND COMPANY DIVISION

Chemstrand, which became a division of Monsanto in April, had a successful year. Sales of both nylon yarns and acrylic fibers increased. The division's plants operated at near-capacity levels.

Nylon Yarns

Nylon sales substantially exceeded those of 1961.

All major markets continued to enlarge. Demand for nylon by manufacturers of carpets and tires was especially strong. New deep-dye and dye-resistant *Cumuloft* nylon carpet yarns spurred the acceptance of nylon carpeting with unprecedented design and color effects. An improved tire yarn helped establish nylon as the cord used in about 46 per cent of tires now produced in the United States.

Additional gains were made in such applications as woven stretch fabrics; molded fabrics for apparel, home furnishings and industrial products; and double-knit fabrics for men's and women's wear.

Expansions got under way at both nylon plants — in Pensacola, Fla., and in Greenwood, S.C. Construction at both locations began in June and was scheduled for completion in the first half of 1963. The effect of the twin expansions will be to increase Chemstrand's total spinning capacity 15 to 20 per cent.

A tricot beaming facility and warehouse are under construction at Blacksburg, S.C., to provide better customer service.

A new concept in marketing nylon was established in 1962 when Chemstrand's "Big Blue C" quality standards program was introduced in several areas of end use. Such programs not only promote sales but are constant reminders of Monsanto's high regard for the concept of quality.

Acrylic Fibers

Acrilan acrylic fibers substantially bettered their 1961 sales. High quality and product innovations to fit new end uses contributed to the gain. Manufacturing efficiencies helped offset lower prices which came into effect during the year.

Acrilan made good headway in solidifying its position in a number of important applications. They include carpets; pile fabrics for apparel; blankets; fiber-fill products, including pillows and comforters; knit and woven fabrics for many types of apparel; and pads for hospital beds.

A particularly strong move was made into the contract carpet business. This is an area in which *Acrilan* carpeting of special design is made for institutional use. Hotels, motels and schools are among the ultimate customers.

Acrilan fibers introduced in 1962 included a new superior performing carpet fiber, new solution-dyed *Acrilan* and an improved fiber-fill material.

To accommodate increasing demand for solution-dyed fiber, facilities for its production were expanded at the Decatur, Ala., plant. Solution-dyed material is used principally in making deep-pile fabrics and fabrics for outdoor awnings.

A "Wear Dated" program, under which Chemstrand guarantees men's and boys' shirts made of 100 per cent *Acrilan* and slacks made of *Acrilan*-rayon blends, was begun in the fall of the year. It was helpful in increasing sales of the fiber.

A third expansion of the Decatur plant was begun in the fourth quarter to further boost *Acrilan* capacity.

HYDROCARBONS DIVISION

In its first full year of operation, this division materially strengthened its role as a supplier of raw materials to other manufacturing divisions. It also broadened its external sales.

Chemical Raw Materials

The Chocolate Bayou Plant was on stream by November. Using a feedstock of light crude oils, the unique facility converts petroleum into a variety of chemicals which Monsanto uses and sells.

Chocolate Bayou gives the company a stronger base in raw materials for its present needs and for its future development. The plant's 500-million-pound-a-year ethylene unit and a smaller one at

MONS 352043

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Texas City, Tex., supply Monsanto's current requirements for this vital raw material. Chocolate Bayou also produces significant quantities of naphthalene, benzene, propylene and ethylbenzene. All are "building blocks" for Monsanto's broad product line. Chocolate Bayou also makes butylenes, xylenes, aromatic solvents, resin oil and resinous pitch, which are sold as industrial raw materials.

New manufacturing efficiency was achieved by switching a modern ethylene unit at Texas City to crude oil feedstock and by making mixed product streams for upgrading at Chocolate Bayou. An older, less efficient ethylene facility at Texas City has become obsolete and been shut down. Also at Texas City, process improvements increased the capacity of the acetylene unit.

Monomers

Production of acrylonitrile, styrene and vinyl chloride monomers exceeded previous records. Overseas demand for acrylonitrile was particularly strong.

Technological improvements of the styrene unit added to its efficiency. In July, shipment of styrene began from a new terminal on the Des Plaines River at Lemont, Ill., Monsanto's fifth such outlet in the United States.

Completion of a vinyl acetate unit at Texas City early in 1963 will add a new chemical monomer to the company's product list. Annual production of 45 million pounds is to be used at other Monsanto plants to make vinyl resins, emulsions and copolymers. Also new to the company is butadiene. Made at Chocolate Bayou, it is used for production of *Lustran* styrene-based plastics by Monsanto and for manufacture of synthetic rubber by customers.

Petroleum Products

Branded product sales of gasolines, automotive lubricants and diesel fuels rose to new high levels, exceeding the average industry increase for these products. Prices, however, were severely depressed.

Gross refinery sales permitted capacity operations throughout the year, while inventories were maintained at minimum levels. Jobbers and distributors of *Lion* products were established in three new marketing areas of Mississippi, Tennessee and Texas. Initial steps were taken to bring the company's five grades of octane-blended gasoline to motorists throughout the nine-state marketing area.

Production and Exploration

Net production of crude oil was down from 8,017,000 barrels in 1961 to 6,992,000 barrels in 1962. The 12.8 per cent decrease was due to new restrictions on the amount of crude to be taken from domestic wells and to a productivity decline in older wells. This decline was not fully offset by production from newer wells.

Although several new gas wells could not produce for lack of pipeline connections, natural gas sales were 23.1 billion cubic feet, compared to 22.6 billion cubic feet in 1961. As the year ended, pipelines were being extended to many of the 39 shut-in gas wells. Thus, gas production in 1963 should rise considerably.

Monsanto participated in the completion of 59 producing wells representing a net interest to the company of 42.8 wells. This included 14 wildcat discoveries in the United States and Canada, of which eight were oil wells and six were gas wells. Monsanto's ratio of successful wildcats to dry holes was better than the industry average.

Exploration expenditures in 1962 were $13.3 millions, up from the $11.5 millions so spent in 1961. There was an intensification of exploration effort on the Gulf Coast, where Monsanto hopes to add to the reserves available for its use at the two Texas plants.

INORGANIC CHEMICALS DIVISION

In 1962, this division made progress on a number of marketing fronts. Several new and significant production and sales records were set.

Phosphorus and Phosphates

Markets continued strong, with virtually every product in the group showing record sales. Profits

MONS 352044

TOWOLDMON0014221

were hit by price declines, however.

Both phosphorus plants — at Columbia, Tenn., and Soda Springs, Idaho — produced at unprecedented rates. Additional ore-washing facilities were installed at Columbia. Both phosphorus plants are now integrated to operate entirely on Monsanto-produced phosphate raw materials.

The new plant at Augusta, Ga., was completed on schedule and has begun shipping sodium tripolyphosphate and phosphoric acid. Phosphoric acid capacity was increased at Kearny, N. J. Additional capacity for the calcium phosphates used in dentifrices was installed at St. Louis.

Aerial applications of *Phos-Chek* fire retardant proved the chemical's effectiveness in controlling brush and forest fires. *Phos-Chek* was developed by Monsanto in association with U.S. and California forestry officials.

Detergents

As a group, surface-active agents showed excellent sales growth. Demand for alkylbenzene was more vigorous than ever.

New facilities are under construction at El Dorado, Ark., for the manufacture of cyanuric acid, and at Monsanto, Ill., for *ACL* 59, the potassium salt of dichlorocyanuric acid. Start-up is scheduled at both locations in 1963's first quarter. These units will use an efficient new Monsanto-developed process. Cost-saving innovations have been incorporated into existing facilities for *ACL* manufacture at Everett, Mass. *ACL* has been well accepted as a chlorine donor for domestic and commercial bleaching, sanitizing, and swimming pool chlorination products.

Heavy Chemicals

Total sales of heavy chemicals were off slightly for the year.

At Everett, expanded facilities are under construction for Monsanto's new silica aerogels, *Santocel* Z and *Santocel* 62. Completion is scheduled for the first quarter of 1963. *Santocel* Z aids in the production of certain blueprint papers. *Santocel* 62 is an improved flatting agent for paints, varnishes and lacquers.

Facilities being installed at Avon, Calif., will recover sulfur from the hydrogen sulfide by-product of Tidewater Oil Company's nearby refinery. Completion is planned for the first half of 1963.

Electronics Chemicals

The market for ultra-pure silicon grew. Monsanto's product line was expanded to include pulled single-crystal silicon in addition to silicon produced by float-zone methods. Technological improvements and innovations helped lower production costs.

In pilot-scale facilities, the company now produces limited quantities of epitaxial silicon wafers of controlled electrical resistivity. Using such wafers, makers of electronic devices have been able to manufacture more integrated, higher quality products at lower cost.

At year end, a major expansion of the silicon plant was under way at St. Charles, Mo. Capacities for polycrystal and pulled single-crystal silicon are being enlarged; capacity for epitaxial wafers is being installed.

Market demand for other semiconductor materials, especially gallium arsenide, exceeded expectation. Monsanto is now a chief supplier of such products, particularly those used in laser technology.

ORGANIC CHEMICALS DIVISION

Sales and earnings of organic chemicals exceeded 1961 levels although the division was hard hit by lower prices on a number of major products. Production topped the two-billion-pound mark for the first time. Eleven new products entered commercial production and capacity expansions in 11 others came on line.

In their first year of operation, all manufacturing units at the new plant near Bridgeport, N. J., including the unique plasticizer process, exceeded design capacities. In October, Monsanto's newest phenol unit achieved successful start-up at the Chocolate Bayou Plant.

MONS 352045

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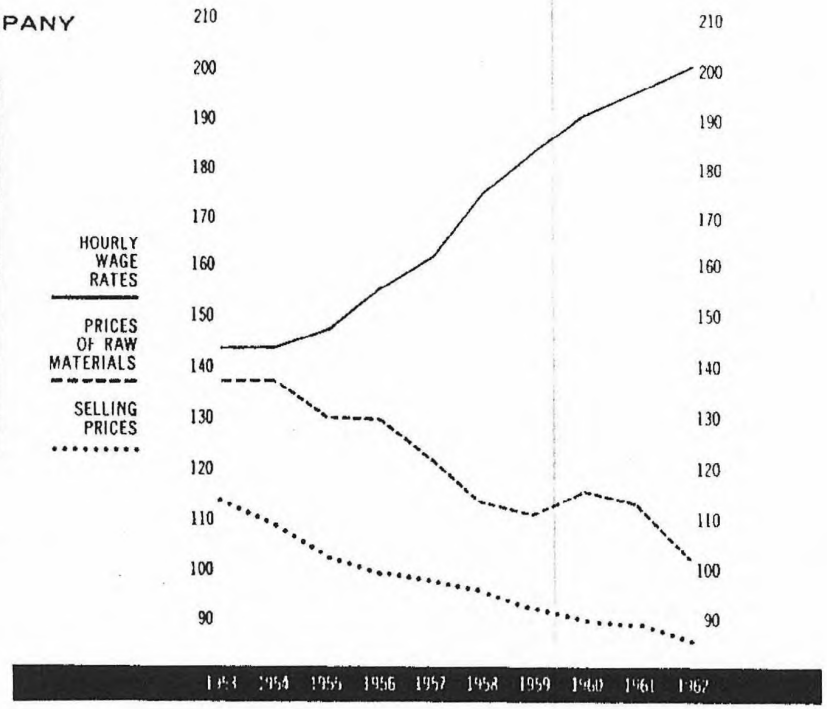
PARENT COMPANY

INDEX OF HOURLY WAGE RATES, PRICES OF RAW MATERIALS AND SELLING PRICES

1947 – 1949 = 100



Functional Fluids and Petroleum Additives

Additives for motor oils, gear oils and automatic transmission fluids led this product group to higher sales. A new *Santolube* 800 series of detergent-inhibitor systems for engine oils reached commercial status. So did *Santowax* OMP, a coolant and moderator for nuclear reactors. And *Santolene* K, a non-metallic additive for fuel oil, was successfully introduced.

An intensive marketing program was launched on a newly designated family of *Therminol* fire-resistant heat-transfer fluids.

Intermediates

Despite two price decreases on phenol, sales volume in this product enabled the group to top its performance of the previous year.

All dyestuff intermediates moved well. Toluene-sulfonic acid sales were of record proportions.

Modernization of the large sulfonation phenol plant at Monsanto, Ill., resulted in cost savings and greater production volume. The new phenol unit at the Chocolate Bayou Plant is integrated to feedstocks produced there and has proved the low production costs for which it was designed.

Paper Chemicals and Wood Preservatives

Sales were well above 1961 levels, with practically all products participating in the gain. *Mersize* fortified rosin size moved strongly. Heavy chemicals for paper making exceeded their 1961 sales, as did pentachlorophenol wood preservative.

MONS 352046

TOWOLDMON0014223

Production of *Scriptite* 400, a resin to give paper a high degree of wet strength, was begun at Baxley, Ga., by Filtered Rosin Products Company, a Monsanto subsidiary. *Mersize* RM 80, a new concentrated fortified rosin size, was commercially introduced.

Pharmaceuticals, Flavors and Condiments

Increased sales of bulk aspirin, acetophenetidin, vanillin, ethavan and saccharin helped this group better its 1961 performance. The price of saccharin increased and work was begun on a new and 50 per cent larger saccharin plant at St. Louis.

At Texas City, Tex., Monsanto is building the first domestic facility for making lactic acid synthetically. New to Monsanto, the acid is an important additive in food products.

Plasticizers

Greatly increased pound sales of these products more than offset two rounds of price reductions and lifted dollar sales well above those of 1961. Sales of polymeric plasticizers introduced in 1961 figured importantly in the gain.

Four new proprietary plasticizers reached commercial status: *Santicizer* 261 and *Santicizer* 262 are high molecular weight monomeric plasticizers for the new acrylic lacquer automobile finishes; *Santicizer* 264 offers greatly improved stain resistance in solid vinyl flooring; *Santicizer* 406 is a polymeric plasticizer with outstanding resistance to styrene migration, important in the gasketing for refrigerator doors.

A national network of plasticizer distributors was established to speed the handling of small-quantity orders. Bulk blending facilities for plasticizers were installed at the plant near Bridgeport, N.J., and expanded at the Long Beach, Calif., plant.

Resin Materials

Dollar sales of these products were down sharply despite pound sales equivalent to those of 1961.

Industry-wide excess capacities have resulted in fierce price competition in phthalic anhydride and maleic anhydride. Consequently, their respective prices have dropped 28 per cent and 27 per cent below the highest 1961 levels.

Three new resin materials — diethyl fumarate, dioctyl fumarate and dioctyl maleate — were introduced as ingredients for polymer and copolymer systems. Hydrogenated bisphenol A was offered as an effective means of imparting chemical resistance to surface coating formulations. *Phosgard* flame retardant compounds achieved commercial acceptance in rigid urethane foams and in acrylic panels.

Modification of phthalic anhydride manufacturing units at Everett, Mass., and St. Louis lowered production costs. Substantial quality advances and cost savings were obtained in production of adipic acid and bisphenol A.

Rubber Chemicals

Sales of the group rose. The gain was spearheaded by the Monsanto-invented *Santocure* family of delayed action accelerators to speed the curing of rubber. Two new additions, *Santocure* MOR and *Santocure* MOR 90, gave Monsanto the broadest line of such accelerators.

Santoflex 36, an antiozonant (antiweathering agent) for truck and automobile tires, was successfully introduced. So were two non-discoloring antioxidants (also antiweathering agents), *Santowhite* 54 and *Santowhite* 54-S.

Production facilities for *Santoflex* 36 started up at Monsanto, Ill. New and expanded multi-product facilities for making *Santocure* accelerators and *Flectol* H, a general-purpose antioxidant, came on stream at Nitro, W. Va.

PLASTICS DIVISION

Plastics sales increased over those of 1961. While profits improved, they continued to be depressed by more of the price erosion which has typified the plastics industry in recent years.

Increased sales were achieved by *Lustrex* polystyrene and high-pressure polyethylene. The automobile industry's good year contributed to sizable increases in sales of *Saflex* polyvinyl butyral film

MONS 352047

TOWOLDMON0014224

for laminated safety glass and *Resimene* melamine resins for automotive finishes. Additional gains came in such applications as wire and cable, packaging, flooring and thermal insulation.

New *Lustran* styrene-based copolymers and terpolymers, which made excellent headway in some substantial end uses, further justified the confidence with which they were introduced. Successful commercial applications now include school seating, business machine and appliance housings, refrigerator and automobile components, luggage and other products requiring the abuse resistance and balanced price-performance properties these materials offer.

With the April start-up of full-scale production of *Lustran* at Addyston, Ohio, Monsanto became the only company to market a full spectrum of styrene-based molding and extrusion materials — a competitive advantage that is being exploited.

Many of the new or improved products introduced in 1962 are tailored to specific process and performance requirements of consuming industries. Noteworthy are: new polyethylene resins for extrusion coating of milk-carton board and cellophane; two tough, high-clarity polyethylene resins for production of packaging films; latex and styrene-maleic anhydride products for improving detergents, floor waxes and foam rubber; better phenolic resins for glass-wool insulation bonding, decorative-panel laminating, and foundry molding; styrene-acrylonitrile molding materials for refrigerator parts, housewares and lighting fixtures; an improved high-impact polystyrene with superior processing properties; a special polyvinyl butyral film for use as a transparent protective cover plate for TV picture tubes; a series of rigid vinyl polymers for building panels and profile extrusions; and improved polyethylene resins for wire coating.

Production facilities for polyvinyl chloride paste resin and copolymer were expanded at Springfield, Mass., to meet increased market demand.

Efforts to provide customers not only with better products but with better service continued. Expanded order service centers were set up in major U.S. market areas. Monsanto's leadership in bulk shipping of plastics was strengthened when its fleet of specially designed railroad cars was enlarged. And expansion of electronic computer facilities helped establish industry leadership in production scheduling, inventory control and product distribution.

OPERATING DEPARTMENTS

Building Products Department

This department was formed early in the year to develop and market finished building products and building systems. Its principal efforts are directed toward upgrading raw materials already made by Monsanto, most important of which are plastics.

The department's first commercial offering — a corrugated building panel of rigid polyvinyl chloride — was introduced at mid-year. Such panels are being produced on a continuous basis at Kenilworth, N.J. Early in 1963, capacity will be tripled.

To handle the marketing function, a small sales group was set up and nation-wide distributorships were established. As new products broaden the line, they will be distributed through these same channels.

A prototype house with components made primarily of plastics was built and successfully tested. A number of potential markets for such a house are currently being explored.

Gering Plastics Company

In every area of its operations, Gering made good sales gains.

Sales of molding materials — these include polystyrene, polyvinyl chloride, polyethylene, polypropylene, cellulosics and nylon — were especially strong. In 1962, Gering improved its competitive position in the Midwest when it began warehousing such materials at Chicago. And at its plant in Kenilworth, N.J., the company succeeded in boosting the productivity of its compounding facilities.

Garden hose had a good year. Advance bookings indicate that 1963 sales will go still higher. Gering's sales promotion efforts were aided when the burst

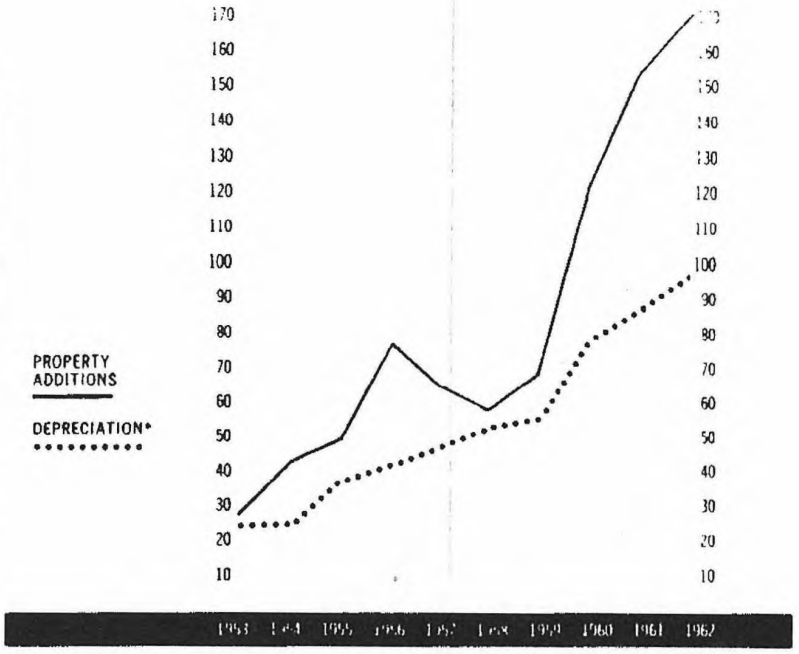
MONS 352048

TOWOLDMON0014225

GROSS ADDITIONS TO PROPERTY AND DEPRECIATION* (in $ millions)

*Depreciation includes: depreciation, obsolescence, amortization and depletion.

Chemstrand and subsidiaries not included in years prior to 1960.



strength of its hose was given a superior rating by an independent testing laboratory.

Use of the company's polyethylene film in construction, agriculture and industry continued to grow, with sales often exceeding the capacity of present tooling. Production facilities will be expanded as a consequence of this booming demand.

Plax Company

A public preference for plastic packages was again evident. Plax sales of both plastic bottles and *Polyflex* polystyrene sheeting increased.

Like liquid detergents before them, liquid bleaches became available nationally in *Plax* bottles. Other products which began appearing in the company's bottles were fabric softeners, waxes and polishes, oils for outboard motors, insect killers, photographic chemicals, industrial chemicals, beauty parlor preparations and vinegar.

Polyflex extended its popularity for the packaging of fresh produce, baked goods and candies. Development of a scratch-resistant coating for the material helped open a new market in the field of transparent envelopes.

The new bottle-making plant at Yardville, N.J., was in full operation by the second quarter. Additional capacity to produce bottles was installed at Anaheim, Calif. *Polyflex* capacity was increased to meet strong demand.

RESEARCH

Determined research effort was again rewarded by discoveries that helped Monsanto move forward.

In 1962, following a 10-year period in which 438 products were introduced by Monsanto's five chemical divisions, 293 of these products contributed 35 per cent of those divisions' total sales and 37 per cent of their gross profit. During the year, 78 new Monsanto products survived screening tests and were sold commercially.

Also in 1962, the company was granted 345 U.S. patents and 338 foreign patents.

Expenditures for research, development, patent work and basic engineering amounted to $51.6 millions in 1962, compared to $46.7 millions in 1961.

Monsanto's St. Louis Research Center in its first full year of operation fulfilled expectations of efficiencies to be gained from centralized services to and close communication among research personnel.

Monsanto operates a wholly owned subsidiary, Monsanto Research S.A., at Zurich, Switzerland. Its laboratory, established for the purpose of carrying out fundamental physical and organic chemical research, is now in its sixth year. The European company, in addition to making significant contributions to Monsanto technology, makes available for consultation on Monsanto programs the varying scientific trainings and viewpoints of the

MONS 352049

TOWOLDMON0014226

European chemists who compose its staff. It also provides useful contacts with others in the European scientific community.

Monsanto's manufacturing divisions strengthened their research activities in 1962. The Agricultural Chemicals Division, for example, expanded its laboratories at the Research Center by one-third to provide additional facilities for the study of pesticides in different types of soils and under varying climatic conditions. The number of new products transferred from the division's research department to development in 1962 was considerably greater than the number transferred in 1961.

At the Research Center, also, the Organic Chemicals Division enlarged and consolidated its research program on the development of new products for the paper industry.

Research & Engineering Division

The Research & Engineering Division in 1962 continued to emphasize programs that forward Monsanto's total technical development. They include fundamental research leading the company into new fields as well as research directly oriented to existing Monsanto areas of production. In one area of scientific exploration, for example, the concepts involving combinations between inorganic and organic materials are being vigorously pursued in programs directed to a variety of industrial uses.

During the year, work continued on organic phosphorus compounds. Certain new compositions have been found which, when incorporated in polymers, are of special interest. Although these compositions impart flame-proof characteristics, the physical properties of the compounded polymers are essentially those of the base polymers.

Monsanto has long been the leader in providing fire-resistant functional fluids so important to the development of certain hydraulic mechanisms in missiles and in industry, and to the safe operation of military and civilian aircraft. Successful research on these functional fluids continued during 1962.

Modern methods of information retrieval were developed during the year to store and retrieve accumulated Monsanto research and engineering information. This system makes such information immediately available to all segments of the company in support of many fast-moving programs. It not only affords a saving of many manhours on each project where a review of related past work within the company is advantageous but also avoids duplication of previous work.

Monsanto Research Corporation

Wholly owned Monsanto Research Corporation continued to operate in four areas. It handled research for 18 government agencies under 30 separate contracts. It made and sold nuclear sources. It operated Mound Laboratory at Miamisburg, Ohio, for the Atomic Energy Commission. And it did research for the parent company.

The research subsidiary's 1962 highlights included development of: a laminating resin for prolonged use at temperatures higher than 550 degrees Fahrenheit; antioxidants and antiwear additives that may permit military aircraft to use polyphenyl ether fluids and lubricants at 600 degrees Fahrenheit, rather than the 400 to 450 degrees now realized with other fluids; a plastic composition that can be applied to ship hulls to reduce vibration and thus help navy vessels escape detection (and which, it is believed, will be useful in reducing vibration in industrial and architectural applications); and a model thermoelectric generator to convert heat to electricity — in orbiting satellites, for example.

Also in 1962, MRC's contract to operate Mound Laboratory was renewed through September, 1966. Monsanto built the AEC laboratory in 1948 and has since been responsible for its operation.

INTERNATIONAL OPERATIONS

Overseas Division

Export sales of chemicals and plastics in 1962 were considerably higher than those of 1961 and exceeded those of 1960, the prior record year. Reflecting the trend of U.S. exports generally, such sales included an increased percentage of specialty products. At the same time, there was a reduction in exports of heavy chemicals. Products from the Inorganic, Organic and Agricultural Chemicals Divisions contributed to the year's gain.

Europe

Europe's future economic growth, stimulated

MONS 352050

TOWOLDMON0014227

particularly by the European Economic Community (Common Market), is expected to be at least as vigorous as in the 15 years following World War II. In the past, Monsanto has participated in this growth through export sales and through investments in France, Belgium, the United Kingdom and Italy. Consolidation of the company's European interests into a new organization — Monsanto Europe — should help maximize future participation.

In France, Monsanto acquired majority ownership of Societe Monsanto Boussois in 1962. The name of this formerly 50 per cent owned associate was changed to Societe Monsanto. The company, which manufactures a complete line of polystyrene molding and extrusion products, entered the paper chemicals market with local manufacture of *Mersize*, a synthetic size for paper. In 1962, it also became the first overseas manufacturer of *Lustran* I, Monsanto's new styrene-acrylonitrile-butadiene terpolymer plastic.

Wholly owned Monsanto Belgium, which produces *Saflex* polyvinyl butyral interlayer for laminated safety glass, profitably completed its first full year of operation.

Monsanto Chemicals Limited, one of Monsanto's three subsidiaries in the United Kingdom, maintained its sales level. But profits were hurt by price reductions in heavy chemicals and plastics. MCL acquired a plastics manufacturer producing foamed plastics and panels for the construction industry. It integrates well with MCL's own polystyrene operations. Plant expansions and improvements were made in rubber chemicals and aspirin. A new fumaric acid plant was completed.

The second U.K. subsidiary is wholly owned Chemstrand Limited, which produces *Acrilan* acrylic fibers in Northern Ireland. In 1962, this company operated profitably.

Also in the United Kingdom, all the common stock of Lansil Limited was purchased in 1962. Lansil is principally a producer of cellulose acetate flake and filament yarns.

Monsanto's position in Spain was strengthened when ownership was increased from 25 per cent to 50 per cent in Etino-Quimica S.A. This company is directly related to Monsanto's other 50 per cent owned Spanish associate, Monsanto Iberica S.A. The two are integrated from basic raw materials such as limestone, salt and coal to polyvinyl chloride compounds. The product line includes calcium carbide, acetylene, alcohols, plasticizers and high-impact polystyrene. Many of the facilities are currently in start-up phase and all should become operative in 1963.

In Italy, Monsanto's 40 per cent owned affiliate, ACSA (Applicazioni Chimiche Societa Per Azioni), which makes and markets acrylic fibers, substantially increased sales and production in 1962 in the process of further developing its markets.

Western Hemisphere

Operations in this hemisphere consist of wholly owned subsidiaries in Canada, Mexico and Argentina; an affiliate in Colombia; and export sales to virtually every country.

Canada, with its high standard of living, accounts for the largest share of Monsanto exports. Latin American nations account for a smaller but increasing share.

Monsanto Canada Limited had a year of record sales. Sales of polystyrene and vinyls were especially strong. So were sales of plastic foam to the clothing and automotive industries. Although some tapering in the level of Canada's economy is expected in 1963, the outlook remains favorable.

Sales of Monsanto Mexicana S.A. recovered from a 1961 slump. The company was aided by improved sales of polyvinyl chloride resins and compounds, plus export gains within the Latin American Free Trade Area. Acquisition of an interest in a Mexican plastics fabricating company moved Monsanto Mexicana closer to the consumer in a country with one of the world's fastest-growing populations.

Monsanto Argentina S.A.I.C. was badly hurt by lower sales, lower profits and currency devaluation. Political unrest has seriously affected the Argentine economy. Nevertheless, Monsanto Argentina is making the necessary adjustments to prepare for more efficient operations when the economy is revitalized.

In Colombia, Monsanto has a 49 per cent equity in Fabrica de Hilazas Vanylon S.A. Formed in

MONS 352051

TOWOLDMON0014228

1959, this company now produces about two million pounds of nylon yarn annually. In 1962, it had a good year in terms of both sales and profits.

Asia-Pacific Area

Monsanto exports to most of the non-communist countries in this vast area. Its principal investments, however, are currently in Australia and Japan.

Monsanto Chemicals (Australia) Limited — in which Monsanto's direct and indirect interests total 81 per cent — recovered more rapidly than expected from 1961's business recession. Sales and profits increased in step with the recovery. MC(A)L is building a new phenol plant to utilize a newly developed process. By 1964, this plant should provide major economies over the company's aging sulfonation plant.

Australian Fluorine Chemicals Pty. Limited, an MC(A)L associate, has its fluorocarbon plant operating. During 1962, however, due to excessive imports, output was insufficient to prevent an operating loss.

Australian Petrochemicals Pty. Limited, a Monsanto subsidiary, showed a profit in its first full year of operation. The company manufactures styrene monomer.

Mitsubishi Monsanto Chemical Company, Monsanto's 50 per cent owned Japanese associate, reflected a slowdown in Japan's economy. Its sales and profits were below those of 1961's record year. Overcapacity in both the polyvinyl chloride and polystyrene fields caused price reduction.

Also in Japan, Monsanto has a 38 per cent equity in Mitsubishi Vonnel Company Limited. This Monsanto affiliate operated its acrylic fiber plant close to capacity in 1962. Here again, low selling prices, caused by intense competition from other Japanese producers, prevented profitable operations.

Near East

Israel Chemical Fibres Limited was formed in 1962, as a 60 per cent owned subsidiary to produce *Acrilan* at Ashdod, Israel. Its plant will soon be under construction. Completion is scheduled for 1964.

50 PER CENT OWNED DOMESTIC ASSOCIATED COMPANIES

Operations of domestic associates are not consolidated with those of Monsanto and its subsidiaries. Yet, some discussion of them is appropriate.

Mobay Chemical Company, owned with Farbenfabriken Bayer A.G. of West Germany, had its best year to date. Gains in both sales and income were substantial.

A number of expansions were completed or under way at Mobay's plant in New Martinsville, W. Va. New units to make diphenyl-methane diisocyanate and dinitrotoluene were on stream by mid-year. Under construction were facilities to raise capacity for tolylene diisocyanate (TDI) from 50 to 70 million pounds annually. It is the sixth TDI expansion since Mobay's formation in 1954.

Isocyanate-based materials have gained substantial footholds in a wide cross section of basic U.S. industries. Price erosion, common to fast-growth chemical commodities, has been largely offset by the development of large-volume markets, notably in the automotive, construction, refrigerated transport and appliance insulation fields.

An event of significance was the opening of Mobay's new 52,000-square-foot research center at Pittsburgh. Mobay continues to place heavy emphasis on researching new products and new applications. In 1962, a number of products were commercially introduced and 79 patent applications on processing technology were filed.

Typical of the new developments is an isocyanate introduced in April. Essentially hazard-free, it makes possible low-cost manufacture of rigid, high-strength urethane foams. The chemical is useful in new techniques for sealing interiors of mine tunnels and for erecting emergency firewalls to localize and control underground fires. Additional use is expected as a sprayed-on or foamed-in-place insulant in building construction.

New formulations of Mobay's urethane elastomer resins were commercially introduced for such applications as caulks and sealants for the construction industry. Advances also were made in adapting the resins to molding, casting, sheet extrusion and production of spandex fibers.

MONS 352052

TOWOLDMON0014229

Expansion of facilities to make polycarbonate thermoplastic resins is in progress. Tough polycarbonate is the only transparent plastic listed by Underwriters Laboratories, Inc., as both self-extinguishing and adaptable to current-carrying electrical components. In 1962, the plastic made good penetration into prime industrial component markets. Recent development of improved processing technology should lead to new advances.

In 1962's final quarter, Mobay declared and paid its first cash dividend to the parent companies. It had paid a stock dividend in 1961.

Shawinigan Resins Corporation, owned with Shawinigan Chemicals Limited of Canada, made significant gains in its twenty-fifth year. Sales advanced and profits recovered well from a 1961 downturn.

The improvement resulted from a more favorable product mix and increased demand for "Butvar" polyvinyl butyral in various markets, including that market for which Monsanto converts "Butvar" into *Saflex*, the interlayer for automotive and architectural laminated safety glass. Exports grew in importance, amounting to more than one-tenth of total sales. Specialized resins for electrical insulation and adhesives accounted for the bulk of overseas shipments.

The third expansion of "Gelvatol" polyvinyl alcohol capacity was completed. A new unit provides facilities for making two new types of the alcohol for use in paper and textile manufacture.

Fome-Cor Corporation, owned with St. Regis Paper Company, manufactures, as its only product, a lightweight laminated board — a sandwich of polystyrene foam between layers of kraft paper. Its sales are to the construction industry and to the graphic arts industry. The young company again showed a loss.

Polythane Corporation, owned with Peteco, Inc., was formed in January, 1962, to produce spandex fibers (elastic fibers now used mainly in women's foundation garments and hosiery). Its products are to be marketed by the Chemstrand Company Division.

Polythane's plant at Rumford, R. I., was built during the year. Its spandex is expected to be added to Chemstrand's product line in 1963's first quarter.

Also in 1962, Polythane formed a wholly owned subsidiary in the United Kingdom. The new company, Polythane Fibres Limited, will also produce spandex.

PERSONNEL

Strong emphasis on personnel development continued. A sales technique program was conducted for all marketing people. A program of instruction to improve maintenance skills was begun. An instrument school to help supervisory personnel adapt to the new requirements of automated production was established. And operations analysis was introduced as a production training tool.

A technical training program to further the development of scientists was carried on at company research facilities. Academic and advanced management leaves also were continued in an effort to build the best trained scientific and managerial staff possible.

Relationships with universities and colleges were strengthened by a new program which centralizes the administration of recruiting, scholarships and scholarship aid. Combining these functions improves the means of evaluating both schools and students and assures that Monsanto will continue to secure its share of top-caliber college graduates.

Also effected in 1962 was a new company-wide system of requisitioning manpower. It permits more accurate specification of the types of technical personnel needed to meet current and expected requirements in given areas of endeavor.

Monsanto's safety performance was again outstanding. Its accident frequency rate was far below the industry average. Thus, the company's record as one of the safest in the chemical industry was continued.

New three-year work contracts were negotiated successfully at three plants. Two-year contracts were agreed to at four. As a result, the company finished the year without a work stoppage. The favorable pattern of labor agreements reflects a constant effort to better employe understanding of Monsanto's business goals and the competitive en-

MONS 352053

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vironment in which they must be achieved.

Alert to new developments which minimize and expedite handling of paperwork, Monsanto in 1962 became the first company to install an electronic mail sorter to speed mail distribution.

Also during the year, an industrial preparedness policy was formulated for use in the event of a worsened international situation. The policy provides procedures for continuing business operations in time of national emergency and includes disaster plans for all facilities.

The company's pattern of expansion created the need for certain organizational changes.

A new Distribution Department, having comprehensive traffic responsibilities, was established. John R. Sayers, formerly assistant director for purchasing and traffic, was named its director.

In October, Franklin J. Cornwell became a regional vice president with headquarters in New York. Mr. Cornwell, who had been in corporate development, now is concerned with Monsanto's marketing interests as they affect major eastern customers.

Because of the rapid expansion of overseas interests, Director and Vice President Robert K. Mueller was assigned the principal sphere of interest for international chemical and plastics activities.

Other important changes occurred in January, 1963. David R. Calhoun, president of St. Louis Union Trust Company and director of a number of other corporations, was elected to Monsanto's Board of Directors. Edwin J. Putzell Jr., corporate secretary and director of Monsanto's Law Department, was elected a vice president and appointed general counsel. Marlette C. Covert, formerly an assistant controller and the associate director of the Accounting Department, was elected controller and appointed director of the department. In both capacities, Mr. Covert succeeded Edwin J. Cunningham, who retired Jan. 31, 1963.

SALES BY PRODUCT GROUPS

PARENT COMPANY AND ALL SUBSIDIARIES

	1962 %	1961 %	1957 %
Chemical Fibers	26.3	25.2	19.9
Plastics, Synthetic Resins and Surface Coatings	23.5	21.0	22.3
Phosphate Products and Detergents	11.3	12.2	12.9
Intermediates and Plasticizers	9.8	10.7	11.1
Rubber and Oil Chemicals	7.4	7.7	9.0
Agricultural Chemicals	6.9	7.2	6.6
Petroleum Products—Net of purchases	5.6	6.7	7.9
Pharmaceuticals, Flavors and Condiments	3.3	3.6	4.3
Textile and Paper Chemicals	3.1	2.8	2.8
Heavy Chemicals	2.3	2.6	3.1
Other	.5	.3	.1
	100.0	100.0	100.0

MONS 352054

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MONSANTO CHEMICAL COMPANY

STATEMENT OF CONSOLIDATED FINANCIAL POSITION

ASSETS

	1962	1961
	(In Thousands)	
Current Assets:		
Cash	$ 34,435	$ 28,914
Marketable securities, at cost which approximates market	67,037	18,600
Net receivables	173,924	152,704
Inventories	170,595	154,438
	445,991	354,656
Investments and Miscellaneous Assets, at Cost or Less:		
Investment in and advances to associates	25,552	33,545
Miscellaneous investments and receivables	58,808	56,942
	84,360	90,487
Property, Plant and Equipment, at Cost	1,402,062	1,224,923
Less accumulated depreciation and depletion	632,190	544,119
Net property	769,872	680,804
Deferred Charges	24,639	16,326
	$1,324,862	$1,142,273

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

MONS 352055

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AND SUBSIDIARIES

AT DECEMBER 31, 1962 AND 1961

LIABILITIES

	1962	1961
	(In Thousands)	
Current Liabilities:		
Accounts payable and accruals	$ 126,964	$ 109,274
Income taxes	42,855	48,794
Current portion of long term debt (less $1,000,000 debentures in treasury)	9,346	9,223
	179,165	167,291
Notes, Debentures, etc.—Less Current Portion Above	219,864	128,225
Income Debentures	141,000	141,000
Other Liabilities:		
Deferred income taxes	33,520	28,069
Miscellaneous	3,459	3,394
	36,979	31,463
Minority Interests in Subsidiary Companies	30,268	23,065
Shareowners' Equity:		
Common shares—authorized, 35,000,000 shares, par value $2 each; outstanding, 29,010,147 shares in 1962 and 28,023,440 shares in 1961	58,020	56,047
Paid-in surplus	360,856	323,055
Retained earnings	298,710	272,127
	717,586	651,229
	$1,324,862	$1,142,273

MONS 352056

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MONSANTO CHEMICAL COMPANY

STATEMENT OF CONSOLIDATED INCOME

	1962	1961	Increase Decrease
	(In Thousands)		
Income:			
Net sales	$1,063,195	$932,916	$130,279
Other	11,731	11,755	[illegible]
	1,074,926	944,671	130,255
Deductions:			
Cost of goods sold	762,218	672,924	89,294
Selling, administrative and research expenses	151,724	131,407	20,317
Interest	15,422	11,579	3,843
Minority interests	1,600	382	1,218
Other	2,679	1,339	1,340
	933,643	817,631	116,012
Income Before Income Taxes	141,283	127,040	14,243
Provision for Income Taxes:			
Current	51,464	58,384	[illegible]
Deferred	11,451		11,451
	62,915	58,384	4,531
Net Income	$ 78,368	$ 68,656	$ 9,712

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

MONS 352057

TOWOLDMON0014234

STATEMENT OF CONSOLIDATED PAID-IN SURPLUS AND RETAINED EARNINGS

PAID-IN SURPLUS

	1962	1961
	(In Thousands)	
Balance at Beginning of Year	$323,055	$286,666
Additions:		
Excess of approximate market value of common capital stock distributed as a stock dividend over the par value thereof	21,191	27,022
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	
Excess of amounts received over the par value of common capital stock issued under stock option plans	2,501	9,367
Balance at End of Year	$360,856	$323,055

RETAINED EARNINGS

Balance at Beginning of Year	$272,127	$258,907
Addition—Net Income for the Year	78,368	68,656
	350,495	327,563
Deduction:		
Dividends on capital stock of parent company:		
Cash—at the rate of $1.05 a share in 1962 and $1.00 a share in 1961	29,470	27,316
Stock—2%	22,315	28,120
	51,785	55,436
Balance at End of Year	$298,710	$272,127

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

MONS 352058

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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 owns more than 50 per cent of the voting capital stock. The accounts of Societe Monsanto Boussois and Plax Corporation have been included in consolidation from the dates of acquisition in 1962 of the remaining 50 per cent interests in these companies.

The equity in the unaudited 1962 net income of 50 per cent owned companies, including the net income of Boussois and Plax to the dates they became subsidiaries, was $2,250,000, compared with $3,652,000 in 1961. Dividends of $1,822,000 were received from 50 per cent owned companies in 1962 and $573,000 in 1961. The equity in the unaudited net assets of such companies at the end of the year was $30,941,000, which exceeded the carrying value of $25,552,000 by $5,389,000.

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 base of such property. As a result of this investment credit, the company's income tax liability for 1962 has been reduced by $6,709,000, of which $3,220,000 or 48 per cent, has been included in 1962 net income. The remainder, $3,489,000, has been credited to a reserve for deferred taxes and will be amortized over the life of the properties to which attributable, to compensate for the reduction of the depreciable tax basis.

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 1962. The excess of depreciation provided by this method over straight line depreciation increased from $12,263,000 in 1961 to $13,755,000. For income tax purposes only, the company, in 1962, adopted the shorter lives established for machinery and equipment by the United States Treasury Department. The additional depreciation for tax purposes reduces the company's current income tax. Net income for the year, however, was not affected, since an amount equivalent to the reduction in taxes has been charged to income to provide for deferred taxes payable in future years.

Charges against income for depreciation, obsolescence and depletion amounted to $97,639,000, of which $94,161,000 was depreciation and obsolescence, and $3,478,000 depletion of mines and wells. In 1961, such charges were $84,201,000 and $2,675,000.

Repair and maintenance charges included in operating expenses were $68,143,000 in 1962 and $57,883,000 in 1961.

In certain prior years, provisions were made for income taxes payable in future years resulting 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 1962 and 1961, $3,684,000 and $4,049,000 of such taxes became payable and were charged against the reserve provided in prior years.

Inventories are generally stated at the lower of cost or market. Annual rates of turnover were 4.7 in 1962 and 4.4 in 1961.

Reserves for doubtful accounts were $5,014,000 in 1962 and $4,110,000 in 1961.

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

The parent company sold at par in January and May, 1962, a total of $75 millions principal amount of 4¾ per cent promissory notes, due January 1, 1993. In June, 1962, the company sold an additional $25 millions of such notes, on a basis to yield 4⅞ per cent interest over their average life. The notes require that 93 per cent of the principal amount be prepaid in equal annual installments commencing January 1, 1973, with the balance due at maturity.

Upon merger of The Chemstrand Corporation into the company in April, 1962, the holders of Chemstrand's then outstanding 3½ per cent First Mortgage Bonds, Series A, due April 1, 1976, aggregating $66,212,000 principal amount, exchanged such bonds for an equal principal amount of 3½ per cent Promissory Notes of the company, due August 1, 1972.

In 1962, cash dividends of 25 cents in each of the first three quarters and 30 cents in the fourth quarter were paid on the common shares. Also, a stock dividend of two per cent was paid in December.

The parent company has three stock option plans in effect: the plans authorized by shareowners in 1951 and 1960 for key employes, and the Second

MONS 352059

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LONG TERM DEBT
(Exclusive of Current Maturities)

	1962	1961
	(In Thousands)	
Notes, debentures, etc.:		
Parent company:		
3¼% sinking fund debentures, due 1968	$ 10,000	$ 11,250
2.65% debentures, due 1971 (less $1,000,000 in treasury in 1961)	23,000	23,000
3⅜% sinking fund debentures, due 1972	10,500	11,000
3½% promissory notes, due 1972	55,412	
4¾% promissory notes, due 1993	100,000	
The Chemstrand Corporation:		
3½% first mortgage bonds, due 1976		62,257
Monsanto Chemicals Limited (British subsidiary):		
6% debentures, due 1977/82	8,400	8,400
5% debentures, due 1982	9,800	9,800
Other subsidiaries (less $289,500 in treasury in 1961)	2,752	2,518
Total	$219,864	$128,225
Income debentures — Parent company:		
3¾%, due 2002	$ 91,000	$ 91,000
4¼%, due 2008	50,000	50,000
Total	$141,000	$141,000
Total long term debt	$360,864	$269,225

Employes' Stock Plan, authorized by shareowners in 1960 for hourly and salaried employes except participants in the key employe plans. The status of the authorized shares of each and the changes occurring during the year were:

	1951 Stock Option Plan	1960 Stock Option Plan	Second Employes' Stock Plan
Outstanding 1/1/62	177,808	513,370	352,234
Unoptioned 1/1/62		33,696	48,306
Optioned during year		32,250	2,153
Exercised during year	20,164	8,621	40,196
Terminated during year		3,080	43,082
Outstanding 12/31/62	160,961*	544,524*	271,109
Unoptioned 12/31/62		4,768*	89,235

*Adjusted for 1962 two per cent stock dividend.

Under the Stock Option Plans, 394 options are outstanding, at prices ranging from $25.53 to $55.03 a share. Where applicable, the prices have been adjusted for stock dividends and for the 1955 three-for-one split.

The three-year Second Employes' Stock Plan, which became effective on June 3, 1960, provided for the grant to hourly paid and salaried employes of options to purchase a maximum of 450,000 Monsanto shares. On subsequent anniversary dates of the plan, options were offered to those employes who had not previously been eligible to participate. At the end of 1962, the options outstanding were:

Date of Offering	Number of Employes	Number of Shares	Price a Share
June 3, 1960	7,415	254,852	$39.25
December 5, 1960	259	6,541	40.75
June 5, 1961	166	3,027	50.25
December 4, 1961	354	4,723	50.50
June 5, 1962	116	1,017	50.50
December 3, 1962	189	949	50.50
	8,499	271,109	

The prices are 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 the employe over the option period are made by payroll deductions on which the company has been crediting interest at a minimum rate of four per cent.

TOWOLDMON0014237

ACCOUNTANTS' OPINION

HASKINS & SELLS
CERTIFIED PUBLIC ACCOUNTANTS

BOATMEN'S BANK BUILDING
SAINT LOUIS 2

Monsanto Chemical Company:

We have examined the statement of consolidated financial position of Monsanto Chemical Company and its subsidiary companies as of December 31, 1962 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, 1962 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 11, 1963

Haskins & Sells

TOWOLDMON0014238

MONSANTO CHEMICAL COMPANY AND SUBSIDIARIES

SOURCE AND DISPOSITION OF FUNDS

(In Thousands)

	TOTAL	1962	1961	1960	1959[1]	1958[1]
Source of Funds:						
Net income	$305,186	$ 78,368	$ 68,656	$ 67,807	$ 53,473	$ 36,882
Provisions for:						
Depreciation, etc.	372,531	97,639	86,876	79,038	56,055	52,923
Deferred income taxes	13,290	11,451				1,839
Sale of securities:						
4¾% promissory notes	99,593	99,593				
4¼% income debentures	50,000				25,000	25,000
6% debenture stock of British subsidiary	3,780					3,780
Common shares issued under options	28,323	2,639	9,926	1,040	13,846	872
Other—net	*153*	2,366	*7,918*	*2,273*	4,723	2,949
	872,550	292,056	157,540	145,612	153,097	124,245
Disposition of Funds:						
Dividends on common shares:						
Monsanto	124,577	29,470	27,316	23,159	22,414	22,218
Chemstrand	2,500			2,500		
	127,077	29,470	27,316	25,659	22,414	22,218
Plant additions and replacements	570,618	168,833	153,818	121,253	68,657	58,057
Investment in affiliated companies	54,866	9,597	9,810	9,723	5,504	20,232
Retirement of debt	57,589	17,877	21,928	9,915	3,999	3,870
Increase—*decrease* in working capital[2]	51,491	14,614	5,021	27,479	*3,485*	7,862
Increase—*decrease* in cash and securities	10,909	51,665	*60,353*	*48,417*	56,008	12,006
	$872,550	$292,056	$157,540	$145,612	$153,097	$124,245

(1) The accounts of The Chemstrand Corporation and subsidiaries are not included in the years 1959 and 1958.
(2) Exclusive of cash and securities.
Italics indicate decrease.

MONS 352062

TOWOLDMON0014239

MONSANTO CHEMICAL COMPANY

HISTORICAL STATEMENT OF CONSOLIDATED

(In millions)

ASSETS

	1962	1961	1960	1959[1]	1958[1]	10 YEARS AGO 1952	25 YEARS AGO 1937
Current Assets:							
Cash	$ 34.4	$ 28.9	$ 32.8	$ 25.7	$ 24.6	$ 38.0	$ 3.1
Marketable securities	67.1	18.6	75.1	93.3	38.5	17.5	4.0
Net receivables	173.9	152.7	124.4	101.6	93.5	41.9	2.9
Inventories	170.6	154.5	153.5	105.5	100.4	62.6	7.6
	446.0	354.7	385.8	326.1	257.0	160.0	17.6
Investments, etc	84.4	90.5	75.4	79.6	76.4	20.4	.8
Property:							
Land	25.2	23.4	19.2	14.2	11.8	5.9	1.7
Buildings	219.3	195.0	181.0	110.4	107.3	55.4	7.7
Machinery and equipment	1,054.5	907.0	795.5	524.1	484.4	236.8	24.4
Phosphate deposits	8.6	8.5	8.1	6.9	6.2	4.4	.4
Producing oil and gas properties	84.8	82.1	79.5	76.6	74.9		
Undeveloped oil and gas leaseholds	9.6	8.9	9.0	10.0	12.8		
Accumulated depreciation, etc.	*600.9*	*514.8*	*449.4*	*307.7*	*274.3*	*90.1*	*10.4*
Accumulated depletion	*31.2*	*29.3*	*27.2*	*25.6*	*24.4*	*.6*	
Net property	769.9	680.8	615.7	408.9	398.7	211.8	23.8
Deferred Charges	24.6	16.3	12.7	10.2	8.5	2.2	.2
	$1,324.9	$1,142.3	$1,089.6	$824.8	$740.6	$394.4	$42.4

(1) The accounts of The Chemstrand Corporation and subsidiaries are not included in the years 1959 and 1958.
Italics indicate deduction.

MONS 352063

TOWOLDMON0014240

AND SUBSIDIARIES

FINANCIAL POSITION

(In millions)

LIABILITIES

	1962	1961	1960	1959(1)	1958(1)	10 YEARS AGO 1952	25 YEARS AGO 1937
Current Liabilities:							
Accounts payable and accruals.....	$ 127.0	$ 109.3	$ 86.4	$ 65.5	$ 63.0	$ 36.8	$ 3.3
Income taxes less tax notes.....	42.9	48.8	46.8	36.1	22.0	3.9	1.0
Current portion long term debt.....	9.3	9.2	9.9	1.8	1.8		
	179.2	167.3	143.1	103.4	86.8	40.7	4.3
Notes, Debentures, etc......	219.8	128.2	148.2	68.8	72.5	35.3	
Income Debentures.....	141.0	141.0	141.0	141.0	116.0	66.0	
Other Liabilities:							
Deferred income taxes.....	33.5	28.1	31.1	19.0	19.3	3.6	
Miscellaneous.....	3.5	3.4	3.1	1.7	2.5	7.7	.5
	37.0	31.5	34.2	20.7	21.8	11.3	.5
Minority Interests in Subsidiaries....	30.3	23.1	23.1	21.6	20.4	19.1	2.3
Shareowners' Equity:							
Preference shares.....						15.0	5.0
Common shares.....	58.0	56.0	54.4	46.3	44.5	26.3	11.1
Paid-in surplus.....	360.9	323.1	286.7	222.6	187.2	100.9	8.3
Retained earnings.....	298.7	272.1	258.9	200.4	191.4	79.8	10.9
	717.6	651.2	600.0	469.3	423.1	222.0	35.3
	$1,324.9	$1,142.3	$1,089.6	$824.8	$740.6	$394.4	$42.4

MONS 352064

TOWOLDMON0014241

MONSANTO CHEMICAL COMPANY

HISTORICAL STATEMENT OF CONSOLIDATED INCOME

(In millions except per share earnings)

	1962	1961	1960	1959(1)	1958(1)	10 YEARS AGO 1952	25 YEARS AGO 1937
Income:							
Net sales	$1,063.2	$932.9	$890.1	$688.0	$611.3	$299.1	$33.2
Other	11.7	11.8	10.4	12.3	8.9	3.4	.5
	1,074.9	944.7	900.5	700.3	620.2	302.5	33.7
Deductions:							
Cost of goods sold	762.2	672.9	632.7	512.5	469.1	213.6	23.0
Selling, administrative, research	151.7	131.4	126.3	83.4	75.4	38.9	4.1
Interest	15.4	11.6	12.4	7.5	7.3	3.5	
Minority interests	1.6	.4	1.6	1.6	.5	.5	.2
Other	2.7	1.3	.9	1.8	5.1	3.7	.4
	933.6	817.6	773.9	606.8	557.4	260.2	27.7
Income Before Income Taxes	141.3	127.1	126.6	93.5	62.8	42.3	6.0
Provision for Income Taxes	62.9	58.4	58.8	40.0	25.9	19.4	1.0
Net Income	$ 78.4	$ 68.7	$ 67.8	$ 53.5	$ 36.9	$ 22.9	$ 5.0
Per Common Share:							
Adjusted for splits	$ 2.70	$ 2.45	$ 2.49	$ 2.31	$ 1.66	$ 1.41	$ .49
Adjusted for splits and stock dividends	$ 2.70	$ 2.40	$ 2.40	$ 2.18	$ 1.53	$ 1.23	$ .43

(1) The accounts of The Chemstrand Corporation and subsidiaries are not included in the years 1959 and 1958.

MONS 352065

TOWOLDMON0014242

AND SUBSIDIARIES

OTHER DATA

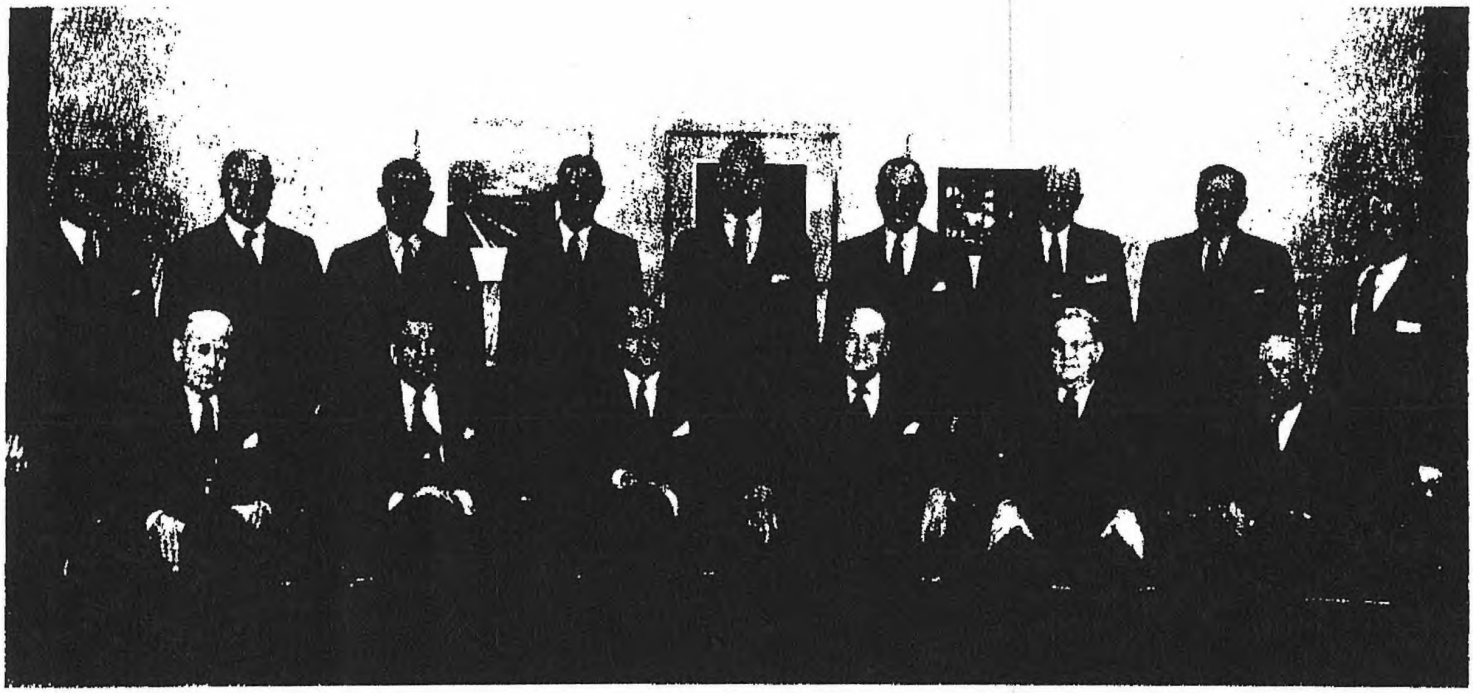
(In millions except where italicized)

	1962	1961	1960	1959[1]	1958[1]	10 YEARS AGO 1952	25 YEARS AGO 1937
Depreciation, depletion, etc.	$ 97.6	$ 86.9	$ 79.0	$ 56.1	$ 52.9	$ 15.2	$ 2.0
Book value a share[2]	*$24.74*	*$23.24*	*$22.06*	*$20.27*	*$19.01*	*$13.10*	*$3.02*
Gross additions to property	$ 169.2	$153.8	$121.3	$ 68.7	$ 58.1	$ 74.8	$ 7.2
Employes[3]	*44,407*	*37,576*	*35,427*	*25,148*	*24,524*	*18,384*	*5,268*
Net working capital	$ 266.8	$187.4	$242.7	$222.7	$170.2	$119.3	$13.3
Employed capital[4]	$1,108.7	$943.5	$912.3	$700.7	$632.0	$342.4	$37.6
Employed capital per employe	*$24,967*	*$25,110*	*$25,752*	*$27,863*	*$25,771*	*$18,625*	*$7,137*
Parent company:							
Cash dividends on common shares.	$ 29.5	$ 27.3	$ 23.2	$ 22.4	$ 22.2	$ 12.9	$ 3.3
Per common share[2]	*$1.05*	*$1.00*	*$1.00*	*$1.00*	*$1.00*	*$.83*	*$.33*
Preference shares outstanding						*150,000*	*50,000*
Common shares outstanding[2]	29.0	28.0	27.2	23.2	22.3	15.8	10.0
Number of shareowners	*82,452*	*82,203*	*83,809*	*78,675*	*66,427*	*24,404*	*7,011*

(1) Data for The Chemstrand Corporation and subsidiaries are not included in the years 1959 and 1958.
(2) Adjusted for splits.
(3) Excluding employes of government plants.
(4) Net worth and long term debt.

MONS 352066

TOWOLDMON0014243



1962 BOARD OF DIRECTORS

Seated (from left): O'Neal, Queeny, Sommer, Thomas, Schneider, Williams. Standing: Mueller, Eaton, Temple, Anderson, Gillis, Hochwalt, Christian, Hoover; and Secretary Edwin J. Putzell Jr.

CHARLES ALLEN THOMAS, *Board Chairman.* Graduate, Transylvania and M.I.T., AB, DSc, LLD. Research chemist, General Motors Research Corporation and Ethyl Gasoline Corporation; president of Thomas & Hochwalt Laboratories, Dayton, Ohio. Joined Monsanto, 1936, as director of Central Research Department when Monsanto acquired Thomas & Hochwalt Laboratories; later vice president and technical director, executive vice president, chairman of Executive Committee. Director since 1942. Elected president, 1951. Elected chairman of the board, March, 1960. Chairman, Bonus and Stock Option Committees and member of Executive, Finance and Chemstrand Committees. Director of Metropolitan Life Insurance Company, Southwestern Bell Telephone Company, St. Louis Union Trust Company, First National Bank in St. Louis, RAND Corporation and Washington University, St. Louis. Member: National Academy of Sciences; Board of Trustees, Carnegie Corporation of New York.

CHARLES H. SOMMER, *President.* BS, chemistry, University of Arizona. Joined Monsanto, 1934, as a salesman; later product sales manager, Organic Chemicals Division; then assistant general manager of sales. In 1949, became assistant coordinator of sales for Monsanto; then Organic division's assistant general manager. Appointed general manager, former Merrimac Division, 1951. Elected a vice president and appointed general manager of Organic Chemicals Division, 1954. Elected executive vice president and elected to board and to Executive Committee, 1959. Elected president, elected chairman of Executive Committee and elected to Finance Committee, 1960. Became chairman of Budget Committee, 1961. Member, Chemstrand Committee. Director and chairman of executive committee, Manufacturing Chemists' Association; director, St. Louis Union Trust Co., Liberty Mutual Insurance Company and Monsanto Research Corporation.

EDGAR M. QUEENY, *Chairman of Finance Committee.* Cornell, class of 1919. Lieutenant (jg), U.S. Navy, World War I. Joined Monsanto, which was founded by his father, in 1919. Served in export department, sales department; later sales manager and vice president. Director since 1919. President from 1928 to 1943. Chairman of the board, 1943 to 1960. Elected to Executive Committee, 1939; elected chairman of Finance Committee, 1960. Member of Bonus, Stock Option and Chemstrand Committees. Chairman, Board of Trustees of Barnes Hospital, St. Louis. Trustee: American Museum of Natural History, National Industrial Conference Board. Director: American Airlines; Federal Reserve Bank of St. Louis.

DILLON ANDERSON, *Board Member.* BS, University of Oklahoma; LLB, Yale. With law firm of Baker, Botts, Shepherd & Coates since 1929; partner since 1940. Chairman of the board of Texas National Bank of Houston. Colonel, U.S. Army, World War II. Consultant to the National Security Council, 1953 to 1960; U.S. delegate to 1955 Summit Conference at Geneva; special assistant for national security affairs to the President, 1955 and 1956. Elected to Monsanto's board, 1960; member of Finance, Bonus and Stock Option Committees. Director: Westinghouse Electric Corporation; Federated Department Stores, Inc.; Foreign Policy Association. Trustee: Carnegie Endowment for International Peace, Brookings Institution, Foley Store Foundation, Schlumberger Foundation. Member of American Bar Association, Texas Institute of Letters; council member, American Law Institute; fellow, American Academy of Arts and Sciences.

JOHN L. CHRISTIAN, *Vice President.* Responsible for coordinating: manufacturing, division engineering, purchasing, distribution, personnel relations and medical. BS, chemical engineering, Alabama Polytechnic Institute; post-graduate work at Columbia. Joined research department of The Swann Corporation, 1933 (which was acquired by Monsanto in 1935), later in pilot plant and production departments; superintendent of furnaces at Columbia, Tenn., elemental phosphorus plant; then plant manager. Appointed general manager of Phosphate Division (now Inorganic Chemicals Division), 1948. Elected vice president, 1951. Elected to the board and to the Executive Committee, 1960. Member, Budget Committee. Director: Louisville & Nashville Railroad Company. Past chairman of St. Louis Bi-State Chapter, American National Red Cross. Member, American Chemical Society, Newcomen Society, American Institute of Chemical Engineers.

MONS 352067

TOWOLDMON0014244

FREDRICK M. EATON, *Board Member.* AB, LLB, Harvard. Partner in law firm of Shearman & Sterling since 1945. General counsel, War Production Board, 1945. Elected to Monsanto's board, 1947; resigned in 1959 to serve as chairman of the American delegation to 10-nation disarmament committee at Geneva. Re-elected to the board and Finance Committee, 1961. Member of Auditing Committee, 1961. Director of Consolidated Edison Company; First National City Trust Company; New York Life Insurance Company; Great American Insurance Company. Trustee of American Museum of Natural History; Carnegie Corporation; Commonwealth Fund, Presbyterian Hospital, New York City.

JOHN L. GILLIS, *Vice President.* Responsible for coordinating: marketing and trade relations. BS, Washington University. Joined Monsanto, 1933. Export manager, assistant director and director, former Foreign Department; later general manager of former Merrimac Division. Elected vice president, 1950; appointed general manager, Organic Chemicals Division, 1951; appointed vice president of marketing, 1953; elected to board, 1955; elected to Executive Committee, 1958. Member of Budget, Salary and Chemstrand Committees. Director of Mobay Chemical Company; St. Louis County National Bank; St. Louis County Chamber of Commerce; General Contract Finance Corp. and Securities Investment Co. Vice president and director, National Safety Council. Chairman, Board of Trustees of the Governmental Research Institute of Missouri. Member of President's Council of St. Louis University.

CARROLL A. HOCHWALT, *Vice President.* Responsible for coordinating: research, development, patents and basic engineering. BChE, DSc, University of Dayton. Research chemist, General Motors Research Corporation; research chemist, production manager, Ethyl Gasoline Corporation. Vice president, Thomas & Hochwalt Laboratories, Dayton, Ohio, in 1926. When Monsanto acquired Thomas & Hochwalt Laboratories in 1936, became associate director of former Central Research Department; later director. Elected vice president, 1947; became coordinator of research, development and patent activities, 1948. Elected to board, 1949; president of The Chemstrand Corporation during research and development stage; elected to Executive Committee, 1950. Member, Budget, Salary and Chemstrand Committees. Director of Monsanto Research Corporation; Kettering Foundation; Boatmen's National Bank of St. Louis. Member, President's Council of St. Louis University. Trustee, University of Dayton.

HERBERT HOOVER JR., *Board Member.* AB, Stanford University; MBA, Harvard University. President, later board chairman, United Geophysical Corporation, 1935 to 1953; consultant to Secretary of State, 1953; Under Secretary of State, 1954 to 1957. Consulting engineer since 1957. Elected to Monsanto's board, 1958. Elected to Finance Committee, 1959. Director: Southern California Edison Company, Hanna Mining Company, American Mutual Fund, Investment Company of America, Pacific Mutual Life Insurance Company. Trustee: University of Southern California, Claremont Men's College, Freedoms Foundation at Valley Forge. A national director of Boys' Clubs of America. Member, Business Advisory Council, U.S. Department of Commerce. President, American Radio Relay League, Inc., and International Amateur Radio Union.

ROBERT K. MUELLER, *Vice President.* Responsible for coordinating international operations. BS, chemical engineering, Washington University; MS, chemistry, University of Michigan. Joined Monsanto, 1935, as a control chemist; operating superintendent, Plastics Division; operating superintendent, general production superintendent, plant manager, Longhorn Ordnance Works, World War II; plant manager, assistant production manager, production manager, assistant general manager, Plastics Division, before appointment as general manager, 1952. Elected vice president, 1954. Elected to board, Executive Committee, 1961. Member, Salary and Retirement Plan Committees. Board chairman of Shawinigan Resins Corporation (an associate company). Director: Fome-Cor Corporation, Monsanto Belgium, Valley Bank & Trust Company of Springfield, Mass.

EDWARD A. O'NEAL JR., *Vice President.* BA, Davidson College. In 1926, joined The Swann Corporation at Anniston, Ala. (acquired by Monsanto in 1935); became plant manager there in 1937. Later plant manager, former Phosphate Division plant at Trenton, Mich.; moving up to division production manager, 1944. Two years later, named managing director of British subsidiary, Monsanto Chemicals Limited; served as its board chairman from 1948 to 1955. Elected a Monsanto vice president and appointed general manager, Overseas Division, 1953. Later named vice president of international operations. In 1955, elected to Monsanto's board and to board of The Chemstrand Corporation (which became Chemstrand Company, a division of Monsanto in 1962.) Has served as Chemstrand's president since 1956. Re-elected Monsanto vice president, 1962.

WILLIAM W. SCHNEIDER, *Vice President.* As general counsel, responsible for coordinating: finance, law and legislative matters. LLB, St. Louis University. Joined Monsanto, 1921, as assistant in Legal Department; later director, Legal Department; corporation secretary, 1925 to 1951. Elected vice president, 1947; board member, 1951. Corporation treasurer, 1953 to 1956. Elected to Finance Committee, 1954; appointed vice president of finance and law, and general counsel, 1954; elected to Executive Committee, 1956. Member, Budget and Retirement Plan Committees. Director of Mobay Chemical Company. Retired from Monsanto, Dec. 31, 1962.

ALAN H. TEMPLE, *Board Member.* B. Litt., journalism, Columbia University. Former managing editor and editor, COMMERCE AND FINANCE; financial editor, NORTH AMERICAN REVIEW; president of Theo. H. Price Publishing Company. Entered banking in 1931. Retired 1961 from First National City Bank of New York, which he had served as a director since 1956 and vice chairman since 1958. Elected to Monsanto's board, 1959; elected to Finance and Auditing Committees, 1960. Director of Mead Corporation; Moore Corporation, Limited; Prudential Insurance Company of Great Britain (in N. Y.); Hudson Insurance Company; Seaboard Surety Company; Centennial Insurance Company; Lazard Fund, Inc. Trustee: Atlantic Mutual Insurance Company, Columbia University, Whitney Museum of American Art, National Industrial Conference Board, Academy of Political Science, Committee for Economic Development.

FELIX N. WILLIAMS, *Vice President.* Responsible for coordinating: new commercial ventures, labor relations. University of Virginia, 1923. Joined The Swann Corporation (acquired by Monsanto in 1935) in production department, later in research department; purchasing agent, assistant plant manager, plant manager. Supervised construction of Columbia, Tenn., elemental phosphorus plant, later plant manager there. Production manager, former Phosphate Division; general manager, Plastics Division. Elected vice president, 1944; elected to board, 1947; member, Executive Committee, 1950. Appointed vice president of manufacturing, 1954; vice president of personnel, 1960; present position, 1961. Member, Budget Committee. Director: Fome-Cor Corporation; Mercantile Trust Company of St. Louis; Managed Funds, Inc.; Illinois State Chamber of Commerce; United Fund of Greater St. Louis. Director, finance committee member of Wabash Railroad Company. Director, executive committee member, Chamber of Commerce of Metropolitan St. Louis.

MONS 352068

TOWOLDMON0014245

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	Charles H. Sommer
Fredrick M. Eaton	Alan H. Temple
Herbert Hoover Jr.	Charles Allen Thomas

Transfer Agent

Morgan Guaranty Trust Company of New York

Registrar

The Chase Manhattan Bank

OFFICERS

Charles Allen Thomas	*Chairman of the Board of Directors*
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*
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*
Erwin G. Somogyi	*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*
Earl B. Mills	*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, 1963

MONS 352069

TOWOLDMON0014246

MONSANTO CHEMICAL COMPANY • 800 N. LINDBERGH BLVD., ST. LOUIS 66, MO.

MONS 352070

TOWOLDMON0014247