

Monsanto



**1977
ANNUAL
REPORT**

**MONSANTO
COMPANY**

DSW 021072

STLCOPCB4006381
TOWOLDMON0014778

Cover: The 61 men and women on the cover are representative of Monsanto's worldwide employee family of 61,519. This year's Annual Report features closeup photos of a major Monsanto asset —its people.

DSW 021073

Table of Contents

Operational Highlights	3
Letter to Shareowners	4
Operating Summaries:	
Monsanto Agricultural Products Company	6
Monsanto Chemical Intermediates Company	10
Monsanto Commercial Products Company	14
Monsanto Industrial Chemicals Company	16
Monsanto Plastics & Resins Company	20
Monsanto Textiles Company	24
International Division	28
Research and Development	32
Social Responsibility	34
Financial Section	37
Directors and Officers	64

Annual Meeting

The next Annual Meeting of the shareowners of Monsanto Company will be held at 2:30 p.m., Friday, April 28, 1978, at the Company's General Offices, 800 N. Lindbergh Blvd., St. Louis County, Mo. A formal notice of the meeting, together with a proxy statement and form of proxy, is being mailed to each shareowner.

10-K Report

Available

A copy of Monsanto Company's 10-K Report filed with the Securities and Exchange Commission for 1977, which contains additional information relating to Monsanto, can be obtained by writing to: Shareowner Relations Department, Monsanto Company, 800 N. Lindbergh Blvd., St. Louis, Mo. 63166.

Italics identify Monsanto's trademarks.

DSW 021074

1

NET SALES

1977		\$4,594.5
1976		\$4,270.2
1975	\$3,624.7	
1974	\$3,497.9	
1973	\$2,647.7	

NET INCOME

1977	\$275.6	
1976		\$366.3
1975	\$306.3	
1974	\$323.2	
1973	\$238.3	

OPERATIONAL HIGHLIGHTS

(Dollars in millions, except per share)

	1977	1976
Net Sales	\$4,594.5	\$4,270.2
Net Income	\$ 275.6	\$ 366.3
Per Common Share:		
Primary Earnings	\$ 7.46	\$ 10.05
Fully Diluted Earnings	7.37	9.77
Dividends	3.025	2.75
Shareowners' Equity	66.16	61.79
Property, Plant and Equipment Additions	\$ 607.1	\$ 646.8
Depreciation, Obsolescence and Depletion	\$ 296.0	\$ 226.0
Taxes—Income, Payroll, Property and Other	\$ 375.2	\$ 346.5
Research and Development	\$ 132.3	\$ 114.3
Year End:		
Shareowners—Common Shares	85,021	84,647
Employees	61,519	61,903

Operating Results by Operating Company

	1977		1976	
	Net Sales	Income	Net Sales	Income
Operating Company:				
Agricultural Products	\$ 654.0	\$273.4	\$ 573.2	\$240.6
Chemical Intermediates	505.0	132.3	476.2	152.6
Commercial Products	385.4	(15.2)	398.2	(0.1)
Industrial Chemicals	1,054.6	209.7	950.4	206.6
Plastics & Resins	1,111.2	76.3	1,018.7	100.8
Textiles	884.3	(39.0)	853.5	(1.2)
Eliminations and Unallocated				
Corporate Expenses		(27.8)		(31.5)
Sales and Operating Income	<u>\$4,594.5</u>	<u>609.7</u>	<u>\$4,270.2</u>	<u>667.8</u>
Income Charges (Credits)—Net		86.0		50.1
Income Before Income Taxes		523.7		617.7
Income Taxes		248.1		251.4
Net Income		<u>\$275.6</u>		<u>\$366.3</u>

Monsanto's Operating Company and World Area data for 1977 and 1976 have been restated to reflect new reporting requirements of the Financial Accounting Standards Board. The restatement consisted of separating eliminations and certain corporate expenses from the operating companies' results, which amounts had previously been allocated. Financial data for 1975, 1974, and 1973 have not been restated.

DSW 021076

3

TO OUR SHAREOWNERS

Monsanto Company weathered difficult conditions and some unexpected setbacks in 1977 while continuing to build toward the future. We had a number of disappointments, which contributed to financial results that fell short of management expectations. On the plus side, we made continued progress in defining and implementing business strategies that should prepare us well for the decade ahead.

An evaluation of the year's significance should take into account both the short-term disappointments and the progress made toward longer-

term objectives. In this report we want to put both into reasonable perspective.

1977 Financial Results

Monsanto's financial results for 1977 fell below the previous year's record levels, with modest sales growth not reflected in an increase in profits.

- Consolidated net sales for the year were \$4.595 billion—an increase of 7.6 percent over the \$4.270 billion for 1976.
- Net income for 1977 was \$275.6 million—a decline of 24.8 percent from 1976's \$366.3 million.
- Primary earnings per common share for 1977 were \$7.46 compared with \$10.05 the previous year. Fully diluted earnings per common share (assuming all convertible issues are converted to common stock) were \$7.37 for 1977 and \$9.77 for 1976.



John W. Hanley

Three factors warrant special attention—write-offs (both voluntary and mandatory), a higher tax rate and currency translation losses. Each had a major adverse impact on earnings, though a significant portion of the total impact of these factors should be non-recurring.

Write-Off Resulting from FDA Edict

The first factor—write-offs—penalized earnings by 94 cents per share, more than half of that due to the unreasonable governmental regulatory edict against the Company's plastic soft drink bottle.

During 1977 the U.S. Food and Drug Administration issued a final administrative decision effectively prohibiting the manufacture of Monsanto's *Cycle-Safe* plastic beverage containers. While we believe the bottle is safe and continue to challenge that decision in the Federal Court, it seemed clear that there had been a meaningful impairment of the fixed assets involved in the manufacture of the bottles. Therefore, in line with sound accounting practice, we recorded a write-off of these fixed assets during 1977. The write-off, together with other shutdown costs associated with *Cycle-Safe*, reduced 1977 earnings by 55 cents per common share.

This development was particularly disappointing not only because the Company has lost an opportunity for future earnings from *Cycle-Safe* but, more importantly, the consuming public has been prevented from using a lightweight, safe container that was designed to reduce litter and conserve energy through recyclability.

The other write-offs during 1977 came as a result of Monsanto's continuing program of formal business analysis. This program entails a management commitment to divest, or manage for cash generation, any business or product line in which we see inadequate longer-term profit potential. These decisions generally have involved a short-term penalty—and often present a real challenge in the compassionate management of our human resources. However, properly handled, these difficult decisions are key to the long-term vitality of the Company.

For example, we withdrew from the expandable polystyrene business in the United States, reduced the scope of our nylon operations in Luxembourg, closed a fiber texturizing plant in West Germany, and withdrew from several unprofitable segments of our European plastics and fibers businesses. These moves further reduced earnings by 39 cents per common share.

Taxes and Currency Translation

The second factor—the higher tax rate—reduced earnings by 95 cents per common share.

For 1977 we provided for current and deferred tax liabilities at a 47.4 percent tax rate, 6.7 percentage points higher than that of 1976. The higher rate was due primarily to the fact that the Company was unable to apply losses from subsidiaries outside the United States against taxable income.

The third factor—currency exchange and translation losses—reduced 1977 earnings by 93 cents per common share, compared with 52 cents per common share in 1976. This loss was related to the precipitous drop in the value of the U.S. dollar in relation to other major world currencies, especially in the fourth quarter.

Monsanto has substantial business activities outside the United States that are financed by long-term debt in such currencies as the German deutsche mark, the British pound sterling, the Japanese yen, and the Swiss and Belgian francs. Financial Accounting Standards Statement No. 8 requires that we restate all such debt in terms of the current value of the dollar at the end of our accounting periods. When the dollar fell in relation to those currencies, the dollar value of the debt became inflated. Generally, Monsanto has not attempted to hedge the earnings fluctuations due to floating rates of exchange through purchases of such currencies to cover its long-term foreign debt exposure.

The currency relationships, in all likelihood, will continue to fluctuate from the levels existing at the end of 1977 to some other levels in the future when the debt becomes payable. The value of the dollar could recover from its 1977 weakness compared with those

currencies, thereby providing us with future translation gains.

These three unusual factors are not directly cumulative because a portion of the exchange and translation losses is reflected in the tax rate. However, they do serve to aid in an analysis of the year-to-year change in the Company's operating results.

Review of Operations

The body of this report contains detailed analyses and discussions of the 1977 operating results of each of Monsanto's six operating companies.

A brief overview of operations indicates that our Agricultural Products Company maintained its excellent momentum of the past several years, led by sales of *Lasso* herbicides. *Lasso* continued to be the premier corn and soybean herbicide in the United States and made strong gains in other parts of the world. The Company's new *Roundup* herbicide—the first herbicide that destroys the root structure of perennial weeds—has surpassed the spectacular early record of *Lasso*. Sales of *Roundup* were divided almost equally between the United States and the rest of the world.

Monsanto Industrial Chemicals Company recorded its seventh consecutive year-to-year gain for both sales and operating income, despite a year-end decline reflecting inventory adjustments by major customers.

Worldwide overcapacity resulted in cost/price pressures for a number of chemical intermediates—including phenol, acrylonitrile and styrene monomer—as well as for polystyrene plastics. This led to year-to-year declines in operating income for the Chemical Intermediates and Plastics & Resins companies.

The operating loss for Monsanto Commercial Products Company reflected the write-off of the *Cycle-Safe* container business provoked by the FDA action described earlier.

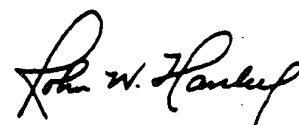
The operating loss incurred by Monsanto Textiles Company stemmed from severe price and volume erosion in Europe, where the man-made fiber industry remains severely depressed.

An overall evaluation of our operations shows that, despite the

disappointments of the year, we were able to maintain the higher plateau of earnings established at Monsanto over the past five years. Our profits from 1973 through 1977 have averaged \$300 million, compared with \$100 million a year during the previous five-year period, 1968 through 1972.

The primary goal of your management is to reach a new and higher level of profitability by supplying quality goods and services to customers in a manner that is in harmony with commercial interests as well as with the broader needs of society.

We are confident that Monsanto is well positioned, our people well prepared, and our strategies well defined to achieve that objective.



John W. Hanley
Chairman of the Board
and President

March 14, 1978

DSW 021078

5

AGRICULTURAL PRODUCTS

(Dollars in millions)

	Sales	Operating Income
1977	\$684.0	\$273.4
1976	573.2	240.6
1975	547.4	252.9
1974	410.7	176.7
1973	283.4	118.3

Increased worldwide demand for Monsanto's broad line of herbicides led the Monsanto Agricultural Products Company to higher sales and operating income for 1977. Sales and operating income both increased 14 percent over 1976 levels.

Sales of Lasso Set New Highs

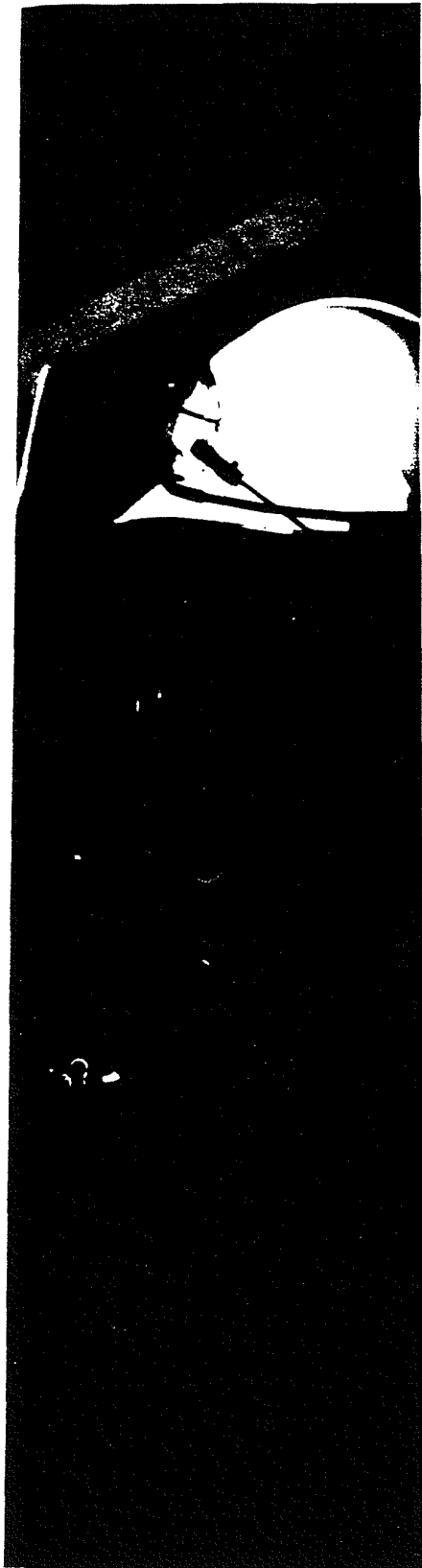
Lasso, Monsanto's premier herbicide, continued its uninterrupted growth due to its versatility and broad-based preference among U.S. corn and soybean farmers. During 1977, Lasso herbicide further established its position as an industry standard as it was used on more corn and soybean acres than any other herbicide. A proprietary Monsanto product, Lasso is used to control grassy weeds principally in corn and soybeans. During 1977, U.S. farmers planted record corn and soybean crops, creating additional demand for Lasso.



Clyde Wilson (above), senior research specialist, records test data on plants grown at Monsanto laboratories in St. Louis. Thousands of compounds are tested before one successful product is put on the market.



DSW 021079



Sales were further stimulated by an increase in herbicide mixtures and by an improvement in the rate of applications.

Monsanto has long been a leader in advocating the concept of herbicide mixtures. In a single application, the farmer can treat a variety of weeds using a combination of herbicides. Some of these control broad leaf weeds and others, like *Lasso*, control grassy type weeds. During 1977, the use of mixtures continued to increase in the United States. *Lasso* is the decided leader in brand shares of these mixtures.

Increasingly, U.S. farmers are using *Lasso* at or near recommended rates of application—thereby receiving improved weed control and increased crop yields. In 1977, rates of application showed further improvement.

As a result of increased demand for herbicides, inventories of *Lasso* herbicide at the farmer, dealer and

distributor levels were at record lows at the end of the planting season. In order to assure adequate supplies of *Lasso* for the forthcoming planting season, somewhat higher levels of shipments of *Lasso* were initiated during the fourth quarter. With the resumption of shipments, the selling price for *Lasso* in liquid form was increased three percent to help offset increased manufacturing costs.

Outside the United States, sales of *Lasso* also showed good year-to-year gains as shipments in Europe and South America increased. In Europe, *Lasso* is used primarily on maize, while in South America, it is used on soybeans.

Growth of Roundup Excellent

Sales of *Roundup*, Monsanto's newest entrant to the broad, worldwide herbicide markets, scored gains



Record sales of *Lasso* herbicide kept Danny Harris (left) and other employees at Monsanto plants busy during 1977.

Francois Schwind (above), a researcher at Monsanto's new agricultural laboratory at Louvain-la-Neuve, Belgium, works in special rooms monitoring plant growth under climate conditions characteristic to Europe.

DSW 021080

in all world areas during 1977. Sales for 1977 were significantly ahead of those for 1976 both inside and outside of the United States. Sales of *Roundup* were substantially ahead of those of *Lasso* in the comparative years of their life cycles. *Roundup* is a post-emergent, nonselective herbicide that controls a broad spectrum of problem weeds.

Markets for *Roundup* herbicide are worldwide and, during 1977, more than half of the herbicide's sales were generated outside of the United States. In Brazil, *Roundup* was increasingly used on coffee, sugarcane and citrus crops. It is being used in Scandinavia, in forest preserves, in vineyards in France, in rubber plantations in Malaysia and in cereal crops in Australia. In the United States, *Roundup* is used to control such perennial weeds as Johnsongrass, quackgrass and field bindweed in major crops.

As with all herbicides, use of *Roundup* is regulated by the Environmental Protection Agency which, in late 1975, approved its preplant use for major grain crops in the United States. Additional approvals for other uses have been applied for but not yet approved by EPA.

Sales of *Avadex* Off

Sales of *Avadex* herbicides, used to control wild oats in wheat and small grains, were below 1977 expectations. Used primarily in the northern United States and Canada, granular *Avadex* is used in fall applications or liquid *Avadex* is used in spring applications. Strong sales of granules in the fall of 1976, combined with drought conditions in Canada and sections of the United States, served to reduce 1977 spring sales of *Avadex*. Fall sales of *Avadex* granular in 1977 were impacted by declining wheat prices. In

Europe, shipments of *Avadex* recorded good year-to-year gains.

Shipments of *Machete* rice herbicides increased during the year as rice producers in Japan, Taiwan and the Republic of Korea increasingly selected this Monsanto herbicide to control weeds.

Sales of *Polaris* plant growth regulator, which increases the sucrose content of sugarcane, also registered gains in 1977 as sales were extended in Brazil and Caribbean countries.

Parathion sales were ahead of those of 1976. Parathion, an insecticide used to control bollworms and boll weevils in cotton crops, is sold primarily in the Mississippi Delta area of the United States and in Central American cotton-producing countries. New methods of parathion applications—where growers used parathion in combination with other insecticides—hindered larger sales gains.



Farmers in the Far East receive advice on the proper use of Monsanto agricultural products from marketing representatives such as Masahiro Miki, located in Tokyo.



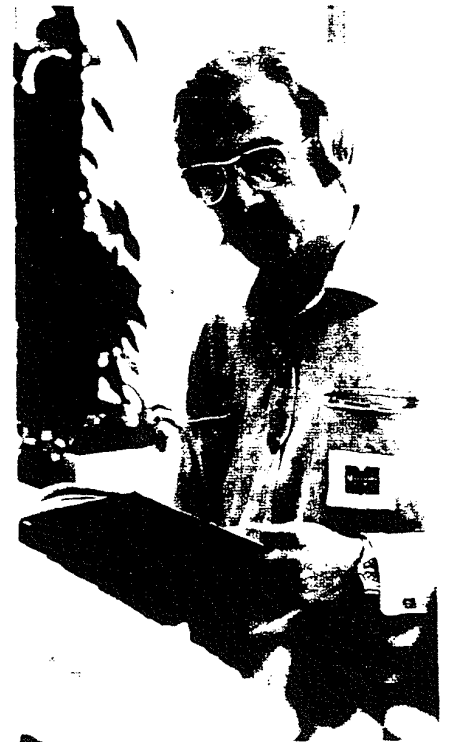
Monsanto sales representative John Hamilton (above) follows farming conditions closely around Arthur, Illinois, in the heart of the U.S. Corn Belt. *Lasso* is the premier corn and soybean herbicide in the Corn Belt.

Norm Eason (right), a Monsanto salesman in Florida, examines sugarcane treated with *Polaris* plant growth regulator. Sales of *Polaris* registered gains in 1977.



Early in 1977, parathion selling prices were increased. Startup of a new plant for the production of parathion is scheduled for 1978, solidifying Monsanto's position as the largest and lowest-cost manufacturer of this important product.

Production of anhydrous ammonia increased during 1977 from a new plant brought on stream late in December in the United States. Anhydrous ammonia is an important raw material used in the production of synthetic fibers, nitric acid and ammonium nitrate for blasting products and fertilizer. External sales were flat with the prior year due to the coal industry strike and shortfall in fall fertilizer sales resulting from decreased planting and farmer uncertainty. Income was lower than that of 1976 because of pricing pressure caused by nitrogen industry excess capacities.



Researchers such as Eric Schreurs (above), at the Monsanto laboratory in Louvain-la-Neuve have the most advanced equipment to tailor Monsanto herbicides, plant growth regulators and other products to the needs of European farmers.

9

301626

CHEMICAL INTERMEDIATES

(Dollars in millions)

	Sales	Operating Income
1977	\$505.0	\$132.3
1976	476.2	152.6
1975	390.3	90.2
1974	416.8	82.2
1973	247.3	20.0

Monsanto Chemical Intermediates Company is a major supplier of basic chemical raw materials to the merchant market and to Monsanto's other operating units.

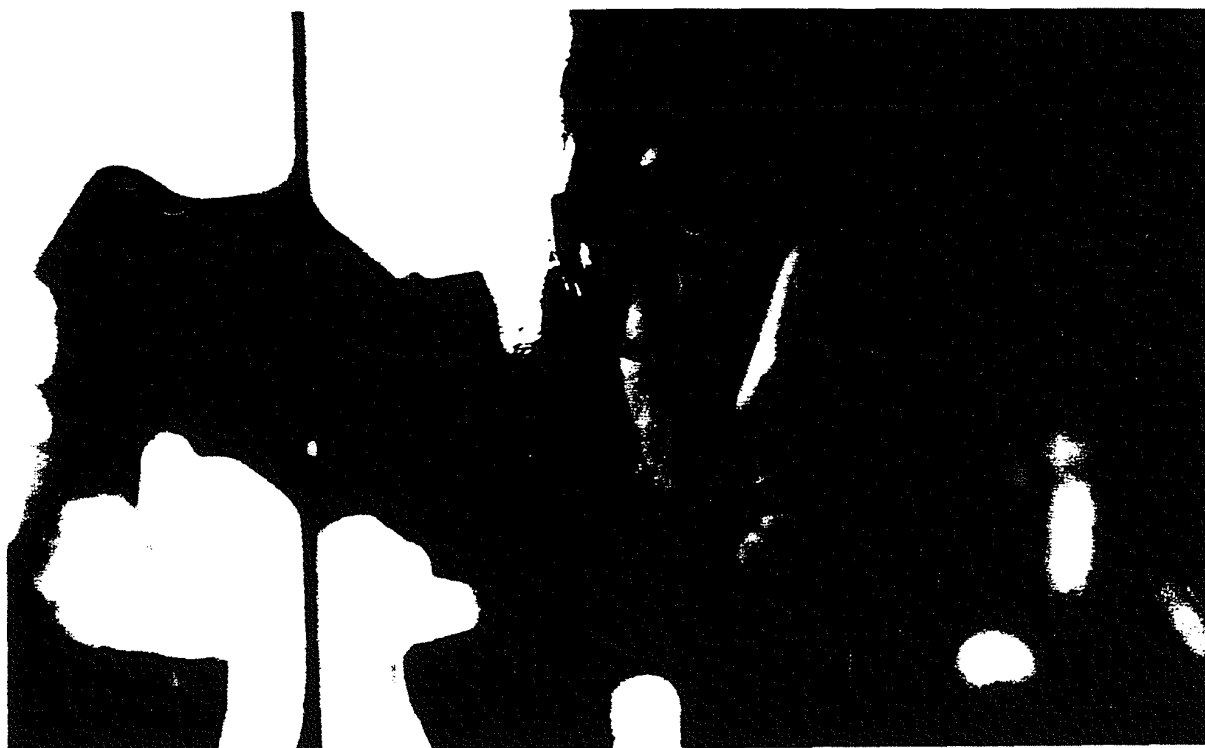
Sales to outside customers were up 6 percent during 1977 and reached record levels. Operating income however, was down 13 percent from the record levels of 1976. Excess capacity throughout the world led to lack of full utilization of plants and downward price pressures on many products. This factor, coupled with increased costs, resulted in a significant cost-price squeeze.

Petrochemical Profits Down

Sales of petrochemicals were up marginally in 1977 as the growth in market demand was offset by the competitive environment, characterized

by new industry capacities brought on stream and resultant price attrition for such major products as styrene monomer, acrylonitrile and phenol. Meanwhile, the cost of petrochemical feedstocks and energy continued to move upward and this, combined with start-up costs associated with some major new production facilities, resulted in a profit decline for this business group.

Monsanto nearly doubled its U.S. capacity for producing acrylonitrile when a new plant with an annual capacity of 420 million pounds became commercially operable in May. This facility, located at Texas City, Texas, will be duplicated with another plant at Teesside, England, due for start-up in 1978. Monsanto is the world's largest producer of acrylonitrile, a basic petrochemical. Acrylonitrile is used to



Process technologist Sally Davila is one of many professionals working to optimize production of the high-volume intermediates essential to other Monsanto operating companies.

Monsanto completed a number of gas wells during 1977 in Wyoming, Texas, and other parts of the United States. The gas may be used either at Monsanto plants or traded for other essential resources.



make acrylics such as *Acrilan* acrylic fiber; nylon intermediates and *Lustran* ABS, SAN plastics.

Sign Conoco Agreement

In October, Monsanto signed agreements with Continental Oil Company (Conoco) to manufacture petrochemicals jointly at an enlarged ethylene and related products plant at Monsanto's Chocolate Bayou site near Alvin, Texas. Most of the feedstock for the expanded plant will be supplied from a new unit to be constructed at Conoco's Lake Charles, Louisiana, refinery. The new Chocolate Bayou unit will be completed in the second half of 1980.

The agreements bring together the crude oil position held by Conoco with the strong technology and manufacturing experience of Monsanto. The



Rod Smith, chief geophysicist at the Houston office, assists Monsanto's efforts in searching for natural gas and oil. Sometimes called "doodlebuggers," geophysicists combine science, experience and intuition in their jobs.

11

MONS 301630

new facilities will provide both companies with additional petrochemicals needed for the future. Of particular importance to Monsanto are propylene and benzene and the improved feedstock security behind those key building block chemicals.

The expansion will more than double Chocolate Bayou's ethylene and coproducts capacity to about 8 billion pounds of petrochemicals a year. The Lake Charles facility will have the capacity to process 100,000 barrels of crude oil a day.

More Expansion Progress

Outside the U.S., two joint ventures to build new plants are part of Monsanto's efforts to secure long-term supplies of important intermediates.

In Australia, commercial sales of

styrene monomer began in November from Hydrocarbon Products Pty. Ltd., a joint venture with a subsidiary of Broken Hill Proprietary Co. Ltd. Styrene monomer is a raw material used to make polystyrene plastics, synthetic rubber and other products.

In Britain, work was nearing completion on a new plant at Teesside that will produce hexamethylene-diamine, an important raw material used to make nylon fibers and nylon plastics. The plant, a joint venture with Montefibre, a subsidiary of Montedison of Italy, will utilize a Monsanto proprietary process which uses acrylonitrile as its principal raw material. Construction should be completed during the first half of 1978.

Strong Demand for Process Chemicals

Sales of process chemicals reached a record high in 1977. These products are used by industry as the building blocks in manufacturing a wide variety of chemicals to serve a broad spectrum of markets. The increase in sales resulted from a combination of good volume growth and selective price increases during the year; however, downward price pressures on some products were evident toward year-end.

During the year, an expansion at the Sauget, Illinois plant increased the annual capacity for phosphorus trichloride from 63 million pounds to 108 million pounds. Monsanto is a major supplier of phosphorus trichloride which is used in the manufacture of agricultural chemicals.



Marcus Perez (above) is a technician at the Chocolate Bayou, Texas, plant where a unit of the Monsanto-Conoco joint project will be built.

Even at the modern chemical plant in Texas City, it is at times easiest to rely on old established methods, including the bicycle used by Cathy Ponds (right), a job distribution clerk.



water treatment chemicals, surfactant intermediates, oil antioxidants, coatings and dyes.

In September, work was completed on a phosphorus pentasulfide expansion at Anniston, Alabama, which doubled Monsanto's capacity there to 50 million pounds a year. Monsanto has unique manufacturing capabilities for phosphorus pentasulfide which is used in making insecticides and oil additives.

Expanded Exploration

Sales in Monsanto's oil and gas business reached a new high for 1977. An expanded exploration program resulted in the completion of significant gas wells in the Gulf of Mexico, West Texas and Wyoming, with additions to reserves in excess of production for the year.

Not all the oil and gas found by Monsanto is sold outside the company. It is an important part of the company's feedstock and energy strategy to supply an increasing portion of its needs from internal sources. Exploration and production efforts center in the U.S. or offshore areas so that production can be traded or used directly by Monsanto's plants to the maximum extent possible. Some exploration and production is under way also in Canada, the North Sea and the Java Sea.



Thousands of highly-trained people operate multi-million dollar chemical plants. Security guards, such as Jim Ridenour, protect Monsanto's huge investment in people and property.

DSW 021086

13

COMMERCIAL PRODUCTS

(Dollars in millions)

	Sales	Operating Income
1977	\$385.4	\$ (15.2)
1976	398.2	(0.1)
1975	318.7	(11.1)
1974	299.0	(15.6)
1973	239.3	(9.6)

Monsanto Commercial Products Company was bolstered during 1977 by another strong performance from Fisher Controls Company, a wholly-owned subsidiary. The lower 1977 sales performance and the large operating loss reflect the impact of lost sales revenue from *Cycle-Safe* containers and the establishment of a provision to write off the fixed assets associated with *Cycle-Safe*.

A Strong Year for Fisher

A substantial increase in spending by manufacturing industries in the United States led to significantly higher sales of Fisher Controls Company products. The business further benefited from programs implemented early in the year to expedite shipments. Fisher manufactures process control valves, regulators, controllers and

electronic instruments for the chemical, refining, power generation and pulp and paper industries.

Incoming orders were at a record rate during the last half of the year and there is a shipment backlog for Fisher products extending well into 1978. A new rotary valve plant at Sherman, Texas had a successful start-up during the year and shipments were ahead of projected levels.

Status of *Cycle-Safe*

On November 17, Monsanto filed a petition with the United States Court of Appeals in Washington, D.C., challenging the final decision by the Commissioner of the U.S. Food and Drug Administration. That decision effectively prohibited the manufacture



How much plant space will be needed in the next decade? Bob Moy (above) of Marshalltown, Iowa, studies marketing plans, business direction papers and data from other plants to answer this type of question in his Facilities Planning job.

14



Precision valves made by Tom Nevins (above) and others at Fisher Controls Company were in heavy demand during 1977. Fisher products control the flow of process liquids and gases.

DSW 021087

of *Cycle-Safe* plastic containers. The evaluation of the Company's petition by the court is expected to be lengthy and it is doubtful that any final court action will occur for several months. A full discussion of the *Cycle-Safe* situation is found on page 4.

Electronics Division Posts Loss

Severe competitive activity, intense pricing pressure and a dramatic drop in demand for consumer products using light emitting diodes (LED) combined to produce an operating loss for the Electronics Division during 1977. The implementation of several manufacturing and technical improvements in the production of silicon wafers helped offset the softness encountered in the electronics markets.

Monsanto is a leading supplier of silicon materials to the electronics industry and views this business as a major growth area. During 1977, the company completed phase one of a three-part expansion and cost reduction program and began implementation of phase two. In 1978, production capacity for silicon materials will be increased by about 30 percent worldwide. Planning is underway for phase three which includes construction of a second U.S. manufacturing plant. These expansion plans are backed by significantly increased research efforts aimed at further cost reductions and new product breakthroughs for high-grade materials used by semiconductor manufacturers.

Markets for LED watches and handheld calculators remained saturated during 1977, and demand for

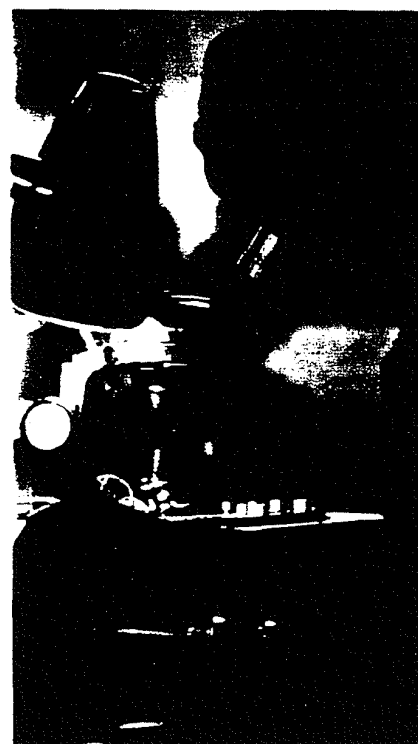
Monsanto's III-V materials used to make the diodes remained slow.

Enviro-Chem Construction Down

Monsanto Enviro-Chem Systems, Inc., a wholly-owned subsidiary, is heavily involved in the design and construction of sulfuric acid plants. During 1977, construction activity for new plants was at the lowest rate in two decades and, as a result, that part of the business was off substantially. Replacement sales of vanadium catalyst used in the sulfuric acid manufacturing process remained strong, however, as did sales of mist eliminator equipment used to control air pollution and processing problems.



Jerry Retter aligns a huge gasfield valve on the production line at Marshalltown, Iowa. Fisher Controls' products are used extensively in gas and oil fields around the world.



High quality silicon wafers for the electronics industry undergo careful inspection by Annalee Twellman at the St. Peters, Missouri, plant. Monsanto is expanding its silicon operations using improved manufacturing techniques.

15

DSW 021088

INDUSTRIAL CHEMICALS

(Dollars in millions)

	Sales	Operating Income
1977	\$1,084.6	\$209.7
1976	980.4	208.6
1975	852.8	193.8
1974	788.8	143.3
1973	663.5	84.0

Monsanto Industrial Chemicals Company during 1977 continued its strong growth, reaching record sales and operating income for the seventh consecutive year. Sales for 1977 increased by 11 percent compared with 1976, and operating income increased 1.5 percent over the prior year. Sales were strong during the first half of the year but weakened in some product areas in the second half, reflecting slowing economic conditions worldwide.

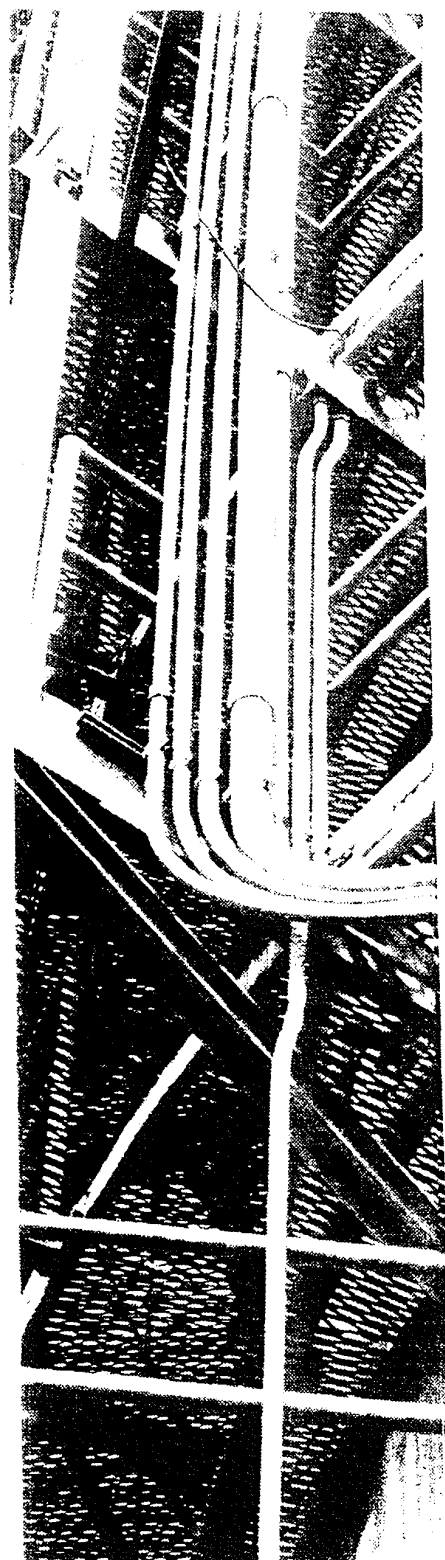
Banner Year for Specialty Chemicals

Sales gains were steady throughout the year over the broad range of specialty chemicals produced by Monsanto. Food and fine chemicals recorded an especially strong year, and demand for vanillin—a food flavoring and pharmaceutical intermediate—was very strong. Sales of bulk aspirin

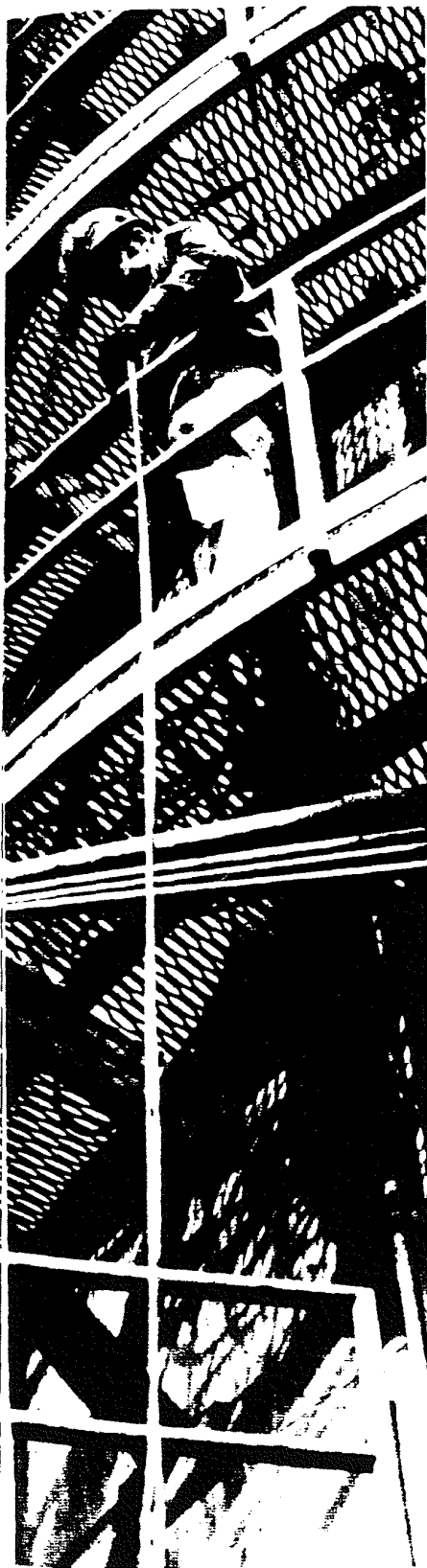


Monsanto's leadership in supplying chemicals and equipment to the rubber industry is made possible by people like Dennis Martin, a senior research technician at Akron, Ohio, and a 40-year Monsanto employee.

16



DSW 021089



rebounded well from 1976, and Monsanto remains the largest supplier of the widely used pain reliever.

Monsanto became the sole U.S. producer of sorbic acid and potassium sorbate in 1977 following start-up in June of a plant at the Chocolate Bayou site near Alvin, Texas. Sorbates are food preservatives used in products such as bakery goods, cheese, margarine and wine. In August, the U.S. Treasury Department agreed to investigate charges by Monsanto that Japanese manufacturers of sorbates were selling them in the United States at prices far below those charged in Japan. An initial finding on the "dumping" charges is expected in the first quarter of 1978.

At Luling, Louisiana, a new facility was completed that will produce acetaminophen, APAP, a popular analgesic compound which will

complement Monsanto's production of aspirin. The plant has an annual capacity of eight million pounds, making Monsanto the second largest producer in the United States.

Sales of functional products were very strong in 1977 led by *ACL* sanitizer and bleaching compounds. The line of *Dequest* water treatment chemicals, *Phos-Chek* fire retardants, and *Skydrol* and *Pydraul* hydraulic fluids also recorded firm year-to-year sales gains.

On October 31, Monsanto announced it had completed the phaseout of its polychlorinated biphenyl (PCB) business. The company had been the principal supplier of dielectric insulating fluids. This phaseout was announced in 1976, and an orderly timetable was established to allow customers to develop and test alternate products.



Monsanto Industrial Chemicals' employees, such as Bob Jenkins (left), combine a wide array of skills needed to produce over 1,000 different products — the most of any Monsanto operating unit.

Steve Webb (above) and other Monsanto engineers oversee construction projects around the world. The Industrial Chemicals Company completed several new projects during 1977.

Phosphate Business Was Mixed

Shipments of detergent raw materials, a major product line, were down modestly during 1977 as a result of legislation in some states that limits the amount of phosphates in detergents. Shipments increased during the year to growing markets for phosphate salts and other phosphate derivatives which are used in food, dental products and industrial applications. These growth markets will continue to receive more emphasis.

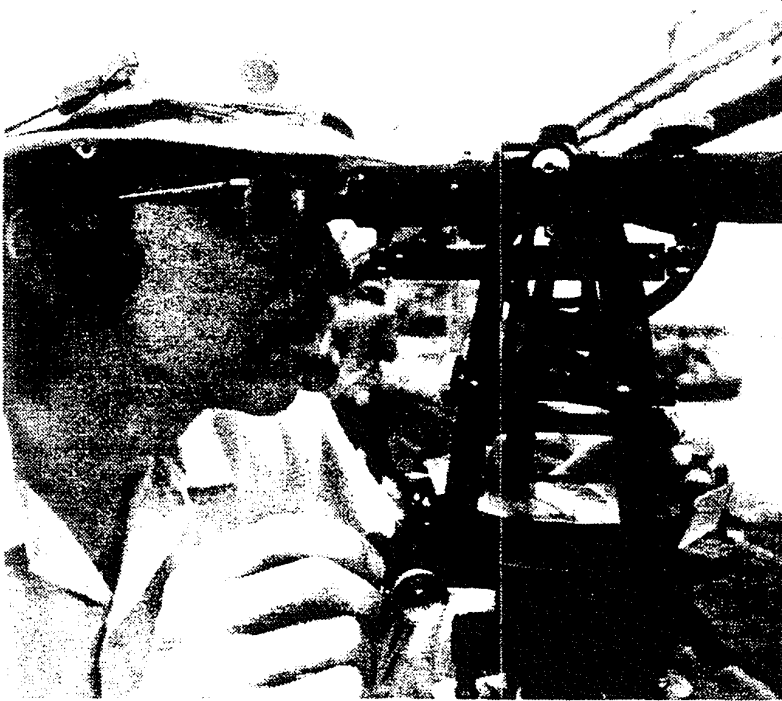
Price increases were announced for some products during the year, including an increase for sodium tripolyphosphate, the major detergent builder. Power shortages in Idaho during the first half of the year restricted production which, in turn, created manufacturing scheduling problems and resulted in higher costs.

International phosphate shipments

improved over 1976 levels as more elemental phosphorus was supplied to Monsanto's Brazilian facility which produces phosphoric acid and various phosphate salts.

Rubber Chemical Sales Were Strong

Monsanto is the leading supplier of a full range of chemicals used for processing natural and synthetic rubber. In addition to being used in tires, these chemicals are necessary to produce industrial rubber products such as conveyor belts, hoses, gaskets and belting. The industrial rubber products market is growing at twice the rate of the tire market. Monsanto also has an expanding line of processing equipment and precision testing instruments for the rubber industry which are used to test rubber materials and monitor production for increased quality and cost controls.



Dan Hagler, mechanical draftsman and three-year employee, takes elevation readings at a plant site in St. Louis. Engineering services are vital to the expansion programs of Monsanto.

18

Core samples identify phosphate deposits for Ronald Ferrel and other mining professionals at Soda Springs, Idaho, and Columbia, Tennessee. These samples are also used to develop mining plans to facilitate future reclamation programs.



DSW 021091



During 1977, the company became a supplier of x-ray tire testing equipment to the tire industry.

Rubber chemical sales for the year were up 15 percent compared with those of 1976. In the United States, near-record automobile sales helped increase demand for Monsanto's products, especially during the first nine months of the year. A large share of the company's rubber chemicals sales was also realized from business demand in markets outside the United States. These markets are served by the company's worldwide network of production facilities.

Plasticizer Sales Improve

Plasticizer sales for 1977 were up 10 percent over those of the previous year. These products, including *Santicizer* 160 and *Santicizer* 711 plasticizers, give plastics flexibility and

other improved characteristics. They are especially important to the production of polyvinyl chloride plastics.

Demand remained essentially level, quarter-to-quarter, as the growth of the U.S. economy slowed. Market shifts to alternative materials were experienced and included increased usage of carpeting rather than vinyl flooring and fabric rather than vinyl upholstery in automobiles.

Monsanto's worldwide capacity for producing *Santicizer* 160 was increased over 40 percent when a new plant was completed in December at Sauget, Illinois. *Santicizer* 160 is a fast-fusing plasticizer used in the manufacture of resilient flooring, vinyl foam, adhesives, rubber compounds and coatings.



Hosea Owens (above, left) and Leatha Reily (right), project engineers at the Chocolate Bayou sorbate food preservative facility, monitor operations. Sorbates are used in many food products to retard spoilage.

PLASTICS & RESINS

(Dollars in millions)

	Sales	Operating Income
1977	51,111.2	\$76.3
1976	1,018.7	100.8
1975	768.3	38.8
1974	312.6	68.4
1973	622.4	74.0

Monsanto Plastics & Resins Company improved upon its billion-dollar sales performance of the previous year as worldwide revenues increased 9 percent for 1977. Operating income, because of excess industry capacity and price weakness in specific plastic products worldwide, failed to keep pace.

Worldwide Demand for Thermoplastics Mixed

First-half shipments of plastic materials in the United States gained strength from vigorous construction activity and solid demand for durable goods and automobiles. Shipments were slightly lower in the second half with a normal seasonal decline during December.

The overall strong year resulted in record revenues for Monsanto's large-volume plastics, *Lustran* ABS and SAN styrene copolymers and *Lustrex*



Ralph Ottberg (above) and other employees at facilities producing *Lustran* ABS/SAN in the United States were kept busy all year handling near-record shipments of the tough, versatile thermoplastics.



DSW 021093



polystyrene. *Vydyne* nylon resins and *Forme-Cor* board also showed significant sales increases.

Sales of *Lustran* Up

Building from its major position in this dynamic market, the company announced plans to add an additional 100 million pounds of capacity of *Lustran* by the fourth quarter of 1978. The additions are part of a long-term program to secure industry leadership for versatile *Lustran*.

A new 30-million pound facility is being constructed at Springfield, Massachusetts, and an existing plant at Addyston, Ohio, is being expanded by 70 million pounds. The increases will raise Monsanto's annual capacity of *Lustran* in the United States to more than 500 million pounds.

The company continued its international expansion plans for *Lustran* despite some softness in ABS

demand in Europe and Canada. A new 50-million-pound facility was completed late in the year at Antwerp, Belgium, with an additional 50 million pounds scheduled for completion there during the fourth quarter of 1979. With the completion of the latter unit, Monsanto's annual worldwide capacity of *Lustran* will exceed one billion pounds. *Lustran* plastics are used extensively in refrigerators, small appliances, luggage, telephones, construction piping and automotive body parts.

Mixed Results for *Lustrex*

Although shipments of *Lustrex* polystyrene in the United States increased significantly faster than the market, excess industry capacity continued to hamper profitability. This prevented recovery of inflation-driven and energy-related cost increases.

World polystyrene capacity,



Lighter weight Volvo automobile grilles made with Monsanto's *Lustran* ABS plastic are inspected by Clemens von Claparede (left) and a Volvo supervisor at a plant at Ghent, Belgium.

Laboratory technicians such as Catherine Gourdain (above) at Louvain-la-Neuve test Monsanto's plastics and resins products under actual manufacturing conditions to determine how they will perform on the job.

expanded in the early-70s to meet pre-oil embargo growth rates, is seriously overbuilt as a result of slower actual growth rates in recent years. This situation has created continuing price weakness, particularly in Europe, where industry growth has been minimal. *Lustrex* has major uses in appliances, packaging and consumer disposable goods.

During July, Monsanto discontinued a small expandable polystyrene business in the United States, while continuing its international operations for the plastic bead product. A write-off was taken during the third quarter for the business closure. Monsanto did not have a significant position in the U.S. market for the product and decided to concentrate its resources on those products where it possesses a combination of secure raw materials, attractive process economics, and important market positions.

Engineering Thermoplastics Grow

Engineering thermoplastics continue to be among the fastest growing families of plastic materials. New applications in the automotive, industrial machine, appliance and electrical industries resulted in attractive sales increases for *Vydyne* nylon resin in both its natural and mineral reinforced product lines. Expansions of product lines for *Vydyne* were completed during the year at Pensacola, Florida.

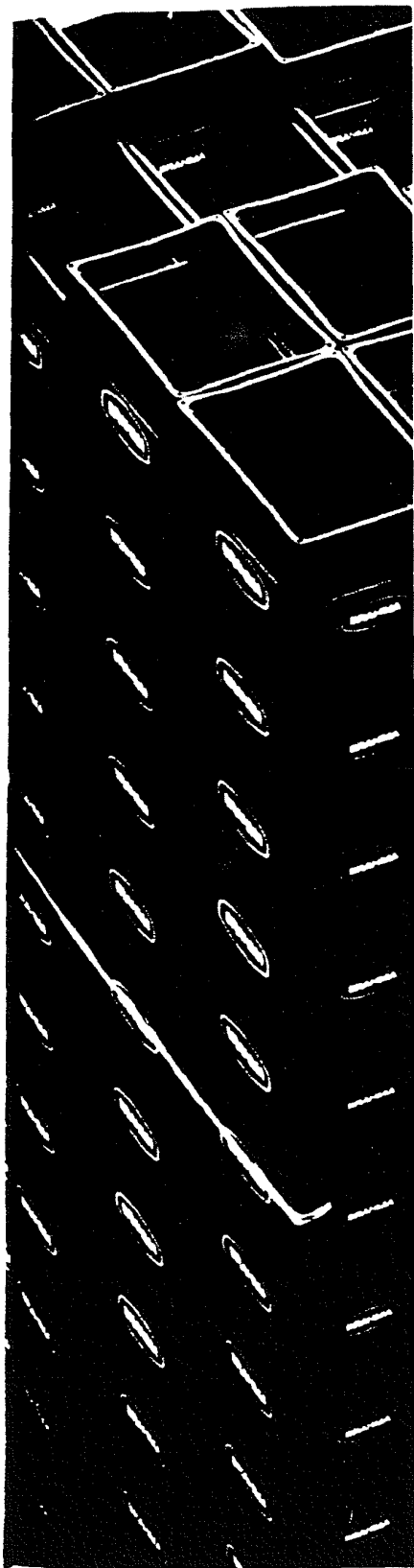
Near-record sales of automobiles and mobile homes in the United States led to a substantial increase in shipment of *Fome-Cor* sheathing board. *Fome-Cor*, a lightweight rigid board of expanded polystyrene foam bonded between two layers of kraft liner board, has major uses as headliners in automobiles, insulation in manufactured housing and re-siding in the home improvement market.



Hugo Lefevre packs rolls of *Saflex* plastic interlayer at the Ghent, Belgium, plant. Major expansion at the plant will more than double European production to meet growing demand for safety auto glass.



DSW 021095



Saflex Leads Resin Gains

Strong worldwide automotive and construction demand resulted in record high sales for *Saflex* plastic interlayer. The polyvinyl butyral interlayer is used in laminated safety glass for automobile windshields, as well as in laminated architectural glass applications.

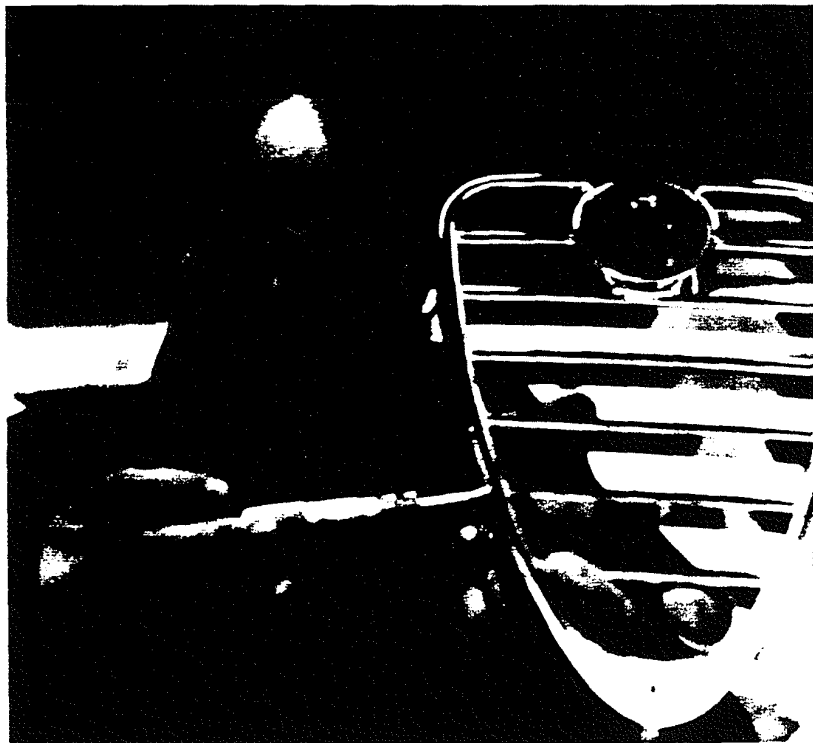
In June, Monsanto announced a major, two-stage expansion of capacity for *Saflex* at its Ghent, Belgium plant which will more than double European production. Completion of stage one is expected in early 1979.

Sales of other resins used in the manufacture of paints, coatings, paper, adhesives and bonding materials also showed an increase.

Fabricated Products Demand Flat

Sales levels for various fabricated plastic products were somewhat reduced from those of 1976. However, sales of blownware bottles to the high growth personal care and pharmaceutical markets increased. Demand was up for polyethylene film used in the construction and agricultural markets. Sales of *AstroTurf* stadia products were down as the rate of new installations declined in the major U.S. markets.

During the fourth quarter, the company completed its sale of a Belgian subsidiary which produced a range of oriented polystyrene film and sheet products. The company, Sidaplast NV, was sold to a group of local investors. A loss on the sale of the subsidiary was reflected in the third-quarter results.



Monsanto's Brazilian affiliate, Goyana S.A., manufactures a variety of finished plastic products. Here Jose Augusto da Silva (left) and Paulo Eduardo de Salles discuss a shipment of beverage cases for Brazil's leading brewery.

Precision moldings, such as the automobile front screen being measured by Willy Moon (above), a technical officer in Belgium, are made of *Lustran* ABS plastic. Auto parts of *Lustran* are lightweight, strong and allow design flexibility.

23

DSW 021096

TEXTILES

(Dollars in millions)

	Sales	Operating Income
1977	\$884.3	\$ (39.0)
1976	853.5	(1.2)
1975	747.2	(17.2)
1974	770.0	65.2
1973	701.8	119.5

Monsanto Textiles Company, despite an increase in worldwide sales, recorded a substantial operating loss for 1977 due primarily to its operations outside of the United States. The operating loss included a large nonrecurring charge resulting from closing or withdrawing from segments of the fiber business outside of the United States which did not offer satisfactory future growth and profits.

During 1977, the Textiles Company operated in an environment of severe worldwide overcapacity. Although the U.S. industry's utilization rate was significantly better than Europe's, the overcapacity situation resulted in depressed prices and, accordingly, unsatisfactory profits for nearly all fiber producers.

U.S. Fiber Operations

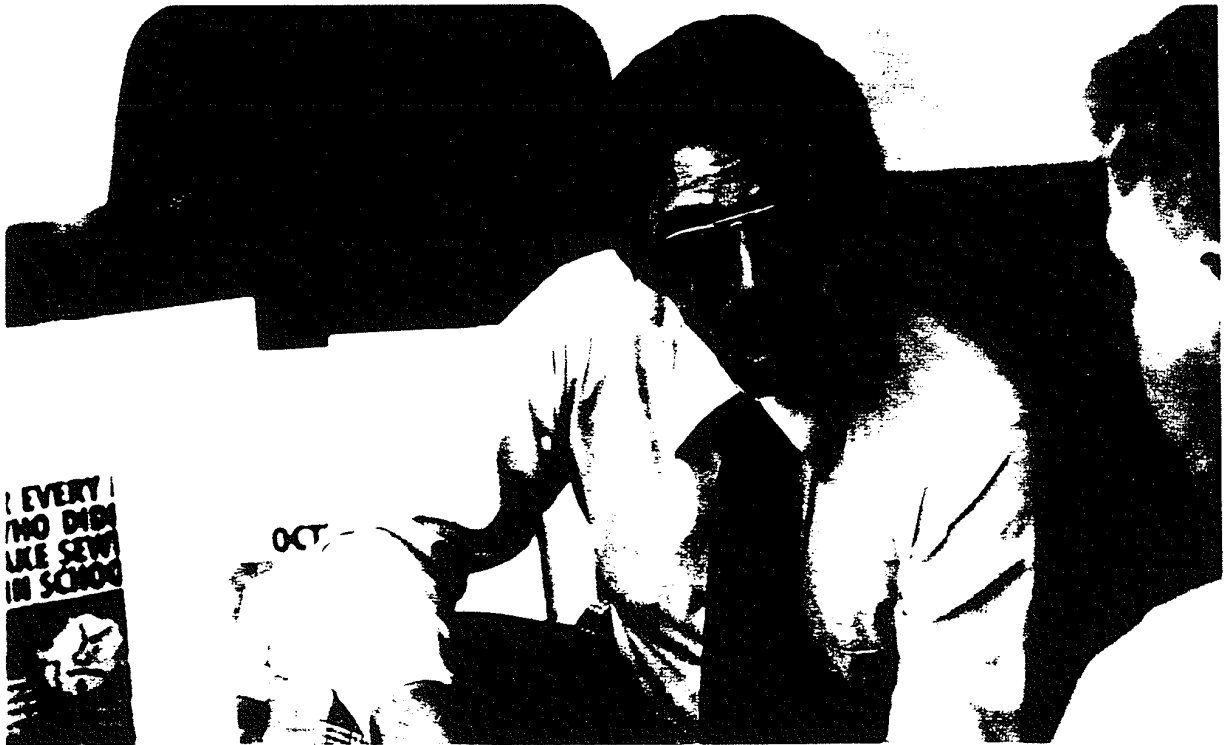
Nylon

Monsanto is the second largest producer of nylon fiber in the U.S. This profitable business segment is supported by efficient chemical intermediate plants that have substantial potential for low cost expansion.

Increased housing starts resulted in market gains for nylon fibers during 1977. Nylon staple for carpet and home furnishing markets was particularly strong.

During 1977, Monsanto expanded its nylon staple capacity by more than 70 million pounds to become the largest producer in the U.S. A substantial reservoir of low cost, debottlenecking capacity for nylon staple is available that can be added in stages to meet the market growth.

The first step in a continuing program of plant modifications to



George Pizzo (above), of the Apparel Advertising and Promotion Department, takes part in a meeting to discuss a 1978 advertising campaign for men's wear made with Monsanto fibers.

Miles of nylon yarn, used to strengthen tires and industrial rubber products, are processed on drawtwist equipment at the Pensacola plant under the watchful eye of foreman John Watkins.



reduce the cost of nylon filament for carpet as well as to provide new generation products was completed in 1977.

In addition, the program continues to reduce the number of nylon filament products for apparel markets and to focus resources on providing nylon feeder yarns for the texturing trades.

Polyester

During the next decade, polyester filament is expected to be the fastest growing man-made fiber. Advances in its aesthetic qualities, plus its easy care characteristics, will combine with this fiber's distinct cost advantages to make it increasingly attractive to garment producers and consumers alike.

Polyester filament has a prominent place in Monsanto's future. In December, the company completed arrangements to purchase a plant at Fayetteville, North Carolina, from Rohm & Haas Company for



Helen Burwell (above), a quality control technician, tests Monsanto fibers to make sure they meet high standards demanded by clothing manufacturers.

55 million. The facility has the capacity to produce 140 million pounds of polyester filament a year. The acquisition of the plant will allow Monsanto to meet future demands at a cost substantially lower than would be needed for expanding current facilities or building new ones. The plant will be put into operation gradually as the demand for the polyester filament increases.

Strong demand during the first half of 1977 pushed operating rates for polyester filament to about 80 percent of capacity, and meaningful price increases were put in place. Even though inventories were trimmed during the second half of the year, and operating rates dropped to 70 percent of capacity, selling prices remained reasonably firm.

Although Monsanto's thrust in polyester will focus on polyester filament, polyester staple is an

important fiber. It is expected that the company will continue to maximize the utilization of its production facilities for this product.

Acrylics

Monsanto has the world's largest capacity for acrylic fibers and is also the world's largest producer of the raw material for acrylic fibers. Monsanto has ample U.S. acrylic fiber capacity due to an expansion made in 1976. In 1977, investments were made to reduce costs. This cost reduction investment program will be continued in 1978.

Demand for Monsanto's *Acrlan* acrylic fiber in the United States was on the upswing during 1977. Acrylic shipments were significantly above those of the previous year reflecting increased consumer demand as a result of the energy shortage which prompted the use of warmer clothing. Acrylics are in increased demand for sweaters,



Willie Kilcrease (above) carefully checks the temperature of diamine, an intermediate chemical used in the manufacture of nylon. Monsanto's nylon is used in products ranging from tire cord to carpet.

26

Archie Wilbanks, Director, Product Development (right) offers customers a selection of colorful fabrics manufactured from fibers that provide the warmth of wool or the sleekness of silk.



DSW 021099



hand knit yarns, pile liners and blankets and are also finding new uses as replacement for natural and cellulosic fibers in the home furnishings area for applications such as upholstery fabrics and draperies.

European Fiber Business

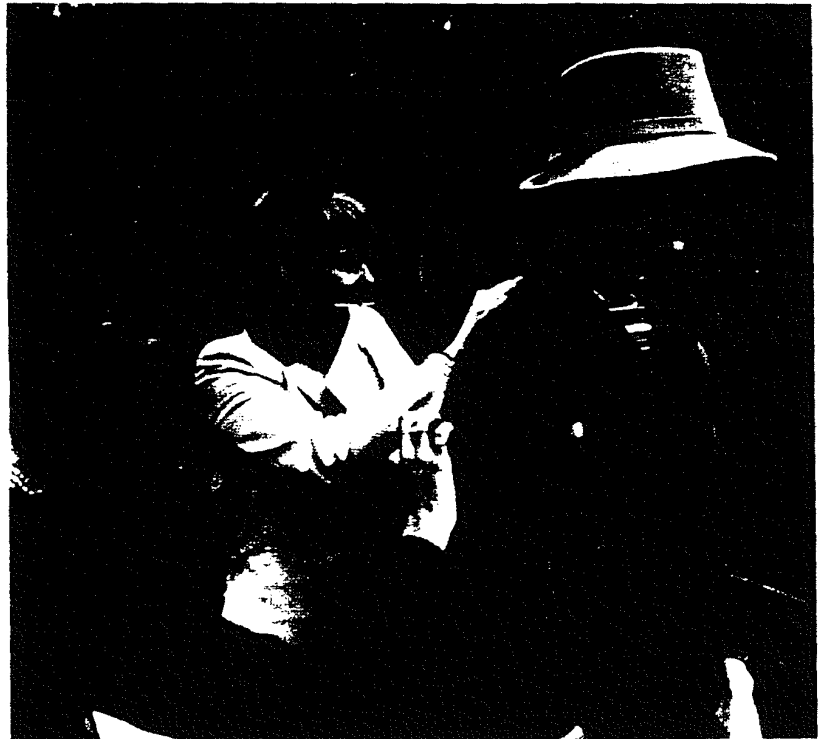
Excess capacity in all major fibers, weak demand, price erosion and large volumes of imports of finished apparel continued to plague the European fibers markets during 1977. Losses for all European fibers manufacturers were reported to total \$1 billion for the year, and announcements of reduced operations and plant shutdowns were common during the second half of the year.

Although Monsanto fiber plants operated significantly above the industry average, low volume and low prices caused severe losses.

A number of cost reduction and

consolidation actions were taken in 1977 to improve Monsanto's position. Monsanto's work force at a major plant in Echternach, Luxembourg, was reduced by 20 percent and a texturizing operation at Crailsheim, West Germany, was closed. A modernization and cost reduction investment at the Coleraine, Northern Ireland, acrylic fiber plant was completed.

Monsanto, one of the largest U.S. producers of man-made fibers, has a long-term commitment to the fibers business which it expects to make positive contributions to future Monsanto profitability. Monsanto's strategy is to focus on growth areas where the company has a strong raw material or technical position and to be on the leading edge of new fiber applications.



As manager of public relations in the New York office, Mary Fennell (above, center) keeps pace with the swirl of fashion news and events in the garment center of the United States.

DSW 021100

27

INTERNATIONAL

Sales from Monsanto's international operations advanced at a somewhat faster pace than for the Company for 1977, reaching \$1.424 billion, an increase of 10.3 percent over 1976 sales of \$1.292 billion. Sales include exports from the United States.

Operating income for 1977, however, failed to keep pace as a number of Monsanto subsidiaries, particularly in Western Europe, operated at less than optimum rates and faced severe cost/price pressures. Operating income for 1977 was \$67.1 million compared with \$105.5 million for 1976—a decline of 36 percent.

Worldwide sales and operating income have been included in the operating company sections. The international presentation provides shareowners with another perspective of Monsanto's worldwide operations. The sales and operating income data reported in this section are based on

the location of the sale—even though the product may have been produced or processed elsewhere.

Europe-Africa

Sales for the Europe-Africa area reached \$741.1 million for 1977—including exports from the United States—compared with \$697.3 million for 1976. Operating loss for this world area was \$0.6 million for 1977 compared with operating income of \$37.4 million for 1976.

European results were particularly hard hit by significant industry overcapacity in man-made fibers and plastics which resulted in low rates of capacity utilization and a severe erosion of selling prices. Both fibers and plastics businesses operated in loss positions for the year.

Sales of Monsanto's *Roundup* herbicide showed excellent year-to-year gains, and modest revenue



Monsanto market researcher, Geert Van Brandt (above, center), talks with Belgian farmers about *Roundup* herbicide, which has expanding applications around the world.

Cyril Evans (right, green hat), a safety engineer at the Ruabon plant in North Wales, joins foremen for a regular meeting to discuss safety precautions and to discover potential hazards before an accident happens.



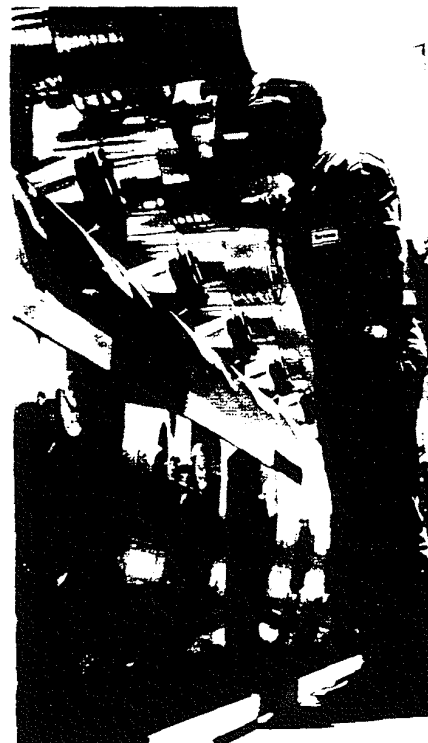
improvements were recorded for *Avadex* and *Lasso* herbicides in the Europe-Africa area. Good gains were reported for specialty and rubber chemicals and for *Saflex* polyvinyl butyral sheet.

During 1977, European management took a number of actions to help minimize future losses by withdrawing from or closing several operations in the fibers and plastics areas.

Operating results from Aiscondel, S.A., a Monsanto affiliate and a major producer of plastic products in Spain, were below 1976's depressed levels. Higher start-up costs of a new vinyl chloride monomer plant, together with weak market conditions, resulted in a loss for the year.

Canada-Latin America

Sales for Canada-Latin America, including U.S. exports, reached \$488.4 million for 1977, a 13 percent increase



Paulo Ferra Ira (above), a utilities operator, and his fellow employees at Companhia Brasileira de Plasticos Monsanto produce polystyrene for the growing plastics markets in Brazil and all of South America.

29

DSW 021102

over 1976 sales of \$411.8 million. Operating income declined 13 percent to \$54.5 million for 1977 from \$61.0 million for 1976.

Spring shipments of Avadex herbicides used by Canadian wheat growers to control wild oats, were lower than those of the previous year due primarily to drought conditions. Fall shipments were impacted by plummeting wheat prices, resulting in a year-to-year sales decline for Avadex.

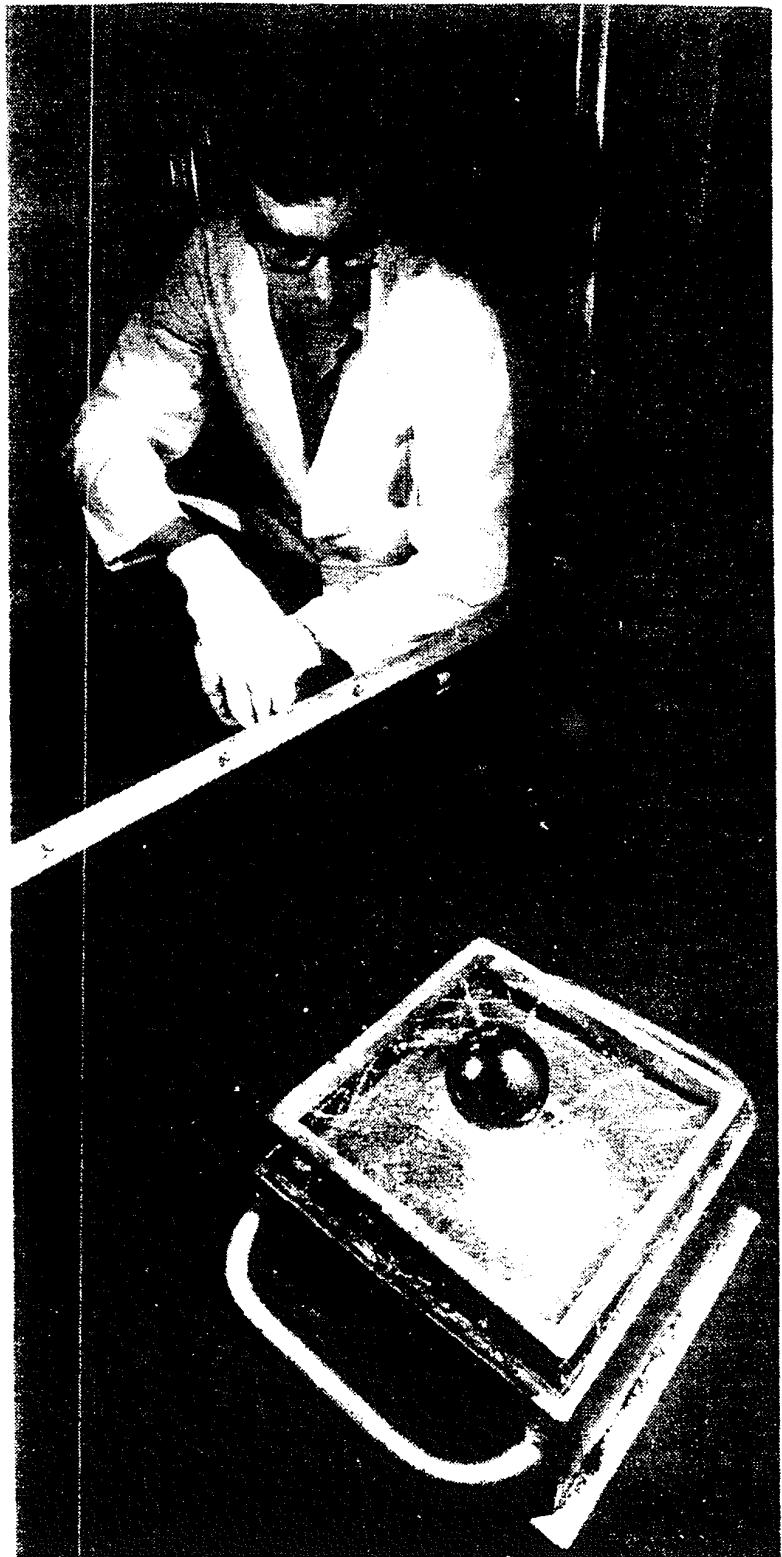
The low rate of economic growth in Canada hindered revenue gains in other markets. Shipments and selling prices of Monsanto's *Lustran* ABS and *Lustrex* polystyrene plastics were soft throughout 1977.

In Latin America, sales of agricultural products, rubber chemicals, styrene monomer and acrylonitrile experienced modest sales gains; and new rubber chemical and phosphate plants in Brazil completed the first year of full production.



Joe Rakic joined Monsanto at Newport, United Kingdom in 1954, just four years after the plant began operations. Starting with synthetic detergents, the plant today has more than 20 departments manufacturing a variety of products.

30



DSW 021103

Sales of Industrias Resistol, S.A., a Monsanto affiliate, were down modestly in 1977, reflecting economic conditions in Mexico. Industrias Resistol manufactures an extensive line of chemicals and plastic products.

Asia-Pacific

Asia-Pacific sales reached \$194.9 million for 1977, a 19 percent increase over 1976 sales of \$163.7 million, despite sluggish economies in Japan and Australia. Sales included exports from the United States. Asia-Pacific operating income also improved to \$12.9 million, compared with \$5.1 million for 1976.

Strong gains were achieved in sales, income and market position for *Machete* and *Roundup* herbicides, particularly in Japan, Taiwan and Malaysia. Other significant gains came from Fisher control systems and valves, plastics and specialty chemicals. During 1977, Monsanto continued to direct increased resources to this rapidly developing world area.

In Japan, increases in sales and operating income were registered by Monsanto's affiliate, Mitsubishi Monsanto Chemical Company, despite the depressed economic situation.

Worldwide Interests

Included among Monsanto's member companies around the world are those appearing in the following list. Percent ownerships are noted parenthetically. In addition, there are a number of other member companies not listed, many of which have been established for marketing or investment purposes.

UNITED STATES

Farmers Hybrid Companies, Inc. (100%) produces hybrid breeding swine.

Fisher Controls Company, Inc. (100%) manufactures and markets process measurement and control equipment.

Monsanto Enviro-Chem Systems, Inc. (100%) develops and markets engineered chemical facilities and pollution-abatement systems.

Monsanto Flavor/Essence, Inc. (100%) manufactures essential oils, aroma chemicals, flavors and fragrances.

Monsanto International Finance Company (100%) obtains funds abroad to help finance overseas expansion.

Monsanto Research Corporation (100%) conducts research for government agencies and for Monsanto; produces nuclear sources; operates a government-owned laboratory.

EUROPE-AFRICA

Belgium

Monsanto Europe, S.A. (100%) area headquarters and coordinating office for Monsanto's manufacturing, marketing and research in Europe (chemicals, plastics, man-made fibers).

France

Societe Monsanto, S.A. (100%) manufactures plastics.

Israel

Israel Chemical Fibres Limited (53%) manufactures acrylic fiber.

Luxembourg

Monsanto Cie. S.A. (100%) manufactures nylon 6,6 yarns.

Spain

Alscondel, S.A. (50%) makes consumer plastic products. A subsidiary produces chemicals and plastics.

United Kingdom

Monsanto Limited (100%) manufactures and markets chemicals, plastics, acrylic fiber and nylon 6,6 yarns.

West Germany

Monsanto (Deutschland) GmbH (100%) manufactures acrylic fiber and markets Monsanto products.

CANADA-LATIN AMERICA

Argentina

Monsanto Argentina S.A.I.C. (100%) manufactures plastics and chemicals.

Brazil

Industrias Monsanto, S.A. (100%) manufactures rubber chemicals and phosphates, and process control equipment.

Cia. Brasileira de Plasticos Monsanto (57%) manufactures polystyrene.

Goyana, S.A. Industrias Brasileiras de Materias Plasticas (44%) manufactures and markets plastic products.

Canada

Monsanto Canada Limited (100%) manufactures chemicals and plastics.

Mexico

Industrias Resistol, S.A. (39%) produces chemicals and plastics.

Compania Industrial de Plasticos, S.A. (100%) fabricates plastic consumer products.

ASIA-PACIFIC

Australia

Monsanto Australia Limited (100%) manufactures chemicals and plastics. Affiliated companies produce styrene monomer, fluorocarbons and synthetic latex products.

Indonesia

P.T. Monsanto Pan Electronics (83%) assembles light emitting diodes.

Japan

Mitsubishi Monsanto Chemical Company (49%) manufactures and markets chemicals and plastics.

Korea

Korag Company Limited (50%) manufactures agricultural chemicals.

Malaysia

Monsanto Electronics Sendirian Berhad (100%) assembles light emitting diodes.

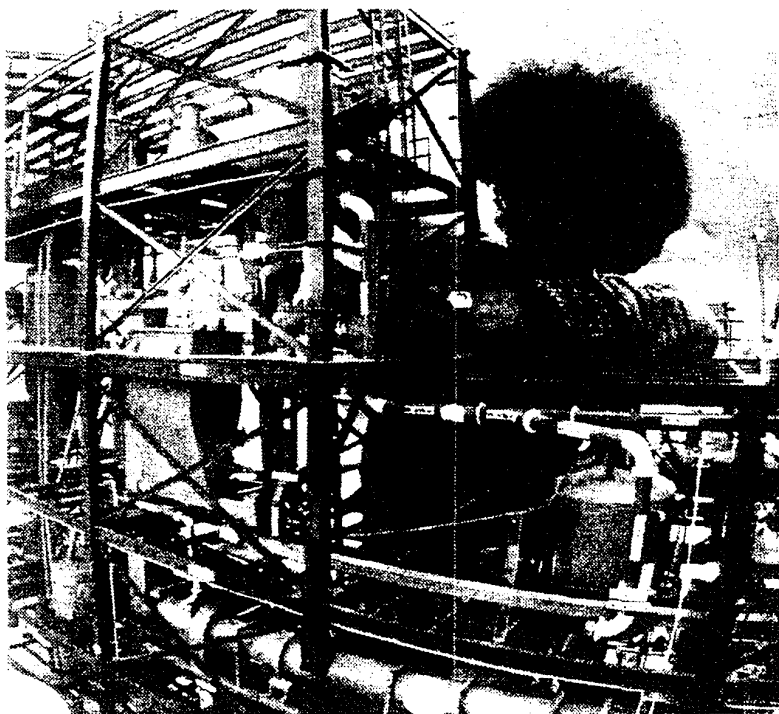
Andre Van Houtte keeps a watchful eye on tests of *Saflex* at the Monsanto Technical Center - Europe in Belgium. More stringent safety requirements for European automobiles have increased the market for *Saflex* plastic interlayer for windshields.

RESEARCH AND DEVELOPMENT

Product innovations and improvements, along with the development of new cost-cutting technologies and processes, continued to be at the heart of Monsanto's research and development efforts during 1977. In addition, the corporate technical staff was reorganized during the year into two groups in order to provide senior technical leadership in environmental matters as well as traditional research.

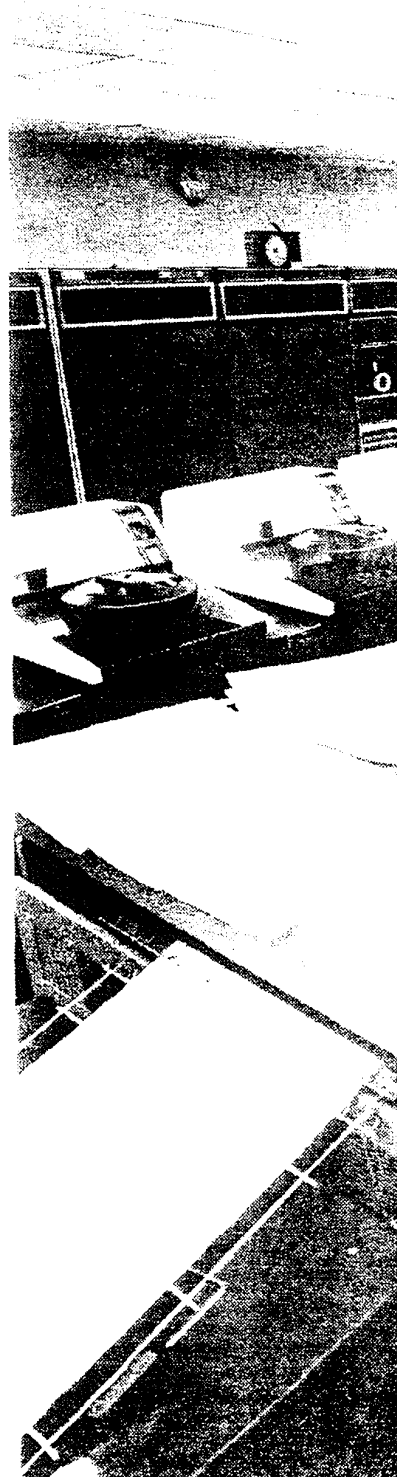
Products announced during the year included a new family of fire-retardant engineering plastics and a glass-reinforced, flame-retardant nylon plastic. These materials will be used initially in electronics products including computers and instrumentation.

Fisher Controls Company, a wholly-owned subsidiary, developed a new line of electronic process recorders with an advanced monitoring system that promotes easier readouts and reduced



Diane Cook (above) works on a scale model of a new Monsanto facility. The use of models, made to the exact proportions of the plant, allows optimum plant layout and operations.

John Schaefer (right), leader of the computer group in agricultural research oversees operations of a sophisticated new computer system designed to aid Monsanto researchers in their efforts to search for new and improved products.



DSW 021105



maintenance. These recorders will add to the line of Fisher products which serve the chemical, hydrocarbon, paper and pulp, and other process industries.

New grades of *Lustrex* polystyrene introduced during the year upgraded the product line to meet the specific needs of the plastics industry. And a second generation of *Fome-Cor* sheathing materials under development is lighter in weight and designed to enhance the Company's leadership in the automotive headliner market.

Researchers in Monsanto's rubber chemicals line have developed a computerized testing and control laboratory that combines a number of complex rubber testing operations into one process. The facility was developed in response to a need in the tire industry for accurate prediction, measurement and control of the rubber mixing and curing process.

Bidim, a nonwoven engineering textile, is showing commercial promise as a useful underlayer in road building, rail track beds, heavy work sites and soil drainage projects. Tests are continuing in a number of other civil engineering applications. In addition to the *Bidim* work, extensive research is being conducted to improve the aesthetics of nonwoven fabrics. It is aimed at improving the feel, appearance and softness of nonwovens for wider acceptance in apparel and home furnishing markets.

Monsanto is a leading producer of silicon materials for the semiconductor industry, and improvements in silicon operations during 1977 resulted in significant manufacturing and cost efficiencies. By 1978, these improvements are expected to increase production capabilities in the United States by 30 percent and double European capabilities. Further research and development designed to provide more improvements has been funded.

New technology used in the production of *Lustrex* polystyrene has reduced costs for manufacturing this high volume plastic material used in a wide variety of products.

In July, as a result of the growing importance and complexity of health and environmental issues, Monsanto's technical staff was separated into two parallel organizations. The Corporate

Environmental Policy Staff will provide leadership in forming the Company's policies and programs which deal with environmental issues. The Corporate Research & Development Staff will focus high-level attention on new products and processes.

Under this new alignment, the operating companies will have expanded responsibility for developing new long-range growth programs in their respective fields. The corporate staff will be charged with supporting these efforts and with building successful new businesses for Monsanto.

Monsanto's research and development program is designed to apply the best science and technology available to the task of developing new and better products for the many markets served by the Company. That work has been the basis for the Company's success in the past, and will provide the foundation for continued success.

In past years, Monsanto's agricultural research has developed successful products such as *Lasso* and *Roundup* herbicides and *Polaris* plant growth regulator. Those research capabilities were significantly increased during the past year with the opening of a new laboratory at the Monsanto Technical Center—Europe at Louvain-la-Neuve, Belgium. Work there will extend ongoing research into new herbicides and plant growth regulators.

One of the most modern agricultural research facilities in the world, the laboratory has test chambers which allow scientists to monitor plant growth under carefully controlled conditions. They can simulate climatic conditions ranging from those found in Northern Europe to those in Central Africa in order to develop products tailored for many diverse markets.

In Monsanto's Corporate Research Laboratories, investigations continue into several aspects of health care and long-range biomedical research. One new product has reached the early stages of clinical trials, and in another area, progress is being made in the development of clinical diagnostic techniques.

DSW 021106

33

SOCIAL RESPONSIBILITY

During 1977, Monsanto strengthened its programs and policies dealing with broad social responsibility issues. New programs were begun, and ongoing programs were given increased emphasis and support. That work was part of a reexamination of how the Company defines its overall social goals.

The Environment

Protecting the environment in plant communities was one of the first issues tackled. Monsanto's existing guidelines were studied and expanded where necessary, using the work done by a special study committee. The guidelines are now being translated into programs including environmental appraisals at plant locations, standards for disposal of wastes in deep wells, and standards for discharging wastes into the air and water.



Des Chappell (third from right), Fire Chief at the Newport, U.K. plant, leads a team of professional and auxiliary firemen. With him are, from left, Andy Owen, Dennis Gusscott, Roger Floyd, Ted Chivers, and Trevor Martin.

34

Strictly enforced safety measures, including equipment and clothing as worn by Fred Speaker (right) at Chocolate Bayou, provide Monsanto with some of the safest workplaces in the U.S.



DSW 021107

In every case, the standards are strict. At locations anywhere in the world at which Monsanto has operating control, the standards not only take into account local laws, but also any additional measures the Company believes necessary and proper to guard employee health and protect the environment. Company operations will be guided by the new standards or by local laws, whichever are more demanding.

A new Environmental Analytical Science Center has been established at the Company's Dayton, Ohio laboratory. Scientists there will develop new analytical methods, train people to do the work, and perform analytical work for Monsanto's six operating companies. The center was accredited early this year by the American Industrial Hygiene Association, which helps to insure that its analyses will be

accepted by the U.S. Occupational Safety and Health Administration and other governmental agencies.

Employee Conduct

During 1977 Monsanto issued a set of "Guidelines for Employee Conduct." These guidelines clearly set forth what is expected of Monsanto employees and, in return, what standards employees can expect from the Company.

Areas covered by the guidelines include: business conduct, antitrust, corporate political activity, conflicts of interest, outside business activities, equal employment opportunity and affirmative action, proprietary and competitive information, and inside information and the trading in securities. These are specific expectations. They allow little or no room for deviation from the highest standards of ethical conduct.



Sheryl Wiley Solomon (left) and Sharen Bull (right) of the Monsanto Fund staff work with Monsanto people at Company locations around the United States to make effective contributions to worthwhile tax-exempt organizations.

35

DSW 021108

Equal Employment Opportunity

Monsanto continued to make progress in the utilization and development of minorities and women. Women and minorities in the classification of managers and supervisors increased from 2.3 percent in 1972 to 5.9 percent in 1977. In professional jobs, minority and female representation has increased from 6 percent in 1972 to 14.8 percent in 1977. In white-collar jobs, excluding office and clerical, minority and female representation has increased from 6.2 percent in 1972 to 12.5 percent in 1977.

Minority Economic Development

Monsanto has had a minority economic development program for several years. Through this program, the Company actively seeks minority-owned firms as suppliers and contractors. Now, the program has been extended. A minority

development office, with corporate-wide responsibility, was set up within the Energy & Materials Management Group. That office has new goals that are expressed in terms of dollars and development aid for minority firms.

Community Support

During 1977, Monsanto substantially increased its support of activities and programs in communities around the United States where the Company has facilities. Monsanto Fund, the Company's philanthropic arm which administers the support programs, distributed \$4.2 million during the year; other corporate donations totaled more than \$800,000 for projects outside the tax guidelines of the Fund. In 1976, \$2.7 million was distributed by the Fund. The increase reflects the growing awareness that the Company has a stake in the quality of life provided in towns and cities where

Monsanto people live and work.

Money from Monsanto Fund went to nearly 1,000 organizations and groups around the country that have received necessary tax-exempt status from the federal government. United Way programs, colleges and universities, community organizations, youth groups and cultural activities all benefited from Monsanto's community support efforts.

Monsanto has always had programs and policies that recognize its responsibilities to society. Activities during 1977 and subsequent years will build on that tradition by keeping pace with changing attitudes and making sure that Monsanto remains responsive to the needs of society.



Chuck Keffer (above, right) supervises reclamation of *Lustran* ABS/SAN plastic materials that were formerly lost in manufacturing waste. Similar new methods are installed wherever possible to recover usable materials and reduce pollution.

36



Bill Caparoon (left), Vinton Cromer and other volunteer firemen at the Muscatine, Iowa, plant train on their own time, away from regular jobs, to protect fellow employees and plant property.

DSW 021109

FINANCIAL SECTION

Contents

Responsibilities for Integrity of Financial Data	37
Financial Review	38
Summary of Significant Accounting Policies	48
Statement of Consolidated Income	49
Statement of Consolidated Financial Position	50
Statement of Changes in Consolidated Financial Position	52
Statement of Consolidated Shareowners' Equity	53
Notes to Financial Statements	54
Accountants' Opinion	61
Ten-Year Summary	62

Responsibilities for Integrity of Financial Data

The management of Monsanto Company is responsible for the integrity of the financial data reported by Monsanto and its subsidiaries. Fulfilling this responsibility requires preparing financial statements in accordance with generally accepted accounting principles and reporting data which, using management's best judgment, fairly reflect financial position, results of operations and changes in financial position.

To gather and control financial data, Monsanto establishes and maintains accounting systems adequately supported by internal controls. Management believes a high level of internal control is maintained by the selection and training of qualified personnel, by the establishment and communication of accounting and business policies and by internal audits. In establishing internal controls, management weighs the cost of such systems against the benefits derived. Management believes the internal control systems in use are sufficient to provide reasonable assurance that assets are safeguarded against loss from unauthorized use or disposition and that the financial records are reliable for preparing financial statements and maintaining accountability for assets.

Haskins & Sells, certified public accountants, are engaged to render an opinion on our consolidated financial statements. This opinion, which appears on page 61, is based on an examination of our consolidated financial statements in accordance with generally accepted auditing standards. These standards provide for a review of the internal control systems and tests of a limited number of transactions.

The Board of Directors, through its Audit Committee consisting of three outside directors, is responsible for reviewing and monitoring the Company's financial reports and accounting practices. The Audit Committee discusses audit and financial reporting matters with both management and Haskins & Sells. To ensure complete independence, the certified public accountants have full and free access to meet with the Audit Committee, with or without the presence of management representatives.

DSW 021110

FINANCIAL REVIEW

(Dollars in millions, except per share)

CONSOLIDATED OPERATING DATA

Quarterly Results

	Quarter				Total Year
	First	Second	Third	Fourth	
Net Sales					
1977.....	\$1,306.1	\$1,122.1	\$1,075.8	\$1,090.5	\$4,594.5
1976.....	\$1,173.6	\$1,063.4	\$ 998.4	\$1,034.8	\$4,270.2
% increase.....	11.3%	5.5%	7.8%	5.4%	7.6%
Net Income					
1977.....	\$ 147.9	\$ 81.5	\$ 24.9	\$ 21.3	\$ 275.6
1976.....	\$ 156.9	\$ 98.4	\$ 63.4	\$ 47.6	\$ 366.3
% decrease.....	5.7%	17.2%	60.7%	55.3%	24.8%
Earnings per Share					
Primary					
1977.....	\$ 4.01	\$ 2.21	\$ 0.66	\$ 0.58	\$ 7.46
1976.....	\$ 4.40	\$ 2.69	\$ 1.69	\$ 1.27	\$ 10.05
% decrease.....	8.9%	17.8%	60.9%	54.3%	25.8%
Fully Diluted					
1977.....	\$ 3.95	\$ 2.18	\$ 0.66	\$ 0.58	\$ 7.37
1976.....	\$ 4.19	\$ 2.62	\$ 1.69	\$ 1.27	\$ 9.77
% decrease.....	5.7%	16.8%	60.9%	54.3%	24.6%

Monsanto's consolidated sales for each quarter of 1977 and for the total year of 1977 were higher than for 1976 and produced the highest sales level in the history of the Company. On a percentage basis, quarter-to-quarter sales gains over 1976 generally decreased, however, as the year progressed.

Net income for 1977, and for each of the quarters of 1977, was down from the comparable periods of the prior year. Net income for the first quarter and, more importantly, for the third quarter was impacted by shutdown costs and the write-down of the fixed assets associated with the *Cycle-Safe* container operations. The third-quarter results were also impacted unfavorably by the decision to withdraw from the expandable polystyrene business in the United States, to reduce the scope of operations at a nylon plant in Luxembourg and to withdraw from three small unprofitable lines of the plastics and fibers businesses outside the United States. Foreign exchange and translation losses had a severe impact on the results for the fourth quarter—particularly for

NET SALES

1977	\$4,594.5
1976	\$4,270.2
1975	\$3,624.7
1974	\$3,497.9
1973	\$2,647.7

NET INCOME

1977	\$275.6
1976	\$366.3
1975	\$306.3
1974	\$323.2
1973	\$238.3

purposes of comparing the last three months of 1977 with those of 1976. A higher effective tax rate, reflecting reduced investment tax credits and losses of certain foreign subsidiaries for which no benefits are currently available, also impacted 1977 results unfavorably.

Analysis of Change in Primary Earnings per Share

1977 vs. 1976

Operating Income:	
Higher Selling Prices	\$ 2.47
Sales Volume and Product Mix	0.91
Higher Raw Material Prices	(0.65)
Higher Other Manufacturing Costs	(2.57)
Lower Start-up Costs	0.02
Higher Nonmanufacturing Expenses	(1.13)
Decrease in Operating Income	\$ (0.95)
Other Causes:	
Higher Interest Expense	\$ (0.10)
Lower Other Income Credits—Net	(0.49)
Higher Tax Rate	(0.97)
Increased Shares Outstanding	(0.08)
Decrease from Other Causes	\$ (1.64)
Net Decrease	\$ (2.59)

Higher selling prices had the most significant positive effect on primary earnings per share during 1977. Earnings per share were also favorably impacted by increased sales volumes. These favorable influences, however, were more than offset by higher raw material prices and other manufacturing costs. In addition, higher nonmanufacturing expenses affected 1977 earnings per share unfavorably.

Included in the adverse impact of higher other manufacturing costs was a \$0.55 per primary share charge resulting from the shutdown costs and write-down of the fixed asset investment in the *Cycle-Safe* container program. Additionally, included in higher other manufacturing costs was a \$0.39 per primary share charge resulting from anticipated losses due to terminating or divesting certain product lines.

Lower other income credits, which include exchange and translation losses, and a higher tax rate also impacted earnings per share unfavorably. Higher interest expense and an increased number of shares outstanding added to the downward pressure on earnings per share.

NET INCOME (as a percent of net sales)

1977	6.0%
1976	8.6%
1975	8.4%
1974	9.2%
1973	9.0%

NET INCOME (as a percent of average shareowners' equity)

1977	11.9%
1976	17.3%
1975	16.4%
1974	20.0%
1973	17.2%

FINANCIAL REVIEW

(Dollars in millions, except per share)

OPERATING COMPANY DATA

Selected Financial Information

1977	Net Sales	Operating Income (Loss)	Total Assets	Depreciation, Obsolescence and Depletion	Capital Expenditures	Research and Development
Agricultural Products . . .	\$ 654.0	\$ 273.4	\$ 576.6	\$ 29.6	\$ 81.2	\$ 19.6
Chemical Intermediates . .	505.0	132.3	715.4	41.0	208.4	15.9
Commercial Products . . .	385.4	(15.2)	280.8	48.5	22.0	24.0
Industrial Chemicals	1,054.6	209.7	691.7	43.5	80.2	23.0
Plastics & Resins	1,111.2	76.3	891.9	50.4	86.4	24.2
Textiles	884.3	(39.0)	1,011.2	82.0	127.2	25.6
Eliminations		(1.1)	(3.1)			
Unallocated corporate expenses		(26.7)		1.0		
Total Operating	4,594.5	609.7	4,164.5	296.0	605.4	132.3
Income charges (credits) . .		86.0				
Nonoperating assets			185.6		1.7	
Total Company	<u>\$4,594.5</u>	<u>\$ 523.7⁽¹⁾</u>	<u>\$4,350.1</u>	<u>\$296.0</u>	<u>\$607.1</u>	<u>\$132.3</u>
1976						
Agricultural Products . . .	\$ 573.2	\$ 240.6	\$ 460.6	\$ 13.2	\$127.0	\$ 15.7
Chemical Intermediates . .	476.2	152.6	593.9	43.7	175.9	12.8
Commercial Products . . .	398.2	(0.1)	291.2	27.5	32.1	21.4
Industrial Chemicals	950.4	206.6	588.6	35.1	79.1	21.7
Plastics & Resins	1,018.7	100.8	752.9	36.8	82.2	17.9
Textiles	853.5	(1.2)	947.5	69.2	147.8	24.8
Eliminations		(6.8)	(0.7)			
Unallocated corporate expenses		(24.7)		0.5		
Total Operating	4,270.2	667.8	3,634.0	226.0	644.1	114.3
Income charges (credits) . .		50.1				
Nonoperating assets			325.1		2.7	
Total Company	<u>\$4,270.2</u>	<u>\$ 617.7⁽¹⁾</u>	<u>\$3,959.1</u>	<u>\$226.0</u>	<u>\$646.8</u>	<u>\$114.3</u>

(1) Income before income taxes

The principal product lines included in each operating company are shown in the "Sales by Product Group" data on page 43. Total sales between operating companies made on a market basis were \$195.0 and \$181.7 for 1977 and 1976, respectively. These sales were not significant for any operating company except Chemical Intermediates (\$127.2 for 1977; \$123.8 for 1976) and Industrial Chemicals (\$40.5 for 1977; \$36.2 for 1976).

Included in Commercial Products' operating loss for 1977 was a \$35.6 charge related to the *Cycle-Safe* container. Textiles' and Plastics & Resins' operating results for 1977 included \$11.7 and \$7.0 charges, respectively, related to terminating or divesting certain product lines. Included in Textiles' operating loss for 1976 was a \$12.4 charge resulting from the closing of a plant. Commercial Products' operating loss for 1976 included a \$9.4 charge resulting from the acceleration of provisions for obsolescence of certain machinery and equipment.

Intercompany receivables and profit derived from intercompany sales were the principal items reflected as eliminations in arriving at the consolidated totals. Certain corporate expenses, primarily those related to the overall management of the Company, were not allocated to the operating companies. Nonoperating assets principally include cash, short-term securities and time deposits, and investments.

DSW 021113

Five of the six operating companies had year-to-year sales increases with the largest percentage gain being recorded by Agricultural Products. Industrial Chemicals also had a good sales gain. A decline in year-to-year sales for Commercial Products resulted from the cessation of production and shipments of the *Cycle-Safe* containers in the first quarter of 1977 and a decline in the construction of sulfuric acid plants. Chemical Intermediates, Plastics & Resins and Textiles had modest sales gains.

Increases in operating income were achieved in 1977 by Agricultural Products and Industrial Chemicals. Chemical Intermediates and Plastics & Resins experienced operating income declines from 1976. The operating losses for 1977 for Commercial Products and Textiles were larger than the operating losses for the prior year. Operating income was restated to conform to the requirements of Financial Accounting Standards Board Statement No. 14 (FASB No. 14) and, to that extent, some slight differences are reflected when compared with interim reports for 1977 and the 1976 Annual Report.

Total assets increased for five of the six operating companies, with the largest gains occurring in Plastics & Resins and Chemical Intermediates.

Depreciation, obsolescence and depletion expenses were higher for 1977. The largest increases in depreciation expense occurred in Commercial Products and Agricultural Products. Greater obsolescence expense due to the *Cycle-Safe* container write-down contributed to the Commercial Products increase.

Capital expenditures were down in total from 1976, although Chemical Intermediates had a significant increase in capital additions. Textiles' 1977 additions, which are lower than the prior year's, include the acquisition of Rohm & Haas' textile facilities in Fayetteville, North Carolina for \$55.0. Agricultural Products' expenditures were down significantly. Commercial Products also experienced a decrease in capital expenditures.

Research and development expenditures increased for 1977, with all of the operating companies sharing in the increase.

Income charges (credits) increased in 1977 due principally to increased interest expense, a lower level of interest income and decreased income from unconsolidated affiliates. Nonoperating assets for 1977 decreased from the prior year, primarily as a result of decreased short-term securities and time deposits.

CAPITAL EXPENDITURES

1977		\$607.1
1976		\$646.8
1975		\$527.7
1974	\$313.4	
1973	\$205.3	

DEPRECIATION EXPENSE

1977		\$296.0
1976		\$226.0
1975	\$172.7	
1974	\$171.9	
1973	\$170.3	

FINANCIAL REVIEW

(Dollars in millions, except per share)

Quarterly Results

Sales—1977	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Year
Agricultural Products	\$ 340.1	\$ 98.6	\$ 94.4	\$ 120.9	\$ 654.0
Chemical Intermediates	121.3	140.0	132.7	111.0	505.0
Commercial Products	89.5	95.8	100.2	99.9	385.4
Industrial Chemicals	269.5	267.5	267.9	249.7	1,054.6
Plastics & Resins	264.1	287.3	273.3	286.5	1,111.2
Textiles	221.6	232.9	207.3	222.5	884.3
Total Company	<u>\$1,306.1</u>	<u>\$1,122.1</u>	<u>\$1,075.8</u>	<u>\$1,090.5</u>	<u>\$4,594.5</u>

Operating Income—1977	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Year
Agricultural Products	\$ 166.4	\$ 38.5	\$ 27.2	\$ 41.3	\$ 273.4
Chemical Intermediates	35.5	43.3	32.3	21.2	132.3
Commercial Products	(4.3)	5.7	(21.5)	4.9	(15.2)
Industrial Chemicals	62.9	62.3	52.0	32.5	209.7
Plastics & Resins	23.8	27.3	12.2	13.0	76.3
Textiles	3.9	(2.0)	(24.5)	(16.4)	(39.0)
Eliminations and unallocated corporate expenses	<u>(5.6)</u>	<u>(8.1)</u>	<u>(7.6)</u>	<u>(6.5)</u>	<u>(27.8)</u>
Total Company	<u>\$ 282.6</u>	<u>\$ 167.0</u>	<u>\$ 70.1</u>	<u>\$ 90.0</u>	<u>\$ 609.7</u>

Agricultural Products, due principally to herbicide sales, was responsible for the seasonal pattern of the Company's sales. Herbicide sales are concentrated in the early months of the year, particularly in the first quarter. The other operating companies experienced relatively stable quarter-to-quarter sales levels, except for a slight tapering-off in the third and fourth quarters.

Agricultural Products was also responsible for the seasonal concentration of operating income in the first quarter. Chemical Intermediates, Industrial Chemicals and Plastics & Resins experienced quarter-to-quarter fluctuations in operating income with a marked decline in the third and fourth quarters. Commercial Products experienced an operating loss for the year including a substantial operating loss in the third quarter resulting from the write-down of the fixed asset investment in *Cycle-Safe* containers. Textiles also had an operating loss for the year, with substantial losses in both the third and fourth quarters. Textiles' third quarter operating loss was increased by write-offs associated with terminating and divesting certain product lines.

SHAREOWNERS' EQUITY (per common share)

1977	\$66.16
1976	\$61.79
1975	\$56.62
1974	\$51.39
1973	\$44.26

Sales by Product Group

	1977	1976	1975	1974	1973
Agricultural Products:					
Herbicides, Insecticides & Other Products	\$ 654.0	\$ 573.2	\$ 547.4	\$ 410.7	\$ 283.4
Chemical Intermediates:					
Petrochemicals	286.6	284.0	230.5	258.1	143.6
Process Chemicals	137.6	125.2	101.3	107.9	74.2
Oil & Gas Production and Exploration	80.8	67.0	58.5	50.8	29.5
Commercial Products:					
Process Controls & Electronics	334.4	286.3	237.9	212.4	194.3
Chemical & Environmental Systems and Other Products	51.0	111.9	80.8	86.6	45.0
Industrial Chemicals:					
Detergents & Phosphates	328.4	310.5	315.4	254.5	173.9
Specialty Chemicals	293.7	254.9	206.3	196.5	143.8
Rubber Chemicals	228.8	199.0	172.4	169.7	127.2
Plasticizers	203.7	186.0	158.7	168.1	108.6
Plastics & Resins:					
Plastic Materials	589.9	514.4	360.5	395.4	289.5
Resin Products	321.1	291.5	223.5	227.9	184.2
Fabricated Products	200.2	212.8	184.3	189.3	148.7
Textiles:					
Man-Made Fibers	884.3	853.5	747.2	770.0	701.8
Total Company	\$4,594.5	\$4,270.2	\$3,624.7	\$3,497.9	\$2,647.7

Sales of all major product groups, except Chemical & Environmental Systems and Other Products and Fabricated Products, increased over 1976. Oil & Gas Production and Exploration and Process Controls & Electronics recorded the highest percentage increases. Significant year-to-year gains were also experienced by Herbicides, Insecticides & Other Products, Specialty Chemicals, Rubber Chemicals and Plastic Materials. Sales of Chemical & Environmental Systems and Other Products were adversely affected by the shutdown of plants producing the *Cycle-Safe* container and the decline in the construction of sulfuric acid plants.

LONG-TERM DEBT AND SHAREOWNERS' EQUITY

1977	\$1030.6	\$2400.9
1976	\$915.4	\$2252.5
1975	\$845.3	\$1976.7
1974	\$587.0	\$1755.0
1973	\$79.3	\$1483.7
	Debt	Equity

PRICE/COST INDEX (Worldwide) (Year 1972 = 100)

1977	168.8	210.8
1976	162.0	203.6
1975	156.7	190.3
1974	141.7	202.1
1973	105.2	108.5
	Price	Cost

DSW 021116

43

FINANCIAL REVIEW

(Dollars in millions, except per share)

WORLD AREA DATA

Selected Financial Information

	Net Sales		Operating Income	Total Assets	Capital Expenditures
	Outside Customers	Inter- Area			
1977					
United States	\$3,409.5	\$ 317.9	\$ 614.1	\$3,030.4	\$424.6
Europe	706.0	43.4	8.5	910.8	162.7
Other Ex-USA	479.0	15.2	18.9	385.8	18.1
Eliminations		(376.5)	(5.1)	(162.5)	
Unallocated corporate expenses			(26.7)		
Total Operating	4,594.5	—	609.7	4,164.5	605.4
Income charges (credits)			86.0		
Nonoperating assets				185.6	1.7
Total Company	<u>\$4,594.5</u>	<u>\$ —</u>	<u>\$ 523.7</u> (1)	<u>\$4,350.1</u>	<u>\$607.1</u>
1976					
United States	\$3,165.7	\$ 283.5	\$ 616.1	\$2,660.4	\$473.5
Europe	669.4	54.5	54.8	752.0	143.3
Other Ex-USA	435.1	22.4	15.0	354.8	27.3
Eliminations		(360.4)	6.6	(133.2)	
Unallocated corporate expenses			(24.7)		
Total Operating	4,270.2	—	667.8	3,634.0	644.1
Income charges (credits)			50.1		
Nonoperating assets				325.1	2.7
Total Company	<u>\$4,270.2</u>	<u>\$ —</u>	<u>\$ 617.7</u> (1)	<u>\$3,959.1</u>	<u>\$646.8</u>

(1) Income before income taxes

Inter-area sales, which are sales from one Monsanto location to another Monsanto location in a different world area, were made on a market basis. Export sales included in the United States net sales to outside customers were as follows:

	Europe	Other Ex-USA	Total
1977	\$49.6	\$198.8	\$248.4
1976	32.5	169.6	202.1

United States operating income for 1977 included a charge of \$35.6 related to the *Cycle-Safe* container. Europe operating income for 1977 included a \$12.2 charge from terminating or divesting certain product lines. Included in United States operating income for 1976 were charges of \$12.4 and \$9.4 relating to the closing of a plant and accelerated provisions for obsolescence of certain machinery and equipment, respectively.

Inter-area receivables and profit derived from inter-area sales are the principal items reflected as eliminations in arriving at the consolidated totals. Unallocated corporate expenses and nonoperating assets are the same as those described for the Operating Company Data on page 40.

Following is a reconciliation of the Europe and Other Ex-USA operating income and total assets shown above to the Company's equity in the net loss and net assets of consolidated Ex-USA subsidiaries:

	1977	1976		1977	1976
Operating income	\$ 27.4	\$ 69.8	Total assets	\$1,296.6	\$1,111.7
Income charges—net	81.0	54.0	Total liabilities	764.2	619.6
Income taxes	14.7	30.0			
Net loss	\$(68.3)	\$(14.2)	Net assets	\$ 532.4	\$ 492.1

Net sales to outside customers improved for 1977 in all world areas. In addition, 1977 export sales increased over those of the prior year. Operating income, however, was down from 1976 levels in the United States and significantly lower in Europe.

Total assets increased in each world area. Capital expenditures were down slightly. Europe had increased expenditures, whereas the United States and Other Ex-USA had decreases.

Income charges (credits) increased and nonoperating assets decreased as explained in "Operating Company Data" on page 40.

The Company's equity in the net loss of foreign subsidiaries increased as a result of lower operating income and higher other income charges. In addition, there was a substantial increase in losses of certain foreign subsidiaries for which no tax benefits are currently available. The Company's equity in net assets of foreign subsidiaries increased from the prior year.

OTHER FINANCIAL DATA

Consolidated Assets, Liabilities and Shareowners' Equity

	1977	1976	Percent Increase (Decrease)
Working Capital	\$1,080.0	\$1,105.9	(2.3)%
Net Property, Plant and Equipment	2,408.7	2,089.8	15.3
Long-Term Debt	1,030.6	915.4	12.6
Other Assets (Liabilities)—Net	(57.2)	(27.8)	—
Shareowners' Equity	<u>\$2,400.9</u>	<u>\$2,252.5</u>	<u>6.6</u>

Monsanto's financial position continued strong for 1977. Working capital (current assets less current liabilities) decreased only slightly from 1976. Net property, plant and equipment increased, as did long-term debt. Shareowners' equity increased over the prior year.

SALES BY WORLD AREA

1977	\$3,409.5	\$706.0	\$479.0
1976	\$3,165.7	\$669.4	\$435.1
	United States	Europe	Other
1977			\$1080.0
1976			\$1105.9
1975			\$1149.6
1974		\$967.8	
1973		\$854.5	

FINANCIAL REVIEW

(Dollars in millions, except per share)

Major Operating Expenses

	1977	1976
Purchased raw materials	\$1,501.6	\$1,317.9
Energy and utilities	345.2	290.8
Wages, salaries and employee benefits	1,145.1	1,041.6
Income, payroll, property and other taxes	375.2	346.5

In 1977, the cost of purchased raw materials and energy and utilities increased at rates of approximately 14 percent and 19 percent, respectively. Wages, salaries and employee benefits were 10 percent higher than the previous year. Income, payroll, property and other taxes increased 8 percent in 1977 over 1976.

Foreign Exchange Losses

	Foreign Exchange Losses (Gains) Earnings per Share Effect	
	1977	1976
First quarter	\$0.10	\$ 0.02
Second quarter	0.22	0.15
Third quarter	0.01	0.38
Fourth quarter	0.60	(0.03)
	<u>\$0.93</u>	<u>\$ 0.52</u>

The above amounts include not only the earnings per share effect on Monsanto Company and its consolidated subsidiaries (\$0.74 for 1977), but also the earnings per share effect on equity income of unconsolidated affiliates.

As a result of Financial Accounting Standards Board Statement No. 8 (FASB No. 8), the Company must translate many items, including long-term debt, on the balance sheets of Ex-USA subsidiaries and affiliates at current exchange rates. This accounting method, although required by FASB No. 8, does not reflect the long-term economic results of the Company's policy of risk management for foreign exchange exposures related to non-dollar denominated debt. Losses related to long-term debt translations may, or may not, be realized when the debt must actually be repaid in the future. Accordingly, the Company manages such exposures from a long-term viewpoint, which policy may result in losses or gains being reflected in periodic earnings because of the accounting prescribed by FASB No. 8.

Selected Statistics

	1977	1976
Current ratio	2.6:1	2.9:1
Debt-to-equity ratio	30.0	28.9
Return on average shareowners' equity	11.9%	17.3%
Shareowners' equity per common share	\$66.16	\$61.79

The current ratio decreased slightly for 1977, principally as a result of increased current liabilities. The debt-to-equity ratio increased only slightly from the prior year. The return on average shareowners' equity was down for 1977 as compared with 1976. Shareowners' equity per common share continued to advance in 1977.

WAGES, SALARIES AND EMPLOYEE BENEFITS

1977	\$1145.1
1976	\$1041.6
1975	\$892.7
1974	\$803.3
1973	\$693.3

Common Stock Dividends per Share

	1977	1976	1975	1974	1973
Dividend Payments per Share:					
First quarter	\$0.70	\$0.65	\$0.60	\$0.50	\$0.45
Second quarter	0.775	0.70	0.65	0.60	0.45
Third quarter	0.775	0.70	0.65	0.60	0.50
Fourth quarter	0.775	0.70	0.65	0.60	0.50
	<u>\$3.025</u>	<u>\$2.75</u>	<u>\$2.55</u>	<u>\$2.30</u>	<u>\$1.90</u>

Effective with the second-quarter payments of 1977, the Board of Directors increased the quarterly dividend from \$0.70 to \$0.775 per share. The dividend has been increased in each of the past five years and the regular cash dividend has been paid quarterly without interruption or reduction since 1928.

Stock Prices (New York Stock Exchange)

Common Stock Prices		1977		1976	
		High	Low	High	Low
First quarter		88 ⁷ / ₈	73 ³ / ₈	98 ¹ / ₄	76
Second quarter		82 ³ / ₈	69 ¹ / ₈	100	86 ³ / ₈
Third quarter		70 ¹ / ₄	58 ⁵ / ₈	93 ¹ / ₄	84 ³ / ₄
Fourth quarter		60 ⁵ / ₈	52	88 ¹ / ₂	78 ³ / ₈
Preferred Stock Prices		1977		1976	
		High	Low	High	Low
First quarter		94 ¹ / ₂	82 ¹ / ₈	108 ³ / ₄	84 ³ / ₄
Second quarter		91 ¹ / ₈	77 ¹ / ₄	110 ¹ / ₂	98
Third quarter		77	67 ¹ / ₂	102 ¹ / ₂	95 ¹ / ₄
Fourth quarter		64	58 ¹ / ₄	96	89

Monsanto's common stock (symbol—MTC) is traded on the New York Stock Exchange and certain other major exchanges throughout the world. The Company's preferred stock is also traded on the New York Stock Exchange.

Quarterly highs and lows for the Company common and preferred stocks were lower in 1977 than in 1976.

DIVIDENDS AND EARNINGS

1977	\$3.025	\$7.46
1976	\$2.75	\$10.05
1975	\$2.55	\$8.63
1974	\$2.30	\$9.25
1973	\$1.90	\$6.90

	Dividends	Earnings
1977	\$52	\$88 ⁷ / ₈
1976	\$76	\$100
1975	\$41	\$80 ⁷ / ₈
1974	\$39 ³ / ₈	\$69 ¹ / ₄
1973	\$43 ¹ / ₈	\$75 ³ / ₄

At December 31

SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The financial statements have been prepared in accordance with generally accepted accounting principles applied on a consistent basis in all material respects. Where acceptable alternative accounting principles exist, Monsanto Company and Subsidiaries (the Company) have selected the methods they believe to be preferable in the circumstances. A summary of the significant alternative accounting principles selected follows.

Basis of Consolidation

The consolidated financial statements include Monsanto Company and its majority-owned subsidiaries. All significant intercompany transactions have been eliminated.

Investments in the common stock of certain affiliates, in which the Company has a greater than 20 percent interest, but which are not majority owned, are accounted for by the equity method.

Depreciation

The Company generally uses the straight line method of computing depreciation on assets; however, the sum of the years digits method is used on most domestic assets placed in service prior to January 1, 1972.

Income Taxes

The Company follows the "flow through" method of accounting for investment tax credits. Under this method, benefits are recognized as a reduction of income taxes in the year they are realized by an offset to the Federal income tax liability.

Income taxes on the undistributed earnings of foreign subsidiaries and domestic international sales corporations (DISC's) have not been provided because the Company intends to indefinitely invest these earnings.

Inventory Valuation

Inventories are stated at the lower of cost or market. The method of determining cost for substantially all domestic inventories is the last-in, first-out (LIFO) basis. The cost for other inventories is determined generally on the first-in, first-out (FIFO) basis.

Pension Plans

Pension costs include charges applicable to current service and amortization of unfunded prior service costs over periods ranging from 15 to 30 years. The policy is to fund pension costs accrued.

DSW 021121

STATEMENT OF CONSOLIDATED INCOME

(Dollars in millions, except per share)

	Year 1977	Year 1976
Net Sales	<u>\$4,594.5</u>	<u>\$4,270.2</u>
Cost of Goods Sold	3,409.7	3,096.8
Marketing and Administrative Expenses	399.6	350.7
Technological Expenses	175.5	154.9
	<u>3,984.8</u>	<u>3,602.4</u>
Operating Income	<u>609.7</u>	<u>667.8</u>
Income Charges (Credits):		
Interest expense	86.0	79.8
Other—net		(29.7)
	<u>86.0</u>	<u>50.1</u>
Income Before Income Taxes	523.7	617.7
Income Taxes	<u>248.1</u>	<u>251.4</u>
Net Income	<u>\$ 275.6</u>	<u>\$ 366.3</u>
Earnings per Common Share:		
Primary	\$ 7.46	\$ 10.05
Fully diluted	7.37	9.77

The above statement should be read in conjunction with page 48 and pages 54 through 61 of this report.

DSW 021122

49

STATEMENT OF CONSOLIDATED FINANCIAL POSITION

(Dollars in millions, except per share)

ASSETS	Dec. 31, 1977	Dec. 31, 1976
Current Assets:		
Cash	\$ 38.3	\$ 37.3
Short-term securities and time deposits, at cost which approximates market	160.0	282.9
Receivables, net of allowances of \$19.1 in 1977 and \$18.6 in 1976 ..	810.7	731.1
Inventories	726.4	631.8
	<u>1,735.4</u>	<u>1,683.1</u>
 Investments and Miscellaneous Assets:		
Investments in affiliates, at equity	109.2	111.1
Miscellaneous investments and receivables, at cost or less	37.1	29.6
	<u>146.3</u>	<u>140.7</u>
 Property, Plant and Equipment, at Cost:		
Land	45.0	44.5
Buildings	573.3	541.8
Machinery and equipment	3,914.5	3,439.2
Mineral rights and oil and gas properties	212.3	182.8
	<u>4,745.1</u>	<u>4,208.3</u>
Less accumulated depreciation and depletion, etc.	2,336.4	2,118.5
Net property	<u>2,408.7</u>	<u>2,089.8</u>
 Deferred Charges	<u>59.7</u>	<u>45.5</u>
	<u>\$4,350.1</u>	<u>\$3,959.1</u>

The above statement should be read in conjunction with page 48 and pages 54 through 61 of this report.

LIABILITIES AND SHAREOWNERS' EQUITY

	<u>Dec. 31, 1977</u>	<u>Dec. 31, 1976</u>
Current Liabilities:		
Accounts payable and accruals	\$ 551.8	\$ 517.6
Income taxes	50.1	34.3
Current portion of long-term debt	53.5	25.3
	<u>655.4</u>	<u>577.2</u>
Long-Term Debt	<u>1,030.6</u>	<u>915.4</u>
Other Liabilities and Deferred Credits:		
Deferred income taxes	236.0	181.3
Miscellaneous	27.2	32.7
	<u>263.2</u>	<u>214.0</u>
Shareowners' Equity:		
Preferred stock—authorized, 10,000,000 shares without par value, issuable in series; outstanding, 271,306 shares in 1977 and 382,587 shares in 1976; involuntary liquidation preference, \$35 per share, or an aggregate of \$9.5 and \$13.4 at December 31, 1977 and 1976, respectively	0.6	0.8
Common stock—authorized, 100,000,000 shares, par value \$2 each; issued, 36,872,323 shares in 1977 and 36,708,144 shares in 1976.	73.7	73.4
Additional contributed capital	650.6	648.2
Reinvested earnings	<u>1,705.3</u>	<u>1,541.1</u>
	2,430.2	2,263.5
Less common stock in treasury, at cost (591,603 shares in 1977 and 268,903 shares in 1976)	29.3	11.0
	<u>2,400.9</u>	<u>2,252.5</u>
	<u>\$4,350.1</u>	<u>\$3,959.1</u>

STATEMENT OF CHANGES IN CONSOLIDATED FINANCIAL POSITION

(Dollars in millions)

	Year 1977	Year 1976
Source of Working Capital:		
Net income	\$ 275.6	\$ 366.3
Charges not affecting working capital:		
Depreciation, obsolescence and depletion	296.0	226.0
Deferred income taxes	54.7	61.5
Other—net	28.4	14.3
Working capital from operations	654.7	668.1
Outside financing—net of unexpended funds from industrial development bonds	126.3	81.7
Property disposals	26.9	20.3
Proceeds from issuance of capital stock	2.0	8.8
	<u>809.9</u>	<u>778.9</u>
Application of Working Capital:		
Property, plant and equipment additions	607.1	646.8
Dividends	111.4	100.9
Debt reduction	79.0	33.6
Other—net	38.3	41.3
	<u>835.8</u>	<u>822.6</u>
Decrease in Working Capital	\$ 25.9	\$ 43.7
Changes in Elements of Working Capital:		
Increase (decrease) in current assets:		
Cash, short-term securities and time deposits	\$(121.9)	\$(105.4)
Net receivables	79.6	51.7
Inventories	94.6	105.7
	<u>52.3</u>	<u>52.0</u>
(Increase) decrease in current liabilities:		
Accounts payable and accruals	(34.2)	(89.9)
Income taxes	(15.8)	(1.8)
Current portion of long-term debt	(28.2)	(4.0)
	<u>(78.2)</u>	<u>(95.7)</u>
Decrease in Working Capital	\$ 25.9	\$ 43.7

The above statement should be read in conjunction with page 48 and pages 54 through 61 of this report.

DSW 021125

STATEMENT OF CONSOLIDATED SHAREOWNERS' EQUITY

(Dollars in millions, except per share)

	Preferred Stock	Common Stock	Additional Contributed Capital	Reinvested Earnings	Treasury Stock
Balance, January 1, 1976	\$3.7	\$70.2	\$638.1	\$1,275.7	\$(11.0)
Net income				366.3	
Dividends:					
Preferred —\$2.75 per share				(2.2)	
Common —\$2.75 per share				(98.7)	
Conversion of \$2.75 Preferred Stock to common stock	(2.9)	2.9			
Shares issued under stock option plans		0.2	4.8		
Shares issued upon conversion of Monsanto Limited convertible loan stock		0.1	1.9		
Shares issued upon conversion of Monsanto International Finance Company convertible debentures . .			1.8		
Other			1.6		
Balance, December 31, 1976	0.8	73.4	648.2	1,541.1	(11.0)
Net income				275.6	
Dividends:					
Preferred —\$2.75 per share				(0.9)	
Common —\$3.025 per share				(110.5)	
Conversion of \$2.75 Preferred Stock to common stock	(0.2)	0.2			
Shares issued under stock option plans		0.1	1.7		
Shares issued upon conversion of Monsanto Limited convertible loan stock			0.2		
Shares purchased					(18.3)
Other			0.5		
Balance, December 31, 1977	\$0.6	\$73.7	\$650.6	\$1,705.3	\$(29.3)

The above statement should be read in conjunction with page 48 and pages 54 through 61 of this report.

DSW 021126

53

NOTES TO FINANCIAL STATEMENTS

(Dollars in millions, except per share)

Bank Credit Agreements

At December 31, 1977, the Company had \$115.0 of domestic unsecured short-term lines of credit with nineteen banks. During February 1978, the lines of credit were increased to \$300.0 with twenty-one banks. The lines of credit are renewable annually and provide that any loans thereunder bear interest at the prime commercial rate of the various banks. No borrowings were made under any of the arrangements through February 13, 1978.

Capital Stock

The outstanding preferred stock is stated at \$2.24 per share and has a cumulative dividend of \$2.75 per share. The preferred stock is convertible into Monsanto Company common stock at the rate of 1.12 shares of common for each share of preferred, subject to adjustment in certain events under antidilution provisions. During 1977, 111,281 preferred shares were converted into 124,561 common shares; in 1976, 1,283,597 preferred shares were converted into 1,437,537 common shares. Of 2,330,510 total preferred shares originally issued in the period 1969 through 1974, 2,059,204 preferred shares have been converted to 2,306,033 shares of common stock through December 31, 1977. The preferred stock may be redeemed at the Company's option at \$73 per share, which amount is also the voluntary liquidation preference.

The Company issued 2,096 and 34,471 shares of common stock in 1977 and 1976, respectively, to holders of convertible loan stock issued by Monsanto Limited, a United Kingdom subsidiary, upon exercise of their conversion rights.

The Company also issued 21,458 shares of common stock in 1976 to holders of convertible debentures issued by Monsanto International Finance Company upon exercise of their conversion rights.

The Company held 37,754 shares of its common stock for specific purposes which are included in Miscellaneous Investments in the accompanying Statement of Consolidated Financial Position at December 31, 1977.

There were 1,810,068 shares of common stock reserved for the following purposes at December 31, 1977:

	Shares
Conversion of \$2.75 Preferred Stock	303,863
Stock option plans	1,035,485
Conversion of convertible loan stock of Monsanto Limited	258,313
Conversion of debentures of Monsanto International Finance Company	212,407
	<u>1,810,068</u>

Depreciation, Obsolescence and Repairs

Charges to expense were:

	1977	1976
Depreciation, amortization and depletion	<u>\$239.5</u>	<u>\$189.3</u>
Obsolescence	<u>56.5</u>	<u>36.7</u>
	<u>\$296.0</u>	<u>\$226.0</u>
Repairs and maintenance	<u>\$289.3</u>	<u>\$222.7</u>

Earnings per Common Share

Income and the number of shares used in the computation of earnings per common and common equivalent share were determined as follows:

Income	1977		1976	
	<u>Primary</u>	<u>Fully Diluted</u>	<u>Primary</u>	<u>Fully Diluted</u>
Net income	\$275.6	\$275.6	\$366.3	\$366.3
Preferred dividends	(0.9)		(2.2)	
Interest (less tax) on:				
Loan stock of Monsanto Limited	0.2	0.2	0.3	0.3
Debentures of Monsanto International Finance Company		0.5		0.5
	<u>\$274.9</u>	<u>\$276.3</u>	<u>\$364.4</u>	<u>\$367.1</u>
Number of Shares (In thousands)				
Weighted average shares:				
Outstanding	36,511	36,511	35,835	35,835
Incremental shares for outstanding stock options	67	69	161	167
Shares issuable upon conversion:				
Loan stock of Monsanto Limited	259	259	276	276
Debentures of Monsanto International Finance Company		237		269
\$2.75 Preferred Stock		352		983
	<u>36,837</u>	<u>37,428</u>	<u>36,272</u>	<u>37,530</u>

Employee Stock Options

The status of the authorized common shares for the stock option plans and the changes occurring during 1977 were:

	1974 Plan		1969 Plan
	<u>Outstanding</u>	<u>Authorized Not Granted</u>	<u>Outstanding</u>
At January 1, 1977	509,601	407,453	157,453
Granted	259,100	(259,100)	
Exercised	(13,812)		(23,710)
Terminated	(20,389)	20,389	(1,500)
At December 31, 1977	<u>734,500</u>	<u>168,742</u>	<u>132,243</u>

Under the above plans, options for 866,743 shares were outstanding at December 31, 1977 at prices ranging from \$32.50 to \$95.25 per share, or a weighted average of \$67.53 per share. During the year, options for 37,522 shares were exercised at prices ranging from \$32.50 to \$73.19 per share.

Equity in Affiliates

The equity of the Company in the net loss of affiliates totaled \$12.5 in 1977 and is included in other income. For 1976, the equity of the Company in the net income of affiliates totaled \$6.8.

Foreign Exchange

Net exchange losses resulting from foreign currency transactions and translation of foreign currency financial statements, excluding unconsolidated affiliates, were \$29.9 and \$29.4 in 1977 and 1976, respectively. The Company's equity in net exchange losses for unconsolidated affiliates was \$7.0 in 1977; in 1976 there was a gain of \$3.6.

NOTES TO FINANCIAL STATEMENTS

(Dollars in millions, except per share)

Income Taxes

The components of income tax expense were:

	<u>1977</u>	<u>1976</u>
Current:		
Federal (after investment tax credits of \$38.3 in 1977 and \$47.6 in 1976).....	\$172.3	\$157.6
State.....	13.4	15.4
Foreign	7.7	16.9
	<u>193.4</u>	<u>189.9</u>
Deferred:		
Federal.....	45.9	43.4
Foreign	8.8	18.1
	<u>54.7</u>	<u>61.5</u>
	<u>\$248.1</u>	<u>\$251.4</u>

The source of timing differences in the recognition of revenue and expense for tax and financial statement purposes and the tax effect of each were:

	<u>1977</u>	<u>1976</u>
Excess of depreciation for tax purposes over book.....	\$49.6	\$47.2
Other items—net	5.1	14.3
	<u>\$54.7</u>	<u>\$61.5</u>

Income tax expense was less than the federal statutory rate because of the factors indicated below:

	<u>1977</u>	<u>1976</u>
Statutory corporate tax rate	48.0%	48.0%
Investment tax credit.....	(7.3)	(7.7)
Tax treatment afforded earnings of DISC's	(2.1)	(2.6)
Foreign, state and local income taxes	8.6	4.4
Other	0.2	(1.4)
	<u>47.4%</u>	<u>40.7%</u>

Undistributed earnings of foreign subsidiaries and DISC's for which Federal income taxes were not provided because of the Company's intention to indefinitely invest these amounts were:

	<u>1977</u>	<u>1976</u>
Foreign subsidiaries.....	\$141.1	\$226.9
DISC's.....	124.8	102.2
	<u>\$265.9</u>	<u>\$329.1</u>

Any taxes on dividends that may be received from foreign subsidiaries would be substantially offset by foreign tax credits.

Foreign net operating loss carryforwards for which no tax benefits have been recorded are approximately \$96.2 at December 31, 1977 and expire in various years through 1982.

Inventory Valuation

Inventories at December 31, 1977 and 1976 would have been \$229.8 and \$201.0, respectively, higher than reported if the FIFO basis of inventory valuation (which approximates replacement cost) had been used for all inventories.

DSW 021129

Key Employee Bonus

Data relating to the Monsanto Management Incentive Plan of 1974 were:

	<u>1977</u>	<u>1976</u>
Maximum allowable addition to bonus reserve	\$17.4	\$25.9
Actual charge to expense (and addition to bonus reserve) as determined by the Executive Compensation and Development Committee	\$ 5.2	\$ 9.6
Bonus awards:		
Number of directors and officers	23	20
Number of other key employees	454	426
Amount	\$ 4.2	\$ 6.6
Balance in bonus reserve at year-end	\$ 7.9	\$ 6.9

Leases, Guarantees and Other Commitments

The Company was contingently liable as guarantor of bank loans and for customers' receivables discounted aggregating approximately \$98.6 at December 31, 1977.

Commitments in connection with uncompleted additions to property aggregated approximately \$118.6 at December 31, 1977.

Rent expense under operating leases with a remaining term of more than one month was approximately \$41.1 in 1977 and \$36.5 in 1976.

Minimum rental commitments under noncancelable operating leases are:

1978	\$ 7.7
1979	6.5
1980	5.5
1981	5.0
1982	3.4
After 1982	<u>40.9</u>
	<u>\$69.0</u>

Legal Proceedings

The Company is party to a number of lawsuits arising in the normal course of business. The more significant pending lawsuits are described below.

The Company is a defendant in various lawsuits alleging damages from products containing polychlorinated biphenyls (PCB's). Some of these lawsuits purport to be class actions, among which are the following: three class actions purport to be on behalf of those having alleged interests, such as ownership of property, business operations or utilization of certain water bodies as a source of food or a means of recreation, connected with the Coosa River and its tributaries and Weiss Lake located between the States of Georgia and Alabama. These suits were filed in the U.S. District Court for the Northern District of Georgia on September 20, 1976, the Superior Court of Fulton County, State of Georgia, on September 24, 1976, and the U.S. District Court for the Northern District of Alabama on December 29, 1976. Damages claimed in each of the first two of these suits are \$500.0, and in the last is \$1,000.0. The State of Alabama, through its Attorney General, has intervened in the Northern District of Alabama suit seeking \$100.0 actual damages, \$0.1 punitive damages and restoration and clean-up costs. These lawsuits claim that the Company failed to warn of the alleged dangers of PCB's. The Company will vigorously defend all such lawsuits.

While the results of litigation cannot be predicted with certainty, management, based upon advice of Company counsel, believes that the final outcome of such litigation will not have a materially adverse effect on the consolidated financial statements of the Company.

NOTES TO FINANCIAL STATEMENTS

(Dollars in millions, except per share)

Long-Term Debt

At December 31, 1977 and 1976, the long-term debt of the Company, exclusive of current maturities and repayable in U. S. dollars, except where parenthetically indicated, was as follows:

	1977	1976
Parent Company:		
7 ¹ / ₂ % promissory notes due 1979/1985	\$ 14.6	
8% notes due 1985	100.0	\$100.0
4 ³ / ₄ % promissory notes due 1993	67.3	72.0
8 ¹ / ₂ % sinking fund debentures due 2000	175.0	175.0
9 ¹ / ₈ % sinking fund debentures due 2000	125.3	138.0
3 ³ / ₄ % income debentures due 2002	91.0	91.0
4 ¹ / ₄ % income debentures due 2008	50.0	50.0
Leases capitalized (a)	15.6	
4 ⁴ / ₅ %-7 ¹ / ₂ % industrial development bond obligations due 1983/2007	124.2	66.4
Monsanto International Finance Company:		
4 ¹ / ₂ % sinking fund debentures due 1985 (b)	17.5	20.0
Monsanto International N.V. (Netherlands Antilles subsidiary):		
5 ¹ / ₂ % bonds due 1987 (Swiss franc)	39.2	32.0
Monsanto Limited (United Kingdom subsidiary) (British pound):		
5% loan stock due 1982/1986 (c)	11.2	10.1
Monsanto (Suisse) S.A. (Swiss subsidiary) (Swiss franc):		
6 ³ / ₄ % sinking fund debentures due 1985	14.7	12.0
6 ¹ / ₂ % sinking fund debentures due 1986	24.5	20.0
Monsanto Europe, S.A. (Belgian subsidiary) (Belgian franc):		
9% bank loan due 1978/1986	17.7	16.9
10 ⁹ / ₁₀ %-11 ³ / ₁₀ % bank loans due 1980/1987 (d)	44.3	12.5
9 ³ / ₄ % bonds due 1982/1991	11.8	10.0
Other	86.7	89.5
Total (e)	<u>\$1,030.6</u>	<u>\$915.4</u>

Notes:

(a) These are leases capitalized to conform with the provisions of Financial Accounting Standards Board Statement No. 13, "Accounting for Leases."

(b) These debentures are currently convertible into Monsanto common stock at \$86 per share, subject to adjustment under certain conditions.

(c) This loan stock is convertible into Monsanto common stock at the approximate rate of one share per 22 pounds 92 new pence (\$44 at December 31, 1977 exchange rate), subject to adjustment under certain conditions.

Of the \$25.9 total loan stock originally issued in 1969, \$14.7 had been retired through December 31, 1977 by conversion into 212,959 shares of common stock.

(d) The interest rates on these bank loans will be reduced by a government subsidy ranging from 4.0%-2.8%, which expire in 1980/1981. The Company has the option of repaying these loans in 1981.

(e) Maturities and sinking fund requirements on long-term debt are \$53.5, \$31.0, \$35.3, \$35.7, and \$50.4 for the five years ending December 31, 1978 through 1982, respectively.

(f) Covenants of certain loan agreements restrict maximum borrowings of the Company. It is not anticipated that additional future borrowing will be affected by these restrictions.

(g) Under various parallel loan agreements, the Company has borrowed \$85.7 in pounds sterling from United Kingdom (U.K.) companies and the Company has made United States (U.S.) dollar loans to the U.K. companies or their subsidiaries aggregating \$75.7 as of December 31, 1977. These agreements require the Company to make additional U.S. dollar loans of \$10.0, which amount is reflected as a current liability. As both parties to the agreements have the legal right to offset in case of default by the other party, the parallel transactions are reflected net in the accompanying financial statements. Interest rates on the sterling loans are 2¹/₄% to 2¹/₂% higher than the interest rates on the corresponding dollar loans. Maturity dates of the loans range from 1982 through 1986.

(h) The long-term debt of each individual subsidiary company shown above is guaranteed by the parent company.

Pension Plans

Several noncontributory pension plans provide retirement benefits for substantially all employees of the Company. The expense related to these pension plans was \$74.6 in 1977 and \$70.7 in 1976.

The estimated actuarially computed value of vested benefits of the major plans exceeded the market value of the plans' assets by \$51.6 as of December 31, 1977.

Replacement Cost Data (Unaudited)

As the Summary of Significant Accounting Policies indicates, the Company's consolidated financial statements are prepared in accordance with generally accepted accounting principles which include the concept of historical cost. Under this concept, assets generally are recorded and reported at the amounts originally paid despite subsequent changes in (1) the purchasing power of the dollar, (2) the amount for which the asset could be sold—its market value—or (3) the current cost of replacing the asset—its replacement cost.

In an attempt to begin providing readers of financial statements with information as to the "current economics" of businesses, the Securities and Exchange Commission established rules in 1976 that require some companies—Monsanto is one—to estimate and report certain replacement cost data. Under these rules, the estimated impact of replacement cost on the amounts reported in the accompanying (historical cost) financial statements for inventories; property, plant and equipment; cost of goods sold; and depreciation expense is to be disclosed. These disclosures do not take into account the impact of replacement cost on other assets, liabilities, revenues or expenses reported in the accompanying financial statements.

Based on the best estimates of management, use of the replacement cost basis would impact the amounts reported in the consolidated financial statements in the following manner:

- Inventories determined on a first-in, first-out (FIFO) basis approximate the estimated replacement cost.
- Buildings and machinery and equipment would have been more than reported in the historical cost financial statements by approximately \$1,400 for 1977 and \$1,440 for 1976. After adjusting for accumulated depreciation, the net building and machinery and equipment would have been higher than reported on a historical cost basis by approximately \$800 for 1977 and \$835 for 1976.
- Depreciation expense would have been higher than the reported historical cost depreciation by approximately \$145 for 1977 and \$95 for 1976.
- Cost of goods sold, excluding the impact of replacement cost depreciation, would have been approximately the same as on a historical cost basis.

A statement of the procedures used to estimate the replacement cost data and management's concerns with respect to the reliability of such data, as well as certain other information with respect to the replacement cost data, is contained in Monsanto Company's Form 10-K filed with the Securities and Exchange Commission for 1977. A copy of this report is available from the Company on request.

Segment Information

Financial Accounting Standards Board Statement No. 14 requires disclosure of certain industry and world area "segment" data. Accordingly, the Operating Company and World Area data appearing on pages 40 and 44 of the Financial Review Section of this Annual Report are an integral part of the accompanying financial statements.

NOTES TO FINANCIAL STATEMENTS

(Dollars in millions, except per share)

Selected Quarterly Financial Data (Unaudited)

Selected unaudited quarterly financial data for 1977 and 1976 follow:

	Net Sales	Cost of Goods Sold	Net Income	Earnings per Common Share	
				Primary	Fully Diluted
1977:					
First Quarter	\$1,306.1	\$ 871.2	\$147.9	\$ 4.01	\$3.95
Second Quarter	1,122.1	819.4	81.5	2.21	2.18
Third Quarter	1,075.8	872.3	24.9	0.66	0.66
Fourth Quarter	1,090.5	846.8	21.3	0.58	0.58
Year	<u>\$4,594.5</u>	<u>\$3,409.7</u>	<u>\$275.6</u>	<u>\$ 7.46</u>	<u>\$7.37</u>
1976:					
First Quarter	\$1,173.6	\$ 769.8	\$156.9	\$ 4.40	\$4.19
Second Quarter	1,063.4	760.8	98.4	2.69	2.62
Third Quarter	998.4	753.8	63.4	1.69	1.69
Fourth Quarter	1,034.8	812.4	47.6	1.27	1.27
Year	<u>\$4,270.2</u>	<u>\$3,096.8</u>	<u>\$366.3</u>	<u>\$10.05</u>	<u>\$9.77</u>

The 1977 first and third quarters' operating results include charges of \$1.9 (\$0.05 per primary share) and \$18.5 (\$0.50 per primary share), respectively, related to the *Cycle-Safe* container, as further explained in "Write-down of Net Investment in *Cycle-Safe*."

The 1977 third quarter operating results also include a charge of \$13.1 (\$0.36 per primary share) for anticipated losses due to terminating or divesting certain product lines.

Fourth quarter 1977 operating results include a charge of \$22.0 (\$0.60 per primary share) resulting from the weakened position of the United States dollar against several other currencies in that quarter.

The 1976 third quarter operating results include a \$10.3 (\$0.28 per primary share) charge due to the devaluation of the Mexican peso.

Fourth quarter 1976 operating results include two unusual charges aggregating \$12.9 (\$0.35 per primary share). One charge of \$7.3 (\$0.20 per primary share), results from the closing of a plant. The other charge of \$5.6 (\$0.15 per primary share), results from acceleration of provisions for obsolescence of certain machinery and equipment.

DSW 021133

Technological Expenses

Technological expenses consisted of the following:

	<u>1977</u>	<u>1976</u>
Research and development	<u>\$132.3</u>	<u>\$114.3</u>
Engineering, commercial development and patent	<u>43.2</u>	<u>40.6</u>
	<u>\$175.5</u>	<u>\$154.9</u>

Write-down of Net Investment in *Cycle-Safe*

Following a February 1977 announcement by the Food and Drug Administration (FDA) of its intention to suspend the food additive regulations permitting the use of acrylonitrile copolymers in the fabrication of plastic containers for carbonated beverages, Monsanto suspended production of its acrylonitrile/styrene copolymer *Cycle-Safe* container. In September 1977, despite management's efforts to convince the FDA that no health hazard exists in the use of the *Cycle-Safe* container, the FDA issued a final decision prohibiting the use of acrylonitrile to make plastic beverage containers.

In light of the decision of the FDA, included in cost of goods sold for 1977 is a \$35.6 charge resulting from the write-down of the net investment in *Cycle-Safe* container operations and related expenses. This charge reduced earnings by \$20.4, net of income taxes, or \$0.55 per primary share.

Management continues to believe that the use of the *Cycle-Safe* container poses no health hazards but, rather, possesses considerable positive environmental and consumer convenience attributes. The Company has filed a petition in the Federal Appeals Court for the District of Columbia challenging the FDA's decision to prohibit the use of acrylonitrile copolymers in plastic soft-drink bottles.

Accountants' Opinion

HASKINS & SELLS

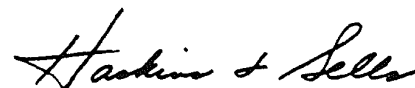
CERTIFIED PUBLIC ACCOUNTANTS

TEN BROADWAY
SAINT LOUIS 63102

Monsanto Company:

We have examined the accompanying consolidated financial statements (pages 48 through 61) of Monsanto Company and Subsidiaries for the years ended December 31, 1977 and 1976. Our examinations were made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, such financial statements present fairly the consolidated financial position of Monsanto Company and Subsidiaries at December 31, 1977 and 1976 and the results of their operations and changes in their financial position for the years then ended, in conformity with generally accepted accounting principles applied on a consistent basis.



February 13, 1978

DSW 021134

61

TEN-YEAR SUMMARY*(In millions, except per share and where italicized)*

	1977	1976
Operating Results		
Net sales	\$4,595	\$4,270
Operating income	610	668
Interest expense	86	80
Income taxes	248	251
Income before extraordinary items	276	366
Extraordinary charges (credits)—net.		
Net income	276	366
<i>Percent of net sales</i>	6.0%	8.6%
<i>Percent of average shareowners' equity</i>	11.9%	17.3%
Earnings per common share:		
Primary:		
Before extraordinary items	\$ 7.46	\$10.05
After extraordinary items	7.46	10.05
Fully diluted:		
Before extraordinary items	7.37	9.77
After extraordinary items	7.37	9.77
Note: Refer to the management analysis of the results of operations which is included under the caption "Analysis of Change in Primary Earnings" on page 39 of this report.		
Year-End Financial Position		
Total assets	\$4,350	\$3,959
Working capital	1,080	1,106
Property, plant and equipment—gross	4,745	4,208
Property, plant and equipment—net.	2,409	2,090
Long-term debt	1,031	915
Shareowners' equity	2,401	2,253
Other Data		
Per common share:		
Dividends	\$ 3.025	\$ 2.75
Shareowners' equity	66.16	61.79
Property, plant and equipment additions	\$ 607	\$ 647
Depreciation, obsolescence and depletion	296	226
Year-end:		
Shareowners:		
Common	85,021	84,647
Preferred	1,404	1,956
Common shares outstanding	36.3	36.4
Employees	61,519	61,903

(1) As of January 1, 1974, the Company and certain of its domestic subsidiaries changed their method of inventory valuation for substantially all United States inventories from the FIFO basis to the LIFO basis. The effect of this change was to decrease 1974 income by \$77.5 or \$2.26 per primary share.

(2) Excludes \$16.0 applicable to extraordinary charges.

DSW 021135

1975	1974	1973	1972	1971	1970	1969	1968
\$3,625	\$3,498	\$2,648	\$2,225	\$2,087	\$1,972	\$1,939	\$1,865
547	550	406	216	178	128	191	214
56	43	39	37	39	33	22	21
230	251	173	81	66	35	73	88
306	323 ⁽¹⁾	238	122	94	78	109	116
					11	(7)	
306	323 ⁽¹⁾	238	122	94	67	116	116
8.4%	9.2%	9.0%	5.5%	4.5%	3.4%	6.0%	6.2%
16.4%	20.0%	17.2%	9.7%	7.8%	5.6%	9.8%	10.3%
\$8.63	\$9.25	\$6.90	\$3.49	\$2.65	\$2.17	\$3.08	\$3.26
8.63	9.25	6.90	3.49	2.65	1.83	3.28	3.26
8.22	8.73	6.54	3.40	2.63	2.17	3.03	3.20
8.22	8.73	6.54	3.40	2.63	1.83	3.21	3.20
\$3,451	\$2,938	\$2,545	\$2,237	\$2,154	\$2,145	\$2,012	\$1,957
1,150	968	855	677	547	538	510	520
3,620	3,157	2,852	2,765	2,735	2,637	2,471	2,345
1,660	1,312	1,152	1,133	1,170	1,170	1,071	1,047
845	587	579	576	558	589	454	473
1,977	1,755	1,484	1,294	1,226	1,194	1,205	1,154
\$ 2.55	\$ 2.30	\$ 1.90	\$ 1.80	\$ 1.80	\$ 1.80	\$ 1.80	\$ 1.65
56.62	51.39	44.26	39.05	37.16	36.27	36.25	34.74
\$ 528	\$ 313	\$ 205	\$ 168	\$ 205	\$ 301	\$ 220	\$ 135
173	172	170	194	187	170 ⁽²⁾	164	174
91,725	98,542	98,964	104,369	110,490	121,399	118,156	111,538
2,836	3,709	3,855	3,939	3,897	3,941	3,621	
34.8	34.1	33.4	33.0	32.8	32.8	33.1	33.1
59,242	60,926	58,277	57,891	59,271	62,940	64,604	62,815

DIRECTORS AND OFFICERS

DIRECTORS

John W. Hanley, St. Louis
Chairman of the Board and President

Edmond S. Bauer, St. Louis
Executive Vice President

H. Harold Bible, St. Louis
Vice President

Donald C. Carroll, Philadelphia
Dean of The Wharton School
University of Pennsylvania

C.R. Dahl, San Francisco
Chairman,
Crown Zellerbach Corporation

John R. Eck, St. Louis
Senior Vice President

Louis Fernandez, St. Louis
Executive Vice President

J.W. Fisher, Marshalltown, Iowa
Former Chairman,
Fisher Controls Company, Inc.

Richard I. Fricke,
Montpelier, Vermont
Vice Chairman,
National Life Insurance Company

James J. Kerley, St. Louis
Executive Vice President

Howard M. Love, Pittsburgh
President,
National Steel Corporation

Jean Mayer, Medford, Massachusetts
President, Tufts University

Buck Mickel, Greenville, S.C.
Chairman,
Daniel International Corporation,
engineering and construction firm

Edward L. Palmer, New York
Chairman of the Executive
Committee,
Citicorp and Citibank, N.A.

Francis E. Reese, St. Louis
Group Vice President

Tom K. Smith Jr., St. Louis
Senior Vice President

Charles H. Sommer, St. Louis
Former Monsanto Chairman

Monte C. Throdahl, St. Louis
Group Vice President

Margaret Bush Wilson, St. Louis
Attorney,
Wilson, Smith, Wunderlich & Smith

COMMITTEES OF THE BOARD OF DIRECTORS

Audit

Donald C. Carroll
Edward L. Palmer
Margaret Bush Wilson

Executive

Edmond S. Bauer
H. Harold Bible
John W. Hanley
James J. Kerley
Charles H. Sommer
Margaret Bush Wilson

Executive Compensation & Development

Richard I. Fricke
Howard M. Love
Buck Mickel
Charles H. Sommer

Finance

J.W. Fisher
John W. Hanley
James J. Kerley
Buck Mickel
Edward L. Palmer
Charles H. Sommer

Pension & Savings Funds

H. Harold Bible
Richard I. Fricke
James J. Kerley
Jean Mayer

OFFICERS

Chairman of the Board and President

John W. Hanley

Vice Chairman

H. Harold Bible

Executive Vice Presidents

Edmond S. Bauer
Louis Fernandez
James J. Kerley
Richard J. Mahoney

Group Vice Presidents

James E. Crawford Jr.
Francis J. Fitzgerald
Francis E. Reese
Monte C. Throdahl

Senior Vice Presidents

John R. Eck
Tom K. Smith Jr.

Vice Presidents

Robert L. Berra
Robert E. Burke
Earle H. Harbison Jr.
S. Allen Heininger
Joseph T. Nolan
Nicholas L. Reding
Ernest S. Robson Jr.
J. Virgil Waggoner

Vice President, Secretary and General Counsel

Richard W. Duesenberg

Vice President and Treasurer

Richard C. O'Sullivan

Vice President and Controller

Francis A. Stroble

Regional Vice Presidents

Richard T. Clark
Sam Pickard

Transfer Agents

Morgan Guaranty Trust Company
of New York
The Boatmen's National Bank
of St. Louis

Registrars

The Chase Manhattan Bank, N.A.
St. Louis Union Trust Company

DSW 021138

Monsanto Company
800 North Lindbergh Boulevard
St. Louis, Missouri 63166

15

DSW 021139