

1970
ANNUAL REPORT
MONSANTO COMPANY

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FINANCIAL HIGHLIGHTS

(Dollars in Millions, Except Per Share Figures)

	1970	1969
Primary Earnings a Share:		
From operations	$ 2.17	$ 3.08
Extraordinary charges (credits)	.34	(.20)
Net income	1.83	3.28
Cash Dividends a Common Share	1.80	1.80
Income:		
Net sales	$1,971.6	$1,938.8
Interest, royalties, etc.	23.8	25.1
	1,995.4	1,963.9
Costs of Doing Business:		
Raw materials, fuel, supplies, etc.	1,118.9	1,056.7
Wages and salaries to employes	518.7	490.2
Depreciation, depletion, etc.	186.4	163.7
Taxes (income, property, etc.)	71.7	115.0
Interest expense	32.7	21.7
Minority interests in subsidiaries	.4	.5
	1,928.8	1,847.8
Net Income	66.6(1)	116.1(2)
Cash Dividends Paid	65.0	63.1
Retained for Future Growth	$ 1.6	$ 53.0
Per Cent of Sales:		
Gross profit	22.6%	26.5%
Selling and administrative expenses	11.1	11.4
Research, development, patent, engineering	5.0	5.2
Income before extraordinary items	4.0	5.6
Plant Additions and Replacements	$ 300.8	$ 219.9
Long-Term Debt (Exclusive of Current Maturities)	$ 589.3	$ 454.0
Shareowners' Equity	1,194.2	1,204.7
Equity to debt ratio	2.03	2.65
Common Shares (In Millions)	33.1	33.1
Book Value a Common Share	$ 36.27	$ 36.25
Working Capital	$ 537.9	$ 509.5
Current Assets to Current Liabilities Ratio	2.70	2.66
Employes	62,940	64,604
Shareowners — Common Shares	121,399	118,156

(1) After deduction of $11.3 million for extraordinary charges.
(2) Includes $6.7 million from extraordinary credits.

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TO THE SHAREOWNERS

Monsanto was able to maintain its level of sales, but not its level of earnings, in the environment of the 1970 economy.

The two principal reasons for the earnings drop were the economic slowdown, which the government correctly induced to combat severe inflationary trends, and the reduced demand for man-made fibers.

For the year, consolidated net sales were $1,971,632,000 — approximately 2 per cent higher than the level attained in 1969. Net income from operations declined about 29 per cent to $77,873,000 — equal to $2.17 per share of common stock. This compared with operating net income of $3.08 per share last year.

For 1970, an extraordinary charge against earnings was made in the amount of $11,343,000 or 34 cents per share. After allowing for this extraordinary charge to income, total primary earnings for the year amounted to $66,530,000 or $1.83 per share, compared with $116,107,000 or $3.28 per share for 1969, when the company had an extraordinary gain equal to 20 cents per share.

The largest of 1970's extraordinary charges resulted when detergent makers accepted a federal government recommendation to stop using sodium nitrilotriacetate (NTA) detergent builder, thus forcing Monsanto to halt manufacture of the product. Detergent makers, although satisfied that NTA is both safe and effective, agreed to discontinue all use of the material. Monsanto had no choice but immediate shutdown.

As a partial replacement for detergent phosphates, NTA was believed to have had a bright future. At the time operations were halted, however, the product had not yet become a significant contributor to Monsanto's sales and earnings.

Additional special charges were for losses incurred or anticipated in connection with discontinuance of certain other operations. These include portions of the farm-chemicals business and segments of the electronic-instruments business.

Decisions to discontinue these latter operations followed careful analyses of profit opportunities.

The year-to-year decrease in total primary earnings of $1.45 a share is accounted for as follows:

	Earnings a Share			
Year 1969 earnings				$3.28
Deduct — Extraordinary items				.20
Earnings exclusive of extraordinary items				3.08
Reduction in earnings caused by:				
Lower selling prices	$.37			
Change in sales volume and product mix	.30			
Higher start-up costs	.25			
Higher manufacturing costs	.08	$1.00		
Additional earnings resulting from:				
Lower raw material prices	.01			
Lower selling, administrative, research and development expenses	.08	.09		
Decrease in operating results		.91		
Other changes in earnings:				
Higher interest charges		.16		
Higher income credits—net	$.06			
Lower federal surtax	.06			
Higher investment tax credit of $.09 less other tax items of $.07	.02			
Effect of change in number of shares outstanding	.02	.16	—	.91
Earnings before extraordinary items				2.17
Extraordinary items decreasing earnings				.34
Year 1970 earnings				$1.83

Italics in the text of this Annual Report identify Monsanto's registered ® trademarks.

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CONSOLIDATED 1970 SALES BY PRODUCT GROUPS

	PER CENT OF TOTAL	PER CENT INCREASE (DECREASE) FROM 1969	PER CENT INCREASE (DECREASE) FROM 1965
Plastics, Resins and Coatings.	22.6	0	23
Man-Made Fibers	22.5	(13)	7
Products for Agriculture	10.2	17	54
Phosphates and Detergents	9.7	5	38
Intermediates, Plasticizers and Functional Fluids	8.3	1	28
Electronics and Process Controls	6.2	18	103
Petroleum Products	5.3	5	15
Rubber and Oil Chemicals	5.2	(9)	16
Food Ingredients and Fine Chemicals	3.0	15	27
Textile and Paper Chemicals.	2.6	6	46
Heavy Chemicals	1.7	(7)	13
Other Products	2.7	—	—
	100.0	2	29

Such analyses are part of a continuing corporate program to identify and eliminate activities no longer fitting Monsanto's long-range objectives. Through this process of selectivity, and through introduction of new technologies and drastic cost-control measures, the company has been restructuring itself to take maximum advantage of the expected economic upturn.

Monsanto's 1970 performance was affected by many factors. Strikes in the tire, auto and appliance industries closed off important sales outlets for prolonged periods. Products became more expensive to make and move, as wages went higher and utility and transportation charges increased. Imports of man-made fibers and products made from them continued flooding into U.S. markets, as import volume rose almost 50 per cent and government efforts to obtain voluntary restraints failed. Start-up costs increased, as a greater number of new production units came on stream than in the prior year. Money to replace scheduled debt retirement and to finance Monsanto's expanded construction program became more costly. And there was need to devote more money and manpower to matters of ecological concern.

But the year-to-year decline in operating income can be almost entirely accounted for by the unusually sharp cyclical downturn in the textiles industry. Industry demand for acrylic and nylon fibers weakened. There were lower selling prices on all Monsanto's fibers, especially nylon. The company's situation was further aggravated by a quality problem in some nylon carpet yarns and by an insufficiently broad product line to compete in certain key markets for nylon. The quality problem has been substantially corrected, and the product line is being broadened appropriately.

The sales decline in fibers was offset by gains in other product groups, notably in areas into which Monsanto had made major diversification moves in prior years. Specifically, these groups were products for agriculture, and electronic products and process controls. Other better-than-average performers included such consumer-oriented products as food ingredients and fine chemicals, plastic packages and detergent chemicals.

Although price erosion undermined the profitability of Monsanto's fiber business, the general pricing environment for chemicals and plastics improved year-to-year. The 1970 price increases outside the fibers area nevertheless fell far short of offsetting price decreases within that area.

In 1970, sales beyond U.S. borders again made a major contribution to the company's over-all earnings. Such sales totalled $467 million, representing a 3.5 per cent increase over comparable sales of $451 million in 1969.

It is clear that attractive investment opportunities for Monsanto exist outside the United States. To capitalize on such opportunities, the company is putting expansion emphasis on such major growth products as certain fibers, farm chemicals and plastics, and on specialty products in areas where Monsanto has technological superiority. Almost one-quarter of the company's 1970 investment in new plant and equipment was in overseas areas, principally in Europe and the United Kingdom.

Total capital expenditures in 1970 amounted to $300,811,000. This was a 37 per cent increase over expenditures of $219,872,000 in the previous year.

In 1970, Monsanto arranged for several new sources of debt financing, both domestically and abroad. The largest borrowing, in the amount of $150 million, was achieved through a domestic offering of 30-year, 9⅛ per cent, sinking-fund debentures — which are refundable after 10 years. The year's total long-term borrowings, which are included in the table on page 18, amounted to $187 million.

Many of the year's principal construction projects were aimed at lowering production costs by convert-

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ing to new, high-efficiency processes. The products involved included phenol, maleic anhydride, styrene monomer, methanol, acrylonitrile, phthalic anhydride and oxo-alcohol. Other projects added polyester tire cord and acetic acid to the company's product line. Still others were planned in anticipation of long-term demand for such traditional products as ABS and polystyrene plastics, silicon, nylon, *Acrilan* acrylic fiber, *Saflex* polyvinyl butyral sheeting and vanillin. Most of these projects and products are described more fully elsewhere in this report.

For the past few years the company has devoted intensive effort to developing new directions for corporate renewal and growth. Businesses and programs that are inconsistent with Monsanto's profit goals are being eliminated. Technology to make Monsanto the lowest-cost producer of a variety of key products is being utilized in new manufacturing units throughout the company. At existing production units, substantial efforts are being made to trim costs.

In addition, a number of actions have been taken to curtail nonmanufacturing costs. For 1970, such costs were reduced by approximately $5.6 million, and a program aimed at an additional $17.0 million reduction for 1971 has been implemented.

Products and systems now in developmental stages, if they succeed, could provide Monsanto with major new business opportunities. One such opportunity is in pollution control, a field in which the company has acquired considerable expertise. Another is in new packaging systems that could qualify for a number of major markets in the food and beverage industries. Monsanto's hair-thin, spun-steel fiber could become a standard tire-reinforcing material. *Cerex* spun-bonded nylon fabric could replace woven fabrics in a number of big-volume applications. And specially bred livestock could help establish the company as a leader in animal agriculture. These areas are dealt with in greater detail on subsequent pages.

Since publication of the 1969 Annual Report, four new members have been elected to the Board of Directors. One is James J. Kerley, former senior vice president-finance for Lone Star Cement Company, who earlier held the same position with Trans World Airlines, Inc. Mr. Kerley's election as a director and as vice president-finance occurred in July and was effective Sept. 1. In December, he was appointed to the Corporate Management Committee.

Directors elected in August are Dr. Jean Mayer of Boston and Gen. Earle G. Wheeler, U.S. Army (Ret.), of Martinsburg, W. Va. A professor of nutrition at Harvard University, Dr. Mayer is internationally renowned in his field. He has broad knowledge and experience in agriculture, health, ecology and consumer protection. Gen. Wheeler, a former chairman of the Joint Chiefs of Staff, has a wide range of experience in organizational planning and foreign affairs.

In January, 1971, the board elected J. W. Fisher of Marshalltown, Iowa, to its membership. Board chairman and former president and chief executive officer of wholly owned Fisher Controls Company, Inc., Mr. Fisher has a strong background in manufacturing and marketing in his highly successful business career.

These four men are making valuable contributions to Monsanto. The company is extremely fortunate to have the benefit of their counsel.

In 1970, Monsanto endured great stress. More than ever, we are grateful to the thousands of employes who are working so hard to bring about a turnaround in the company's business. We are confident that their efforts will succeed.

Sincerely,



Chairman of the Board



President

St. Louis
Feb. 23, 1971

The next annual meeting of the shareowners of the company is to be held at 2:30 p.m. Thursday, March 25, 1971, 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.

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1970 OPERATIONAL HIGHLIGHTS

Monsanto's business activities relate largely to the manufacture and sale of products. Therefore, 1970's more significant developments are discussed here primarily in terms of products and their uses. Information is classified according to Monsanto's 12 product groups and is treated on a worldwide basis.

PLASTICS, RESINS AND COATINGS

Brisk demand overseas, especially in Europe, enabled plastics and related products to match their 1969 sales level.

Although sales of *Lustran* ABS were hurt by strikes in the U.S. appliance and automotive industries, the tough plastic continued to replace other materials in such uses as refrigerator food liners, automobile grilles and furniture. In 1970, an ABS expansion was completed in Japan. A new unit to be completed in Antwerp, Belgium, early in 1972 will nearly triple Monsanto's ABS capacity in Europe.

Demand for *Lustrex* polystyrene rose. Expansions were completed or under way in five of the nine countries in which Monsanto makes the big-volume plastic: Argentina, Australia, France, Spain and the United States. When all the installations are in place, Monsanto's total polystyrene capacity will be almost one billion pounds annually.

Sales of styrene monomer to makers of polystyrene and ABS were steady. To cut production costs and prepare for future demand, Monsanto is building an improved-process monomer unit in Texas City to replace an older one there. Monomer expansions were completed in Australia and under way at an affiliate's plant in the United Kingdom.

Polyvinyl chloride capacity was boosted in Japan and Spain, primarily to meet rising demand by makers of building products and home furnishings.

U.S. and Canadian sales of *Saflex* polyvinyl butyral sheet, a plastic interlayer used in laminated safety glass for automobile windshields, were depressed all year by lower auto production. Late in the year, the strike against General Motors intensified the problem. Elsewhere, demand for *Saflex* continued to increase. In Europe, the principal overseas market, automobile production rose, and laminated windshields gained greater favor. In 1970, new units to produce *Saflex* were being built in Europe and the United States.

Sales of vinyl acetate-based products to manufacturers of textiles and adhesives were hurt by the sluggish economy and by price pressures. The decline in housing starts reduced sales of bonding resins for thermal insulation, decorative laminates and plywood. Although markets for surface coatings were generally slow, sales of Monsanto's styrene allyl alcohol resins for exterior latex paints and automotive primers gained.

In Texas City, new units began producing methanol and acetic acid — the latter by a low-cost, high-yield Monsanto process. The chemicals are intermediates used in manufacturing phenolic and polyvinyl acetate resins, respectively.

Also under construction in 1970 was a 150-million-pound-per-year addition to formaldehyde capacity in Alvin, Tex. Formaldehyde is used to produce phenolic, urea and melamine resins.

Sales of molded and fabricated plastic products exceeded the year-earlier level. Spearheading the gain were garden hose, *Fome-Cor* insulation board for mobile homes, and polyethylene film for agricultural, construction and specialty applications.

In Canada, sales of coated fabrics for non-automotive use rose. In Mexico, sales of consumer and industrial plastic products were sharply higher.

Despite depressed sales to many consuming industries, sales of plastic packages increased 7 per cent. Bottle sales were at a record-high level. Sales of food containers, particularly margarine tubs and transparent meat trays, gained strongly. Sales of vending cups were off because of work slowdowns and stoppages at such major consuming locations as plants in the aerospace, automotive and electronics industries.

The Coca-Cola Company in 1970 continued test-marketing Monsanto's Lopac plastic bottles in parts of New England. And two major brewers began evaluating Lopac bottles for packaging beer.

Still in the developmental stage, Lopac containers possess an unusual combination of barrier properties uniquely suited to food and beverage packaging. No

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previously available plastic container has been satisfactory in the principal packaging jobs for which Lopac is being evaluated.

MAN-MADE FIBERS

Reflecting the textiles industry's over-all slump, Monsanto's fiber sales were 13 per cent below the 1969 level.

The year 1970 was marked by reduced housing construction, tight credit, record-high textile imports, declining retail volume and prolonged strikes in key consuming industries. Consequently, fiber demand and prices weakened.

To strengthen its long-term position, the company continued to develop and introduce new specialty fibers. Also in 1970, Monsanto made plans to build a multimillion-dollar, multifiber plant in northeast Alabama's Sand Mountain area, near Huntsville.

The plant will manufacture nylon and apparel-denier continuous polyester. When it starts producing in 1972, the plant will put Monsanto in the business of making continuous-filament polyester for textiles for the first time. The company will then have firm bases in all major synthetic noncellulosic fibers.

Furthermore, the new plant will employ improved spinning technology developed by Monsanto to boost the quality of both nylon and polyester. The new process is expected to enhance the profitability of the company's over-all fiber business.

In 1970, Monsanto began selling *Ultron* antistatic nylon to makers of tricot lingerie and men's hose and introduced new stretch yarns for textured nylon hosiery. Early indications are that these new products are being well received in steadily growing markets.

Drawing on its know-how in acrylic fibers, Monsanto developed *Elura* modacrylic wig fiber, which was introduced in 1970. Fast acceptance of *Elura* by premium wig makers and leading hair stylists points to a promising future for this specialty product.

The highly successful *Wear-Dated* program, which guarantees high-quality apparel made from Monsanto fibers, was broadened in the United States to include home furnishings. New *Wear-Dated* programs applying to apparel were established in France, Scandinavia and other parts of Europe.

To insure participation in the anticipated growth of European markets for man-made fibers, Monsanto was adding capacity for *Acrilan* acrylic fiber in Northern Ireland and West Germany. New capacity to make nylon yarn was being installed in Luxembourg and Scotland.

Successful start-up of a unit to produce polyester tire yarn occurred late in the year. The new unit will help Monsanto satisfy customer needs for the increasingly popular tire-reinforcing material. In 1970, the company's A07 nylon tire-cord fiber, which offers improved tenacity and strength retention, gained broad acceptance.

Of potential long-range importance is Monsanto's recently developed process to spin hair-thin metals. Such metals could be useful in a number of areas. Of particular interest to Monsanto at this time is the potential use of spun steel fiber by the tire industry. Bulkier drawn-steel wire made by older techniques is already a popular tire-reinforcing material in Europe. If Monsanto's new steel fiber meets laboratory expectations, it could speed a shift to steel cord by U.S. tire makers and provide the company with a significant opportunity in this major market.

PRODUCTS FOR AGRICULTURE

The 17 per cent sales increase by this product group was a bright spot in Monsanto's over-all performance.

Crop-protection chemicals led the advance.

A major gainer was *Lasso* herbicide, which controls most annual grasses and some broadleaf weeds in corn, soybeans, peanuts and, in some areas, cotton. Late in the planting season, the U.S. Department of Agriculture granted an extended clearance on combinations of *Lasso* in liquid form with certain other weed killers. This broadened the usefulness of the Monsanto product and is expected to help increase its sales.

In 1970, Monsanto made its initial commercial shipments of *Machete* herbicide, which effectively combats grassy weeds that infest rice, the world's number-one food crop. The Republic of Korea placed the first order. Markets for *Machete* were subsequently developed in Brazil and Colombia.

A global wheat glut prompted cutbacks in wheat production in Canada and Australia. Declining sales of *Avadex* and *Avadex* BW wild-oat herbicides resulted. But this was partially offset by increased sales of the products to European growers of small-grain crops and sugar beets.

By the end of the year, Monsanto had ceased production of 2,4-D and 2,4,5-T weed and brush killers. Now, virtually all the company's pesticides

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COMPARATIVE CONSOLIDATED SALES, INCOME AND EARNINGS A SHARE, ON A QUARTERLY BASIS

	1970	1969	Per Cent Increase Decrease
	(In Thousands)		
SALES:			
First quarter	$ 512,702	$ 484,288	5.9
Second quarter	523,429	523,563	—
Third quarter	466,888	461,508	1.2
Fourth quarter	468,613	469,479	.2
	$1,971,632	$1,938,838	1.7
INCOME FROM OPERATIONS:			
First quarter	$ 33,007	$ 34,076	*3.1*
Second quarter	27,676	36,933	*25.1*
Third quarter	10,984	20,661	*46.8*
Fourth quarter	6,206	17,696	*64.9*
	77,873	109,366	*28.8*
Extraordinary charges (credits)	11,343	(6,741)	
Net Income	$ 66,530	$ 116,107	*42.7*
PRIMARY EARNINGS A SHARE:			
From operations:			
First quarter	$ .95	$ .97	
Second quarter	.79	1.06	
Third quarter	.28	.57	
Fourth quarter	.15	.48	
	2.17	3.08	
Extraordinary charges (credits)	.34(1)	(.20)(1)	
	$1.83	$3.28	

(1) By quarters:
1970 — First, 5 cents; fourth, 29 cents.
1969 — First, 2 cents; second, 1 cent; third, 6 cents; fourth, 11 cents.

break down rapidly and harmlessly.

Sales of fertilizer materials improved in 1970. There was some encouraging price firming.

Animal feed additives moved well. Sales of *MHA* protein-feed supplement advanced sharply, as poultry production increased and fishmeal, a natural source of protein, became less economical. *Santoquin* feed antioxidant also sold well, despite price pressure from overseas producers.

Wholly owned Farmers Hybrid Companies, Inc., best known as a producer of genetically superior breeding swine, bettered its year-earlier performance. Boars and gilts to upgrade commercial herds were sold in greater numbers.

By applying its expertise in genetics, Farmers Hybrid has developed boars which sire large litters of vigorous offspring, which turn less feed into more pork than do conventional breeds. Through further utilization of this same know-how, Monsanto hopes to become a leader in animal agriculture, as it is in plant agriculture.

PHOSPHATES AND DETERGENTS

Sales of phosphates, detergent chemicals and related products increased 5 per cent.

Monsanto continued as a leading producer of elemental phosphorus. At both phosphorus plants, production stayed at high levels.

Detergent builders and detergent actives moved well. Sales of phosphates for foods, dentifrices and industrial uses were strong. Unprecedented cost increases led to corresponding price increases across most of the product line.

The problem concerning NTA detergent builder is discussed on page 1. Detergent phosphates also were under fire in 1970. It was charged that the products cause excessive plant growth in lakes and streams. And proposals were advanced to ban their use.

Although it is generally recognized that phosphates are plant nutrients, Monsanto does not believe that removal of phosphates from detergents will solve the eutrophication problem. Detergents represent only one of many sources of phosphates entering lakes and streams. Furthermore the company takes the position that not only phosphates but other nutrients must be brought under control to combat the problem effectively. Monsanto believes a better solution would be efficient removal of plant nutrients, including phosphates, in sewage-treatment plants. Such plants would extract all sources of nutrients in municipal wastes — an approach Monsanto believes to be far more desirable than a nationwide attack against a single source of just one nutrient.

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In 1970, a multimillion-dollar phosphoric acid unit neared completion in St. Louis. It is a replacement for a unit that became obsolete.

ACL chlorine-carrying compounds moved well in 1970. The main marketing thrust was toward residential swimming-pool owners, who use disinfectants incorporating *ACL*.

Sales of *Phos-Check* fire retardant gained. The product proved particularly effective for control of wildfire.

INTERMEDIATES, PLASTICIZERS AND FUNCTIONAL FLUIDS

Sales were up 1 per cent.

New facilities to manufacture many of the group's products were completed or started.

Annual capacity to produce maleic anhydride was increased to 105 million pounds in the United States and was being increased to 60 million pounds in the United Kingdom. Maleic is a versatile intermediate used in making polyester plastics, farm chemicals and various other products.

Phenol capacity was boosted to 375 million pounds a year. Monsanto's new phenol unit is producing at what may be the lowest cost in the industry. The company uses phenol to make a range of products, including resins and pharmaceuticals.

Other new manufacturing units further enhanced Monsanto's position as a major supplier of plasticizers. Plasticizers impart flexibility, fire resistance and other desirable properties to plastics.

Units to produce phthalic anhydride and oxo-alcohol, both used in plasticizer manufacture, were being built in Texas City. The new plasticizer complex there is expected to improve Monsanto's profit position.

Two U.S. plants added units to produce phosphate esters, which make plastics fire-resistant. Anticipated new laws requiring fire-resistant plastics for automobile interiors would cause a big boost in demand for these esters.

Monsanto voluntarily undertook a program to reduce the presence of polychlorinated biphenyl (PCB) in the environment. The company withdrew PCB from the plasticizer market and introduced specially tailored replacements. Sales of PCB to the electrical industry were not affected because the product can be used safely in such closed systems as capacitors and transformers. Monsanto is offering a new service to customers that enables them to return spent PCB so it may be recycled or safely disposed of.

Demand for functional fluids was strong; pricing was generally firm. Sales of dielectric fluids exceeded the year-earlier level, due in part to greater demand for fluids by makers of capacitors for air conditioners. *Skydrol* LD fire-resistant hydraulic fluid for aircraft was accepted by all major air-frame manufacturers for use in jets, including the new jumbo jets. And a newly developed Monsanto chemical to melt ice on airport runways awaits final approval by the airlines.

Use of heat-transfer fluids grew significantly in 1970. Many offshore gas-processing platforms switched to Monsanto's *Therminol* heat-transfer fluid to reduce fire hazards. And *Pydraul* hydraulic fluid qualified for use in French and German coal mines, and in continuous steel-casting furnaces.

ELECTRONICS AND PROCESS CONTROLS

Despite the adverse effect of the weak economy on the electronics and aerospace industries, sales of this Monsanto product group advanced 18 per cent.

Sales of silicon and other electronic materials gained well. Directly related to the fast-growing computer industry, silicon has major application in discrete semiconductors, integrated circuits and semiconductor memories.

Sales of optoelectronic products increased materially in 1970. In addition to supplying basic materials for this market, Monsanto manufactures solid-state light-emitting products, including basic light emitters, light sensors, light-emitting arrays for displaying letters and numbers, and photo-coupled pairs.

Sales of valves, regulators, controllers and other products of wholly owned Fisher Controls Company reached record levels. The subsidiary's new line of analog process controllers sparked considerable trade interest. Meanwhile, an advanced digital-control system, complementing the existing product line and providing complete process-control capabilities, was made ready for 1971 introduction.

PETROLEUM PRODUCTS

Sales rose 5 per cent as markets for natural gas and refinery products were generally strong.

Monsanto's continued marketing emphasis on branded gasoline helped boost sales through *Lion* and *Red Bird* service stations.

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While Monsanto's crude oil production declined due to the limited success of the company's 1969 drilling program, natural gas sales gained. Late in the year, domestic crude oil prices increased.

Two drilling groups in which Monsanto holds interests had offshore oil finds that could prove significant. One was the Dutch North Sea's first oil discovery. Further drilling is under way to evaluate this and other North Sea areas. The second find was in the Java Sea, where the third test-drilling produced a show of oil.

RUBBER AND OIL CHEMICALS

Monsanto sold the bulk of its petroleum-additives business late in 1969. Largely because of this, the group's over-all sales declined 9 per cent.

Sales of rubber chemicals increased.

Sluggishness in the U.S. economy combined with strikes in the tire and auto industries to weaken domestic demand for rubber chemicals. But this weakness was more than offset by substantial growth in overseas rubber markets.

Monsanto continued to demonstrate technological leadership in providing tire makers with products to reduce costs and, at the same time, meet strict performance criteria. Successfully introduced was *Santocure* NS-50 accelerator and scorch inhibitor. The product permits faster tire production.

Expansions involving rubber chemicals were completed in the United States, Japan and Spain. Other expansions began in Australia, Belgium and the United Kingdom. Monsanto now serves the global tire industry from plants in seven countries.

Sales of styrene monomer and butadiene for synthetic rubber increased. Sales of the monomer were sharply higher.

GROSS ADDITIONS TO PROPERTY AND DEPRECIATION

	Property Additions	Depreciation, Obsolescence and Depletion
	(Millions of Dollars)	
1970	300.8	186.4
1969	219.9	163.7
1968	135.0	174.3
1967	166.4	165.2
1966	219.6	154.0
1965	299.1	134.8
1964	219.6	121.4
1963	115.7	115.7
1962	170.2	98.7
1961	155.1	87.8

FOOD INGREDIENTS AND FINE CHEMICALS

Sales of these products gained 15 per cent.

Flavors and fragrances led the advance.

Capacity to produce vanillin was raised to more than four million pounds a year. Long a popular flavoring ingredient, vanillin is now used increasingly as an intermediate in pharmaceutical production. One such use is in production of L-dopa, a new drug which has proved effective in treating Parkinson's disease.

New long-term studies were initiated by government and industry to confirm the safety of saccharin, the popular nonnutritive sweetener. A major upsurge in demand for saccharin resulted from the ban on cyclamates late in 1969. But sales returned to normal levels by mid-1970.

TEXTILE AND PAPER CHEMICALS

Sales of chemicals for the manufacture of textiles and paper had a 6 per cent sales increase.

Acrylonitrile, a raw material from which man-made fibers are produced, is the group's principal product. Although demand for the chemical slipped late in the year, total sales for the 12 months gained. In the third quarter, Monsanto began making acrylonitrile at a new plant in England. The unit replaced an obsolete acrylonitrile facility Monsanto had been operating in the United States.

Acetic acid was a newcomer to the product line. The acid is used to produce and treat textiles.

In 1970, U.S. production of paper and paperboard declined about 6 per cent. Sales of paper chemicals consequently suffered.

HEAVY CHEMICALS

Sales of heavy chemicals were 7 per cent below the level of the previous year.

The group's best performers included caustic potash and sulfuric acid, both of which moved in relatively high volume.

Early in the year, a unit to make vanadium pentoxide catalyst for sulfuric acid plants began operation. Also in 1970, a unit to produce sodium sulfite neared completion.

The company mined more salt than in any prior year.

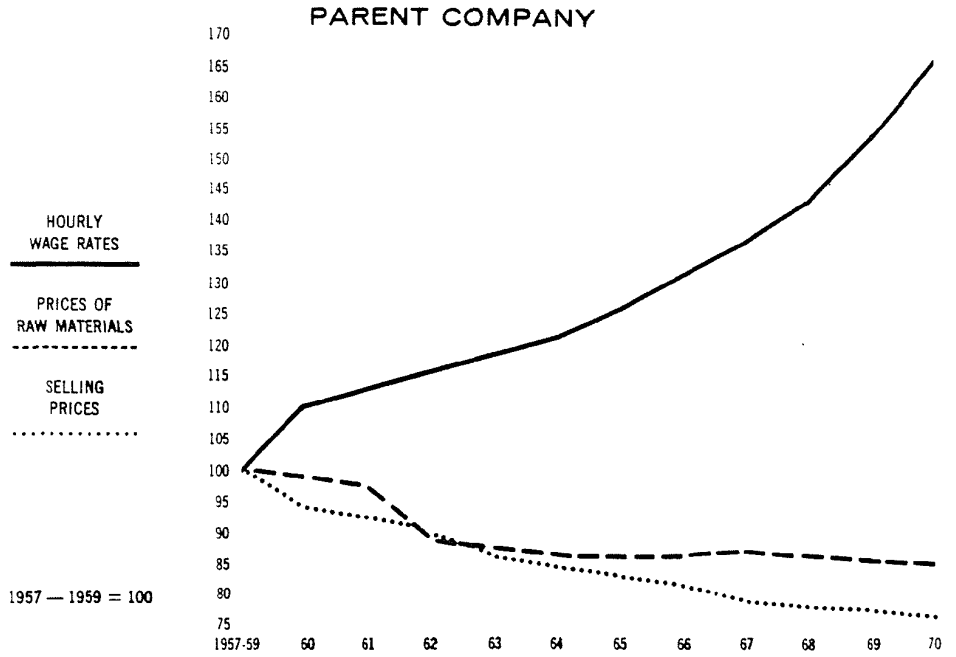
OTHER PRODUCTS

In 1970, 28 new installations of *AstroTurf* stadium

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surface were completed in major sports facilities, compared to 13 in 1969. The Monsanto product is being specified increasingly for new playing fields designed for year-round use.

Use of the *AstroTurf* trademark was extended in 1970 to include Monsanto's action and landscaping surfaces, and its polyethylene doormats. The action surface, engineered for situations less demanding than those stadium surfaces must endure, was test-marketed during the year. So was the landscaping product. Plans were made to make both surfaces available in volume for a number of applications in 1971.

Cerex spunbonded nylon fabric, introduced in 1969, earned increasing acceptance in 1970. In addition to its continuing use in carpet underlays, *Cerex* found new applications in industrial filtration units, single-use parachutes, apparel interlinings and elsewhere. Auto makers are using *Cerex* in backings for vinyl materials, in foam-and-fabric laminates and in reinforcing layers for seating and interior trim.

Computer programs based on Monsanto's experience in process simulation were well received in 1970. Engineering design groups in the eastern and central parts of the United States now utilize Monsanto's Flowtran programs to help solve complicated processing problems. Customers communicate data through remote devices located in their own offices and are billed according to the proprietary Monsanto programs they use to solve their problems.

Work on products and systems to help curb pollution of the environment continued to receive high priority.

Wholly owned Monsanto Enviro-Chem Systems, Inc., bettered its year-earlier performance. In 1970, the subsidiary contracted to design and build 19 sulfuric acid plants. Its sales of *Brink* mist eliminators rose 37 per cent.

Also in 1970, Enviro-Chem received its first contract to build a *Cat-Ox* unit for removing sulfur dioxide and particulates from power-plant stack effluents. The contract is with Illinois Power Company for its plant in Wood River, Ill.

Monsanto Biodize Systems, Inc., an Enviro-Chem subsidiary, sold five plants to remove pollutants from liquid industrial wastes. Biodize also began undertaking technical studies for clients with waste-

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water problems. More than 60 customers used the new service in 1970.

Throughout the year, developmental work continued on Enviro-Chem's pyrolysis system for disposing of solid wastes. The system is capable of converting trash and garbage into environmentally harmless effluents. A prototype plant that operated in 1970 met or exceeded all technical objectives.

Late in the year, the Monsanto subsidiary was awarded a $30 million construction contract by the city of Rochester, N.Y., to build expanded sewage-treatment facilities.

BUSINESS ABROAD

Despite the 3.5 per cent sales advance beyond U.S. borders, overseas profits were adversely affected by the 1970 recession in the global textiles industry. But earnings from sales of chemicals and plastics held up well. And the proportion of corporate sales and income derived from all sources outside the United States continued to gain.

The year's main emphasis was on improving over-all productivity by increasing the efficiency of management and plant operations. Tighter cost control was broadly implemented.

Also in 1970, the company's overseas growth program continued on schedule. And a strategic timetable was developed for additional investments in key areas outside the United States.

MONSANTO'S PROGRAM TO CONTROL POLLUTION

In 1970, Monsanto undertook the initial phase of a $55 million, three-year capital-expenditure program to combat pollution at its U.S. plants. An additional $30 million is being spent in the same period to operate pollution-control systems. And sizable amounts are being similarly invested overseas.

During the year, $12 million went into capital expenditures for pollution control, and a similar amount was spent to operate anti-pollution equipment. In 1971 and 1972, these expenditures will increase substantially to carry out Monsanto's long-term commitment to help clean the environment. Some of the company's largest pollution-abatement projects in 1970 were at plants in the St. Louis area and in Pensacola, Fla.; Luling, La.; Soda Springs, Idaho; Alvin, Tex.; and Nitro, W.Va.

RESEARCH AND DEVELOPMENT

In line with its over-all program to reduce non-manufacturing costs, Monsanto shifted the emphasis of its research and developmental work in 1970. Receiving increased attention are areas offering the greatest potential for developing unique know-how to spawn businesses based on products that have greater value added than do conventional chemicals. Activities and projects not compatible with objectives and growth directions have been shelved.

Expenditures for research, development, patent work and basic engineering were reduced to $98.1 million in 1970 from $101.5 million in 1969. The 1970 figure was 5.0 per cent of sales, down slightly from 5.2 per cent in the prior year.

Major portions of the 1970 sum were devoted to expanding Monsanto's businesses and improving Monsanto's technology. To build sound bases for future businesses, there was also substantial investment in research on the edges of existing technology.

Much of the Central Research Department's work was aimed at developing innovative ways to produce large-volume chemical intermediates essential to the manufacture of major Monsanto products. The department also worked in the field of auto-exhaust catalysts, to attack one of today's major pollution problems. The work is based on Monsanto's proven expertise in devising catalysts for plant processes. The results to date have been very encouraging.

Wholly owned Monsanto Research Corporation (MRC) again contributed significant technology to Monsanto. MRC's Dayton, Ohio, laboratory demonstrated the feasibility of using special foams of limited stability to suppress the dust level in coal mines. The laboratory also developed quick-setting silico-phosphate cements stronger than portland cements.

Significant advances were made in applying MRC's unique arc-plasma spray process to fabrication of electronic materials. And in St. Louis, contract programs supported work on new electronic materials and devices made from such materials.

The research subsidiary continued to operate Mound Laboratory in Miamisburg, Ohio, for the U.S. Atomic Energy Commission. In 1970, applications of Mound's nuclear-fueled heat sources ranged from milliwatt units for cardiac pacemakers to kilowatt units for space ships. Mound is the nation's largest supplier of purified stable isotopes of the noble gases and is the sole U.S. source of carbon-13, used extensively in biological, physical, chemical and nuclear research.

Both the Central Research Department and MRC have worked closely with wholly owned Monsanto

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Enviro-Chem Systems, Inc., in developing systems to control pollution of air, water and land. MRC also has made continued progress in the application of semi-permeable hollow fibers for controlling water pollution and desalinating sea water.

In 1970, Monsanto received 389 U.S. patents and 1088 patents in other countries.

PERSONNEL

The year's cost-cutting efforts brought about a reduction in personnel. Monsanto's worldwide employment dropped from 64,604 at the end of 1969 to 62,940 at the close of 1970. Additional cutbacks announced in December were to take effect in 1971.

Reduced needs for professional manpower prompted a scaling down of the recruiting program. But favorable relations with colleges and universities continued. And Monsanto participated broadly in financial support of major educational institutions.

There was continuing emphasis on programs to improve managerial and professional effectiveness. Compensation programs designed to attract, retain and reward outstanding talent were upgraded, with new emphasis being placed on recognition of noteworthy individual accomplishments. And the program to provide jobs and promotional opportunities to the disadvantaged was continued.

Monsanto's pension and medical-benefits programs for both salaried and hourly personnel were revised and improved at year-end. Improvements for those hourly employes represented by several unions were successfully negotiated in new five-year agreements.

Thirteen new labor agreements were successfully negotiated without strikes. At one location, an existing contract was extended. Eight of the new contracts are for three-year terms; five are for two-year terms.

Domestically and abroad, continuing accident-prevention efforts in 1970 helped reduce the frequency of disabling employe injuries. For the third year in a row, Monsanto was awarded the National Safety Council's highest citation in recognition of the company's excellent safety record.

ACCOUNTANTS' OPINION

HASKINS & SELLS
CERTIFIED PUBLIC ACCOUNTANTS

515 OLIVE STREET
SAINT LOUIS 63101

Monsanto Company:

We have examined the accompanying consolidated financial statements (pages 12 through 19) of Monsanto Company and its subsidiary companies for the years ended December 31, 1970 and 1969. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, such financial statements present fairly the financial position of Monsanto Company and its subsidiaries at December 31, 1970 and 1969 and the results of their operations and source and application of their funds for the years then ended, in conformity with generally accepted accounting principles consistently applied.

February 8, 1971

Haskins & Sells

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STATEMENT OF CONSOLIDATED FINANCIAL POSITION AT DECEMBER 31, 1970 AND 1969

ASSETS

	1970	1969
	(In Thousands)	
Current Assets:		
Cash	$ 28,882	$ 30,816
Marketable securities, at cost which approximates market	50,899	21,744
Net receivables	383,134	390,321
Inventories	392,045	373,915
	854,960	816,796
Investments and Miscellaneous Assets, at Cost or Less:		
Investment in and advances to associates	14,999	14,113
Miscellaneous investments and receivables	64,511	81,707
	79,510	95,820
Property, Plant and Equipment, at Cost	2,636,747	2,470,799
Less accumulated depreciation and depletion, etc.	1,466,802	1,399,371
Net property	1,169,945	1,071,428
Deferred Charges	40,249	28,188
	$2,144,664	$2,012,232

LIABILITIES

Current Liabilities:		
Accounts payable and accruals	$ 249,514	$ 240,298
Income taxes	18,262	39,957
Current portion of long-term debt	49,353	27,001
	317,129	307,256
Long-Term Debt — Less Current Portion Above	589,290	454,035
Other Liabilities and Deferred Credits:		
Deferred income taxes	31,194	31,599
Miscellaneous	10,369	11,519
	41,563	43,118
Minority Interests in Subsidiary Companies	2,451	3,142
Shareowners' Equity:		
Preferred stock — authorized, 10,000,000 shares without par value, issuable in series; outstanding, 2,313,910 shares in 1970 and 2,302,810 shares in 1969, stated value $2.24 each, $2.75 dividend, cumulative, convertible and redeemable; involuntary liquidation preference, $35 a share, or an aggregate of $80,986,850 in 1970 and $80,598,350 in 1969	5,183	5,158
Common stock — authorized, 50,000,000 shares, par value $2 each; issued, 33,088,362 shares in 1970 and 1969	66,177	66,177
Paid-in surplus	583,572	583,290
Retained earnings	551,595	550,056
	1,206,527	1,204,681
Less — common stock in treasury, at cost (301,741 shares)	12,296	
	1,194,231	1,204,681
	$2,144,664	$2,012,232

The above statement should be read in conjunction with pages 16 through 19 of this report.

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STATEMENT OF CONSOLIDATED INCOME

	1970	1969	Increase Decrease
		(In Thousands)	
Net Sales	$1,971,632	$1,938,838	$ 32,794
Cost of Goods Sold	1,526,451	1,425,355	101,096
Gross Profit	445,181	513,483	*68,302*
Less:			
Selling and administrative expenses	218,830	221,105	*2,275*
Research, development, patent and engineering expenses	98,124	101,479	*3,355*
	316,954	322,584	*5,630*
Operating Profit	128,227	190,899	*62,672*
Income Charges (Credits):			
Interest expense	32,705	21,738	10,967
Other — net	(17,368)	(13,678)	3,690
	15,337	8,060	7,277
Income Before Income Taxes	112,890	182,839	*69,949*
Provision for Income Taxes:			
Current	35,422	80,041	*44,619*
Deferred (credit)	(405)	(6,568)	6,163
	35,017	73,473	*38,456*
Income Before Extraordinary Items	77,873	109,366	*31,493*
Extraordinary Items:			
Charges — net, less applicable income taxes of $10,632,000	11,343		11,343
Credits — net, including applicable income tax credits of $3,859,000		6,741	*6,741*
Net Income	$ 66,530	$ 116,107	*$ 49,577*
Earnings a Common Share (Dollars):			
Primary:			
Before extraordinary items	$2.17	$3.08	*$ .91*
Including extraordinary items	1.83	3.28	*1.45*
Fully diluted:			
Before extraordinary items	2.17	3.03	*.86*
Including extraordinary items	1.83	3.21	*1.38*

The above statement should be read in conjunction with pages 16 through 19 of this report.

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STATEMENTS OF CONSOLIDATED PAID-IN SURPLUS AND RETAINED EARNINGS

	1970	1969
	(In Thousands)	
PAID-IN SURPLUS		
Balance at Beginning of Year	$583,290	$583,715
Additions:		
Excess of amounts received over the stated or par value of shares of preferred and common stock issued under stock option plans	282	407
Credit resulting from exercise of stock options of subsidiary company prior to acquisition		665
	583,572	584,787
Deduction:		
Pro-rata portion of excess of cost over par value of shares of common stock in treasury, issued to effect the acquisition, in pooling of interests transactions, of equities in subsidiary companies (see Retained Earnings below)		1,497
Balance at End of Year	$583,572	$583,290
RETAINED EARNINGS		
Balance at Beginning of Year	$550,056	$499,336
Addition — Net Income for the Year	66,530	116,107
	616,586	615,443
Deductions:		
Dividends on capital stock of parent company:		
Preferred — at the annual rate of $2.75 a share	6,363	2,180
Common — $1.80 a share	58,628	58,993
	64,991	61,173
Dividends of subsidiary companies prior to acquisition		1,941
Pro-rata portion of excess of cost over par value of shares of common stock in treasury issued to effect the acquisition, in pooling of interests transactions, of equities in subsidiary companies (see Paid-in Surplus above)		2,391
Other (credit)		(118)
	64,991	65,387
Balance at End of Year	$551,595	$550,056

The above statements should be read in conjunction with pages 16 through 19 of this report.

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CONSOLIDATED SOURCE AND APPLICATION OF FUNDS

	TOTAL	1970	1969	1968	1967	1966
Source of Funds:		*(In Thousands)*				
From operations:						
Net income	$ 530,353	$ 66,530	$116,107	$115,603	$111,704	$120,409
Non-cash charges to income:						
Depreciation, depletion, etc.	843,566	186,392	163,725	174,268	165,160	154,021
Goodwill write-off	6,075					6,075
	1,379,994	252,922	279,832	289,871	276,864	280,505
Outside financing:						
9⅛% sinking fund debentures	138,550	138,550				
6½%-8½% bank loan	3,005	3,005				
4½%-4¾% promissory notes	25,000					25,000
Subsidiary company prior to acquisition	9,000				2,250	6,750
Foreign subsidiaries	52,906	33,500	12,600	1,600		5,206
Net book value of fixed assets retired	68,067	15,902	24,365	11,758	8,696	7,346
Common and preferred shares issued under options	6,365	307	962	2,137	563	2,396
Other — net	*39,283*	*10,293*	*13,554*	*6,231*	*4,372*	*4,833*
	1,643,604	433,893	304,205	299,135	284,001	322,370
Application of Funds:						
Dividends on preferred shares	8,543	6,363	2,180			
Dividends on common shares	273,507	58,628	58,993	54,032	51,347	50,507
Dividends of subsidiaries prior to acquisition	10,890		1,941	3,146	2,953	2,850
Plant additions and replacements	1,041,648	300,811	219,872	134,993	166,415	219,557
Retirement of long-term debt	95,827	17,448	17,306	19,418	31,692	9,963
Increase in working capital[1]	226,596	23,422	66,319	29,564	49,407	57,884
Increase — *decrease* in cash and securities	*13,407*	27,221	*62,406*	57,982	*17,813*	*18,391*
	$1,643,604	$433,893	$304,205	$299,135	$284,001	$322,370

(1) Exclusive of cash and securities and current portion of long-term debt.
Italics indicate deduction.

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FINANCIAL REVIEW

Basis of Consolidation, etc.

The accompanying financial statements consolidate all domestic and foreign subsidiaries in which Monsanto Company (the "Company") directly or indirectly has more than a 50 per cent interest.

In the consolidation of foreign subsidiaries, foreign assets and liabilities have been translated to United States dollars at approximate quoted year-end rates, except that fixed assets have been translated at approximate rates prevailing on the dates they were acquired, and depreciation computed at applicable rates on the resulting dollar amounts; capital stocks have been translated at approximate quoted rates when issued. Income and expense items, other than provision for depreciation, have been translated at approximate quoted rates during the respective years. No provision has been made for income taxes on unremitted earnings of foreign subsidiaries since, in most instances, any U. S. income taxes payable on dividends which may be received from foreign subsidiaries would be substantially offset by foreign tax credits.

In August 1969, the Company issued 2,299,710 shares of its $2.75 Preferred Stock for all the outstanding common stock of Fisher Governor Company in a pooling of interests transaction. The Company also acquired equities in 1969 in three relatively small domestic companies in exchange for 86,368 shares of Monsanto treasury common stock and 71,279 newly issued shares of Monsanto common stock, all of which were accounted for as pooling of interests transactions. Additionally, through its wholly-owned subsidiary, Monsanto Textiles Limited, the Company in 1969 acquired the remaining 33⅓ per cent publicly held ordinary shares of Monsanto Chemicals Limited in exchange for 5 per cent convertible loan stock of Monsanto Textiles Limited.

The accompanying financial statements for 1969 reflect for the entire year the operations of the companies acquired in poolings of interests, including the remaining 33⅓ per cent minority interest in Monsanto Chemicals Limited.

Depreciation, Obsolescence, Depletion

Charges against 1970 income for depreciation, obsolescence and depletion totaled $186,392,000, of which $182,376,000 was depreciation and obsolescence, and $4,016,000 depletion. In 1969, such charges were $159,969,000 and $3,756,000. The increase of $22,667,000 in depreciation and obsolescence in 1970 over 1969 includes obsolescence of approximately $16,000,000 attributable to NTA facilities and discontinuance of certain product lines referred to under "Extraordinary Items — Net."

The use of the sum of the years digits method by the Company for computing depreciation on most new assets acquired since 1954 was continued in 1970. The excess of depreciation provided by this method over straight line depreciation was $17,366,000 in 1970 and $17,817,000 in 1969. For income tax purposes only, the Company in 1962 adopted the guideline lives established for machinery and equipment by the United States Treasury Department. In addition, there are other timing differences which affect taxable income and enter into the determination of pretax accounting income in different periods. Net income is not affected by such differences since an amount equivalent to their tax effect is either charged or credited, as the case may be, to income through the provision for deferred taxes.

Doubtful Accounts and Allowances

The reserves for doubtful accounts and allowances were $15,928,000 at December 31, 1970 and $15,413,000 at the end of 1969.

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Earnings a Common Share

The primary earnings a share of common stock are based on the weighted average number of common shares outstanding in each year plus the number of shares issuable upon the conversion of the convertible loan stock of Monsanto Textiles Limited and the exercise of outstanding stock options. Net income used in this computation is after deduction of dividends on the $2.75 Preferred Stock but before deduction of interest (less tax) on the convertible loan stock of Monsanto Textiles Limited.

The fully diluted earnings a share are based on the number of shares used in the determination of primary earnings, plus the number of common shares issuable upon conversion of the $2.75 Preferred Stock and upon conversion of the debentures of Monsanto International Finance Company. Net income used in this computation is before deduction of dividends on the $2.75 Preferred Stock and before deduction of interest (less tax) on the convertible loan stock of Monsanto Textiles Limited and on the debentures of Monsanto International Finance Company.

Employes' Bonus

No provision for employes' bonus was made in 1970 nor were any bonus awards made for that year. In 1969, the bonus provision charged to income was $1,669,000, and bonus awards for 1969 aggregated $1,882,000.

Equity in Associates

The equity in the unaudited 1970 net income of 50 per cent-owned companies was $1,358,000 compared with $1,970,000 in 1969. Dividends of $537,000 were received from these companies in 1970 and $508,000 in 1969. The equity in the unaudited net assets of such companies at December 31, 1970 was $20,025,000 which exceeded the carrying value of the investment therein of $14,999,000 by $5,026,000.

Equity in Foreign Subsidiaries

The Company's equity in the net income of foreign subsidiaries was $20,530,000 in 1970 and $26,750,000 in 1969. The Company's equity in the net assets of such companies at December 31, 1970 and 1969 was $261,785,000 and $232,895,000, respectively.

Extraordinary Items — Net

The extraordinary net charge of $11,343,000 in 1970 results from provisions for potential losses arising from federal government action causing the discontinuance of the use of sodium nitrilotriacetate (NTA) in detergents, and losses incurred, or anticipated to be incurred, in the discontinuance of other product lines including certain portions of the Company's agricultural chemicals and electronic test and measurements businesses. The charge is net of credits of $1,093,000 from income tax benefits relating to loss carry forwards of certain foreign subsidiaries, and credits from other items aggregating $594,000. The extraordinary net credits of $6,741,000 in 1969 resulted from the sales of the Company's domestic low density polyethylene resin business and the bulk of the petroleum additives business of the Company and an English subsidiary, aggregating $4,732,000; from income tax benefits of $1,148,000 from loss carry forwards of certain foreign subsidiary companies; and from other items aggregating $861,000.

Income Taxes

The Company's federal income tax returns have been examined and closed for all years through 1964. Examination by the Internal Revenue Service of the returns for the years 1965 and 1966 has been largely completed, and the returns for the years 1967 and 1968 are presently under examination. It is believed that adequate provision has been made in the accounts for any additional taxes that may be assessed.

The Revenue Act of 1964 provided for a credit against federal income taxes equal to approximately 7 per cent of expenditures for machinery and equipment purchased and placed in service during the year. The Company has consistently followed the practice of reducing its provisions for current income taxes by the amount of its investment credits which aggregated $9,810,000 in 1970 and $6,765,000 in 1969. The amount for 1970 is stated before a reduction of $1,466,000, representing a recapture of the credit applicable to those facilities referred to under "Extraordinary Items — Net." The investment credit was terminated as of April 18, 1969 by the Tax Reform Act of 1969. Such termination, however, did not materially reduce the amount of credits available for the years 1970 and 1969, because of transitional rules. The credit for 1971, however, is expected to be nominal.

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The consolidated effective income tax rate for 1970 was considerably lower than in 1969, caused primarily by increased investment tax credits and by a lower federal surtax rate.

Inventory Valuation

Inventories are stated at the lower of cost or market, determined generally on the first-in, first-out basis. Annual rate of turnover was 4.0 in 1970 and 1969.

Leases

The Company and its subsidiaries have a number of lease agreements covering the use of transportation and other equipment, certain land and buildings, and retail outlets. The approximate average annual rentals payable for leases having a remaining life of three years or more are summarized as follows:

Leases Expiring in:	Annual Rentals Payable
1973-1977	$4,166,000
1978-1982	1,145,000
1983-1987	1,631,000
1988-1992	1,479,000
1993-1997	1,322,000
	$9,743,000

Legal Proceedings

The Company and its subsidiaries are defendants in a number of lawsuits and patent infringement actions. While the results of litigation cannot be predicted, management, based upon advice of Company counsel, believes that the final outcome of such litigation will not materially adversely affect the financial position or operations of Monsanto and its consolidated subsidiaries.

Liabilities — Contingent and Commitments

The Company and its subsidiaries were contingently liable as guarantors of bank loans and for customers' receivables discounted aggregating approximately $15,500,000 at December 31, 1970 and $12,500,000 at the end of 1969.

There were commitments in connection with uncompleted additions to property aggregating approximately $64,438,000 at December 31, 1970 and $111,554,000 at the end of 1969.

Long-Term Debt

The long-term debt of the Company and its subsidiaries at December 31, 1970 and 1969, exclusive of current maturities, was as follows:

	1970	1969
	(In Thousands)	
Parent Company:		
4¼% promissory notes due 1971/1975(a)	$ 65,000	$ 85,000
2.65% debentures due 1971	—	16,000
3⅜% sinking fund debentures due 1972	6,500	7,000
3⅜% promissory notes due 1972	4,112	9,912
Promissory notes due 1975-1976(a)	10,000	—
6½% — 8½% bank loan due 1975/1985	3,005	—
4¼% — 6% bank loan due 1976	4,632	5,724
4½% notes due 1976	2,520	2,720
4¾% promissory notes due 1993	100,000	100,000
9⅛% sinking fund debentures due 2000(b)	138,550	—
3¾% income debentures due 2002	91,000	91,000
4¼% income debentures due 2008	50,000	50,000
Monsanto International Finance Company:		
4½% guaranteed sinking fund debentures due 1985(c)	25,000	25,000
Monsanto International N.V. (Netherlands Antilles subsidiary):		
8¾% guaranteed sinking fund debentures due 1985	20,000	—
Monsanto Textiles Limited (English subsidiary):		
Guaranteed bank loans (1% over bank rate) due 1971/1974	15,360	11,970
5% guaranteed loan stock due 1982/1986(d)	25,920	25,920
5% guaranteed loan stock due 1992/1997	3,600	3,600
6¼% guaranteed loan stock due 1992/1997	3,600	3,600
Monsanto Chemicals Limited (English subsidiary):		
6% debentures due 1977/1982	5,383	5,601
5% debentures due 1982	6,499	6,710
Monsanto (Suisse) S.A. (Swiss subsidiary):		
6¾% guaranteed sinking fund debentures due 1985	6,900	—
Monsanto Cie S.A. (a Luxembourg subsidiary):		
4¾% bank loans due 1971	—	2,004
Monsanto Mexicana S.A.:		
10.5% bank loan due 1971/1973	640	960
Other subsidiaries	1,069	1,314
Total	$589,290	$454,035

Notes:

(a) The Credit Agreement covering the 4¾% promissory notes was amended on July 15, 1969 to provide that, at the option of the Company, an aggregate of up to $55,000,000 of the notes due in quarterly installments beginning May 15, 1970 and ending November 15, 1972 may be repaid in equal quarterly installments beginning February 15, 1975 and ending November 15, 1976. If this option is exercised, the interest rate on that portion of the loan will be at a rate related to the prime rate. The Company exercised this option with respect to the two $5,000,000 quarterly installments which became payable on August 15 and November 15, 1970.

(b) An additional $11,450,000 of 9⅛% sinking fund debentures were sold under delayed delivery contracts providing for the payment for and delivery of such debentures on February 1, 1971.

(c) The 4½% sinking fund debentures due 1985 of Monsanto International Finance Company, which are fully guaranteed by Monsanto Company, are currently convertible into Monsanto common stock at $89 a share, subject to further adjustment under certain conditions.

(d) The 5% loan stock due 1982/1986 of Monsanto Textiles Limited, which is fully guaranteed by Monsanto Company, is convertible into Monsanto common stock beginning in 1972 at the initial conversion price of $55 a share, subject to adjustment under certain conditions.

Pension Plans

The Company and its subsidiaries have several pension plans covering substantially all of their employes, including certain employes in foreign countries. The total provision for pension costs for the years 1970 and 1969 was approximately $31,845,000 and $30,068,000, respectively. The provisions include, as to certain of the plans, amortiza-

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tion of unfunded actuarial liability generally over a period of 30 years. It is the policy to fund pension cost accrued. The actuarially computed value of vested benefits for the plans of the parent company and certain domestic subsidiaries as of December 31, 1970, when considered in the aggregate, was approximately equal to the related pension funds.

Preferred Stock

The $2.75 Preferred Stock is convertible at any time into Monsanto common stock at the initial rate of 1.12 shares of common stock for each share of preferred stock, subject to adjustment in certain events under antidilution provisions. The $2.75 Preferred Stock may be redeemed at the Company's option at any time on or after August 12, 1974 at $73 a share, which amount is also the voluntary liquidation preference.

Repairs

Repairs and maintenance charges included in operating expenses were $127,628,000 in 1970 and $121,971,000 in 1969.

Shares Reserved

At December 31, 1970, there were 16,900 shares of $2.75 Preferred Stock reserved for stock options, and 4,589,175 shares of common stock were reserved for the following purposes:

	Shares
Conversion of $2.75 Preferred Stock	2,591,579
Stock option plans	1,245,426
Conversion of convertible loan stock of Monsanto Textiles Limited	471,272
Conversion of debentures of Monsanto International Finance Company	280,898
Total	4,589,175

Stock Options

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

	1969 Plan	1964 Plan	1960 Plan
Outstanding 1/1/70	757,350	232,081	134,750
Unoptioned 1/1/70	192,650	—	—
Optioned during year	44,800	—	—
Exercised during year	—	—	—
Expired during year	—	14,366	55,493
Terminated during year	21,100	17,052	3,422
Outstanding 12/31/70	781,050	200,663	75,835
Unoptioned 12/31/70	168,950	—	—

Under the above three key plans, 904 options were outstanding at prices, after adjustment for stock dividends, ranging from $31.25 to $76.14 a share, or a weighted average of $47.23 a share.

The status of the authorized shares of $2.75 Preferred Stock for the stock option plans for employes of the former Fisher Governor Company and the changes occurring during the year were:

Outstanding 1/1/70	28,700
Exercised during year	11,100
Terminated during year	700
Outstanding 12/31/70	16,900

Under these plans, 55 options were outstanding, at prices ranging from $28.88 to $46.50 a share, or a weighted average of $42.29 a share.

Treasury Shares

At December 31, 1969, the Company owned 153,132 shares of its common stock which were restricted as to use for specific purposes, and carried in Miscellaneous Investments at a cost of $7,163,000. In February 1970, the Board of Directors removed the restrictions on the use of these shares, and authorized that they be available for general corporate purposes. Accordingly, these shares, plus subsequent shares purchased and those shares added through cancellations of bonus awards and terminated employes' stock purchase contracts, are shown as treasury shares. In addition, there were 253,325 shares held for specific purposes and carried in Miscellaneous Investments in the accompanying statement of financial position at December 31, 1970.

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HISTORICAL STATEMENT OF

(In millions)

ASSETS

	1970	1969	1968	1967	1966	10 YEARS AGO 1960	25 YEARS AGO 1945
Current Assets:							
Cash	$ 28.9	$ 30.8	$ 26.1	$ 25.7	$ 28.9	$ 32.8	$18.8
Marketable securities	50.9	21.8	88.9	31.3	45.9	75.1	2.9
Net receivables	383.1	390.3	347.8	324.5	308.2	124.4	11.9
Inventories	392.1	373.9	336.8	313.4	300.9	153.5	16.5
	855.0	816.8	799.6	694.9	683.9	385.8	50.1
Investments, etc.	79.5	95.8	80.0	78.9	86.9	75.4	2.3
Property:							
Land	30.5	30.3	35.8	34.7	33.5	19.2	2.7
Buildings	397.2	381.6	368.9	364.0	338.2	181.0	15.7
Machinery and equipment	2,083.5	1,933.4	1,812.7	1,773.3	1,677.3	795.5	55.6
Phosphate deposits	12.1	11.8	11.6	11.4	10.6	8.1	1.2
Producing oil and gas properties	104.7	103.8	107.2	102.4	100.0	79.5	—
Undeveloped oil and gas leaseholds	8.7	9.9	8.4	7.3	7.4	9.0	—
Accumulated depreciation, etc.	*1,419.7*	*1,355.1*	*1,253.1*	*1,153.3*	*1,022.0*	*449.4*	*42.5*
Accumulated depletion	*47.1*	*44.3*	*45.0*	*42.2*	*40.0*	*27.2*	*.4*
Net property	1,169.9	1,071.4	1,046.5	1,097.6	1,105.0	615.7	32.3
Deferred Charges	40.3	28.2	30.6	36.1	30.1	12.7	.4
	$2,144.7	$2,012.2	$1,956.7	$1,907.5	$1,905.9	$1,089.6	$85.1

(1) After deduction of tax notes of $12.8 million.
Italics indicate deduction.

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AND SUBSIDIARIES

CONSOLIDATED FINANCIAL POSITION

(In millions)

LIABILITIES

	1970	1969	1968	1967	1966	10 YEARS AGO 1960	25 YEARS AGO 1945
Current Liabilities:							
Accounts payable and accruals.....	$ 249.5	$ 240.3	$ 217.7	$ 197.6	$ 205.7	$ 86.4	$10.2
Income taxes.....	18.2	40.0	49.3	52.2	64.8	46.8	(1) .8
Current portion of long-term debt....	49.4	27.0	12.9	11.2	17.2	9.9	—
	317.1	307.3	279.9	261.0	287.7	143.1	11.0
Long-Term Debt.....	589.3	454.0	472.8	492.4	520.3	289.2	—
Other Liabilities and Deferred Credits:							
Deferred income taxes.....	31.2	31.6	38.2	39.7	42.7	31.1	—
Miscellaneous.....	10.4	11.5	8.7	9.4	7.2	3.1	5.0
	41.6	43.1	46.9	49.1	49.9	34.2	5.0
Minority Interests in Subsidiaries.....	2.5	3.1	2.7	2.0	3.6	23.1	2.8
Shareowners' Equity:							
Preferred stock.....	5.2	5.2	5.1	5.1	5.0	—	21.0
Common stock.....	66.2	66.2	66.2	65.9	64.6	54.4	12.7
Paid-in surplus.....	583.5	583.3	583.7	585.2	555.0	286.7	12.9
Retained earnings.....	551.6	550.0	499.4	446.8	419.8	258.9	19.7
Treasury stock.....	(12.3)	—	—	—	—	—	—
	1,194.2	1,204.7	1,154.4	1,103.0	1,044.4	600.0	66.3
	$2,144.7	$2,012.2	$1,956.7	$1,907.5	$1,905.9	$1,089.6	$85.1

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HISTORICAL STATEMENT OF CONSOLIDATED INCOME

(In millions except per share earnings)

	1970	1969	1968	1967	1966	10 YEARS AGO 1960	25 YEARS AGO 1945
Net Sales	$1,971.6	$1,938.8	$1,865.1	$1,705.3	$1,679.0	$890.1	$104.3
Cost of Goods Sold	1,526.4	1,425.3	1,367.9	1,255.8	1,219.2	632.7	77.0
Gross Profit	445.2	513.5	497.2	449.5	459.8	257.4	27.3
Less:							
Selling and administrative	218.9	221.1	197.2	179.6	172.8	79.9	8.1
Research, development, patent and engineering	98.1	101.5	86.3	84.2	76.0	46.4	2.6
	317.0	322.6	283.5	263.8	248.8	126.3	10.7
Operating Profit	128.2	190.9	213.7	185.7	211.0	131.1	16.6
Income Charges — Net	15.3	8.1	10.2	8.9	8.4	4.5	(1.2)
Income Before Income Taxes	112.9	182.8	203.5	176.8	202.6	126.6	17.8
Provision for Income Taxes	35.0	73.4	87.9	71.5	82.2	58.8	12.2
Income Before Extraordinary Items	77.9	109.4	115.6	105.3	120.4	67.8	5.6
Extraordinary Charges (Credits) — Net	11.3	(6.7)	—	(6.4)	—	—	—
Net Income	$ 66.6	$ 116.1	$ 115.6	$ 111.7	$ 120.4	$ 67.8	$ 5.6
Earnings a Common Share[1]:							
Primary:							
Before extraordinary items	$2.17	$3.08	$3.26	$2.96	$3.48	$2.49	$.41
Including extraordinary items	1.83	3.28	3.26	3.15	3.48	2.49	.41
Fully diluted:							
Before extraordinary items	2.17	3.03	3.20	2.92	3.40	2.49	.41
Including extraordinary items	1.83	3.21	3.20	3.10	3.40	2.49	.41

(1) Adjusted for splits.

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OTHER DATA

(In millions except where italicized)

	1970	1969	1968	1967	1966	10 YEARS AGO 1960	25 YEARS AGO 1945
Plant additions and replacements	$ 300.8	$ 219.9	$ 135.0	$ 166.4	$ 219.6	$121.3	$ 6.2
Depreciation, depletion, etc.	$ 186.4	$ 163.7	$ 174.3	$ 165.2	$ 154.0	$ 79.0	$ 7.8
Dividends a common share[1]	*$1.80*	*$1.80*	*$1.65*	*$1.60*	*$1.60*	*$1.00*	*$.25*
Book value a common share[1]	*$36.27*	*$36.25*	*$34.74*	*$33.31*	*$32.17*	*$22.06*	*$3.97*
Common shares[1]	33.1	33.1	33.0	33.0	32.3	27.2	11.4
Preferred shares	2.3	2.3	2.3	2.3	2.3	—	.2
Working capital	$ 537.9	$ 509.5	$ 519.7	$ 433.9	$ 396.2	$242.7	$39.2
Long-term debt (less current maturities)	$ 589.3	$ 454.0	$ 472.8	$ 492.4	$ 520.3	$289.2	—
Shareowners' equity	$1,194.2	$1,204.7	$1,154.4	$1,103.0	$1,044.4	$600.0	$66.3
Employes[2]	*62,940*	*64,604*	*62,815*	*62,073*	*60,697*	*36,266*	*12,658*
Shareowners:							
Common	*121,399*	*118,156*	*111,538*	*111,363*	*95,938*	*83,809*	*10,822*
Preferred	*3,941*	*3,621*	—	—	—	—	*3,257*

(1) Adjusted for splits.
(2) Includes Monsanto employes in plants operated for U. S. Government (1,853 in 1970).

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MONSANTO'S WORLDWIDE INTERESTS

Included among Monsanto's member companies around the world are those appearing in the following list. Per cent ownerships are noted parenthetically. In addition, there are a number of smaller member companies, many of which have been established for marketing or investment purposes.

NORTH AMERICA

UNITED STATES: Fisher Controls Company, Inc. (100%) manufactures and markets automatic control equipment. Subsidiaries in Canada and Mexico, and an associated company in Japan.

George Lueders & Co., Inc. (100%) manufactures essential oils, flavors and fragrances.

Monsanto Enviro-Chem Systems, Inc. (100%) was formed to develop and market engineered chemical and pollution-abatement systems. Works in conjunction with **Leonard Construction Company** (100%), a design and construction firm, and **Monsanto Biodize Systems, Inc.** (100%), which develops and markets plants for removing water pollutants from industrial and municipal wastes.

Monsanto International Finance Company (100%) was formed to obtain 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 for the Atomic Energy Commission.

CANADA: Monsanto Canada Ltd. (100%) manufactures chemicals and plastics raw materials.

Plax Canada Ltd. (50%) produces plastic blownware.

LATIN AMERICA

ARGENTINA: Monsanto Argentina S.A.I.C. (100%) manufactures plastics raw materials.

COLOMBIA: Fabrica de Hilazas Vanylon S.A. (49%) produces nylon 6 yarns.

MEXICO: Monsanto Mexicana S.A. (100%) produces chemicals and plastics raw materials.

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

PANAMA: Chemstrand Overseas S.A. (100%) and **Monsanto Overseas S.A.** (100%) hold certain investments outside the United States.

VENEZUELA: Monsanto Venezuela, Inc. (100%) produces petroleum.

EUROPE AND MIDDLE EAST

BELGIUM: Monsanto Europe S.A. (100%) manufactures plastics and chemicals in Belgium and conducts marketing activities throughout Europe.

FRANCE: Societe Monsanto (100%) makes plastics raw materials and plastic containers.

ISRAEL: Israel Chemical Fibres Ltd. (60%) manufactures Acrilan acrylic fiber.

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

SPAIN: Aiscondel S.A. (50%) makes consumer products of plastics. A subsidiary produces chemicals and plastics raw materials.

UNITED KINGDOM: Lansil Ltd. (100%) produces acetate flake and yarn, textile fabrics and apparel.

Monsanto Chemicals Ltd. (100%) manufactures chemicals, electronics materials, plastics and plastics raw materials. Major subsidiaries produce plastics for construction and home-decoration markets.

Monsanto Textiles Ltd. (100%) manufactures Acrilan acrylic fiber and nylon 6,6 yarns.

WEST GERMANY: Monsanto (Deutschland) GmbH (100%) markets chemicals and plastics.

ASIA AND AUSTRALIA

AUSTRALIA: Australian Petrochemicals Ltd. (55%) manufactures raw material for plastics and rubber.

Monsanto Australia Ltd. (100%) makes chemicals and plastics raw materials. Associate companies produce fluorocarbons and synthetic latex products.

HONG KONG: Monsanto Far East Ltd. (100%) supervises marketing of chemicals and plastics in the Asia-Pacific area outside Japan and Australia.

JAPAN: Mitsubishi Monsanto Chemical Company (50%) manufactures chemicals, plastics and plastics raw materials.

COMMON SHAREOWNERS OF RECORD

	1970		1969		1968		1967		1966	
	Number of Shareowners	Number of Shares	Number of Shareowners	Number of Shares	Number of Shareowners	Number of Shares	Number of Shareowners	Number of Shares	Number of Shareowners	Number of Shares
Men	40,783	4,747,159	39,918	4,799,621	36,605	4,834,777	37,094	5,004,713	32,301	4,583,590
Women	34,243	3,764,150	34,062	3,919,326	32,963	3,897,063	32,811	3,961,870	29,983	3,837,791
Joint Accounts	28,593	1,559,345	26,502	1,441,638	24,929	1,326,692	24,541	1,282,708	19,030	952,801
Charitable Institutions	419	134,973	425	175,112	451	181,040	511	200,787	508	206,202
Educational Institutions	77	72,157	103	65,984	125	139,198	147	202,529	143	208,153
Estates and Trusts	13,248	1,711,766	13,064	1,725,115	12,644	1,726,361	12,363	1,771,876	10,429	1,795,397
Insurance Companies	141	538,699	166	895,333	184	1,207,856	228	1,317,139	267	1,279,902
Brokers and Nominees	2,080	18,881,890	2,138	18,818,762	2,041	18,649,909	1,999	18,186,175	1,900	18,429,055
All Others	1,815	1,678,223	1,778	1,247,471	1,596	1,046,024	1,669	1,034,208	1,377	1,015,932
Total	121,399	33,088,362	118,156	33,088,362	111,538	33,008,920	111,363	32,962,005	95,938	32,308,823

In 1970, 67 per cent of Monsanto shareowners held fewer than 100 shares.

Regional Vice Presidents

Western Region	Eastern Region	North Central Region	Governmental Affairs
Roy L. Brandenburger	Richard T. Clark	Daniel J. Murphy	Sam Pickard

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DIRECTORS AND OFFICERS

BOARD OF DIRECTORS

CHARLES H. SOMMER, *Chairman* ..... St. Louis
DILLON ANDERSON ..... Houston
H. HAROLD BIBLE ..... St. Louis
EDWARD J. BOCK ..... St. Louis
DAVID R. CALHOUN ..... St. Louis
FREDRICK M. EATON ..... New York
JOHN R. ECK ..... St. Louis
J. W. FISHER ..... Marshalltown, Iowa
JOHN L. GILLIS ..... St. Louis
JAMES J. KERLEY ..... St. Louis
JEAN MAYER ..... Boston
EDWARD A. O'NEAL ..... St. Louis
JAMES S. ROCKEFELLER ..... New York
MONTE C. THRODAHL ..... St. Louis
EARLE G. WHEELER ..... Martinsburg, W. Va.

CORPORATE MANAGEMENT COMMITTEE

EDWARD J. BOCK, *Chairman*

H. HAROLD BIBLE — JAMES J. KERLEY
JOHN R. ECK — EDWIN J. PUTZELL JR.
JOHN L. GILLIS — CHARLES H. SOMMER
MONTE C. THRODAHL

EXECUTIVE COMMITTEE

EDWARD J. BOCK, *Chairman*

JOHN L. GILLIS — CHARLES H. SOMMER
MONTE C. THRODAHL

Transfer Agents

MORGAN GUARANTY TRUST COMPANY OF NEW YORK
THE BOATMEN'S NATIONAL BANK OF ST. LOUIS

Registrars

THE CHASE MANHATTAN BANK (NATIONAL ASSOCIATION)
ST. LOUIS UNION TRUST COMPANY

Printed in U.S.A.

OFFICERS

EDWARD J. BOCK ..... *President and Chief Executive Officer*
CHARLES H. SOMMER ..... *Chairman of the Board*
JOHN L. GILLIS ..... *Senior Vice President*
H. HAROLD BIBLE ..... *Vice President*
JOHN R. ECK ..... *Vice President*
JAMES J. KERLEY ..... *Vice President*
MONTE C. THRODAHL ..... *Vice President*

JAMES D. MAHONEY ..... *Group Vice President*
TOM K. SMITH JR. ..... *Group Vice President*

WILLIAM H. BROMLEY ..... *Vice President*
ANTHONY J. A. BRYAN ..... *Vice President*
JAMES E. CRAWFORD JR. ..... *Vice President*
PATRICK J. DOWD ..... *Vice President*
LOUIS FERNANDEZ ..... *Vice President*
RICHARD S. GORDON ..... *Vice President*
HOWARD L. MINCKLER ..... *Vice President*
FINIS MORGAN ..... *Vice President*
EDWIN J. PUTZELL JR. ..... *Vice President*
FRANCIS E. REESE ..... *Vice President*

LEWIS F. STEINBACH ..... *Controller*
EDWIN J. PUTZELL JR. ..... *Secretary*
PATRICK J. DOWD ..... *Treasurer*

JACK W. MUELLER ..... *Assistant Controller*
WALTER C. THILKING ..... *Assistant Controller*
RODNEY HARRIS JR. ..... *Assistant Secretary*
C. BRENT HOLLERAN ..... *Assistant Secretary*
FRANKLIN C. REHFELD ..... *Assistant Secretary*
NORVELL G. JONES ..... *Assistant Treasurer*
J. ROBERT MATLOCK ..... *Assistant Treasurer*
WALTER J. NABER JR. ..... *Assistant Treasurer*
THOMAS M. RASMUSSEN ..... *Assistant Treasurer*

Feb. 23, 1971

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