

Annual Report
1981

Monsanto

0674486



Monsanto at a Glance

Monsanto Company, headquartered in St. Louis, is a major multinational chemical company. Founded in 1901, it now has investments in 173 manufacturing plants, laboratories and technical centers in 21 nations. It employs 57,000 people worldwide.

The Company sells more than 1,000 products in 100 countries. These include chemical, agricultural, plastic, man-made fiber and electronics products. Monsanto sells little of its production to end users, but supplies materials to other industries which manufacture the end product.

Monsanto's operating organization includes five operating companies—Agricultural Products, Chemical Intermediates, Industrial Chemicals, Plastics & Resins and Textiles—plus Fisher Controls International, Inc., a majority-owned subsidiary. Monsanto International coordinates the growing operations outside the United States in conjunction with the operating companies.

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Cover

Flags of 16 nations around the world where Monsanto Company or its subsidiaries have major manufacturing investments.

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Operational Highlights

(Dollars in millions, except per share)

	1981	1980	1979
Net Sales	\$6,947.7	\$6,573.6	\$6,192.6
Net Income	\$ 445.1	\$ 148.8	\$ 331.0
Per Common Share:			
Net Income	\$ 11.50	\$ 4.10	\$ 9.11
Dividends	3.75	3.55	3.35
Shareowners' Equity	84.37	77.63	77.20
Property, Plant and Equipment			
Additions	\$ 667.9	\$ 780.5	\$ 565.9
Depreciation and Obsolescence	\$ 387.4	\$ 546.9	\$ 412.7
Research and Development	\$ 220.6	\$ 204.4	\$ 161.3
Year End:			
Shareowners —			
Common Shares	79,029	82,441	85,608
Employees	57,391	61,836	63,926

Net Sales

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1979	6,192.6

Net Income

1981	\$445.1
1980	148.8
1979	331.0

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Italics throughout the Annual Report identify Monsanto's trademarks.

Left to right:
Dr. Louis Fernandez,
Vice Chairman;
John W. Hanley,
Chairman
of the Board and
Chief Executive
Officer;
Richard J. Mahoney,
President
and Chief
Operating Officer.



To Our Shareowners:

Despite a persistent and pervasive recession in the United States and many other sections of the global economy, Monsanto made significant strides in 1981 in developing and supplying products designed to meet basic human needs around the world.

During our 80th anniversary year, as anticipated, we raised earnings from the depressed level of the preceding 12 months to a record high. We strengthened our financial position through careful management of our assets, an important stock offering, and divestiture of a major joint venture.

We reinforced our management team with the promotion of several younger executives to key positions. We progressed significantly along strategic directions designed to produce faster growth and higher profitability in the 1980s and beyond.

Financial Strengths

Sales for 1981 were \$6.9 billion. Our net income rose to \$445 million, including the gain from the sale of Monsanto's portion of a joint venture with Conoco. Earnings per common share were \$11.60.

We faced a challenging economy for most of 1981. Even though some of our key end-use markets were operating at levels below a year ago, our earnings from operations remained at reasonable levels. We were able to keep tight controls on our costs and to obtain more favorable prices on raw materials.

Monsanto's financial strength improved considerably, a result our management deliberately set out to accomplish, and one we have largely achieved. Several major factors contributed to the improvement.

- Over the past several years, Monsanto has withdrawn from unprofitable businesses which drained financial and management resources and which did not fit the corporate strategic thrust. That program is substantially completed, and we are now seeing the financial benefits of these actions.

- During the year, Monsanto sought additional financing through the sale of three million shares of common stock—the third largest primary stock offering in U.S. history. The \$205 million proceeds from the sale were used to reduce the Corporation's short and long-term debt.

- Another \$355 million came from the sale to Conoco of our interest in a joint venture at our Chocolate Bayou, Texas, facility. DuPont acquired Conoco during the year, and it was not practical or acceptable to continue to operate this petrochemical business with a partner who was also a major competitor. As a part of the broader negotiation involving DuPont, Conoco and the Federal government, we sought to be relieved of our equity position in the joint venture. In the longer run this resolution will be in the best interests of all parties.

- We also carefully reviewed the timing of our aggressive capital spending program in view of continuing slow economic conditions. As a result, our spending was trimmed somewhat from earlier expectations, but not in any way that would detract from achieving our long-term strategic goals. This reduction, plus our continuing focus on asset management, further added to our financial strength.

- Finally, we have been able to improve our earnings significantly from their depressed levels of 1980.

Monsanto ended 1981 with a financial position which will provide a firm base for our growth initiatives well into the decade.

Strategic Directions

Careful study of where Monsanto is today and where we should go in the future resulted in the development of clear directions for the 1980s.

Our intention, which has largely been met, is to build a company with strong finances, solid businesses and sound management, backed by excellent technology. That is the foundation upon which our corporate strategy is based.

The chemical industry is changing and we intend to keep ahead of the changes. Many of our traditional markets are maturing. There will be meaningful improvements in products and processes, but we don't see in these businesses alone the growth potential we want. A realistic view of the future shows that we must continually push into new areas.

Monsanto's industrial chemicals, representing products from across the company, have historical positions of sustained strength. Our strategy for these businesses will be to continue to

invest prudently and manage them for balanced income growth around the world.

Crop chemicals are currently Monsanto's leading businesses worldwide. We are taking advantage of our position in existing herbicides and will bring to market a succession of new agricultural chemicals to bolster this record.

Fisher Controls International, Inc., a two-thirds-owned Monsanto subsidiary, manufactures control valves and instrumentation for process industries. For the period 1980 through 1985, the company expects income to grow at a rate of 12 to 18 percent a year.

Monsanto's Oil & Gas Division has increased reserves of hydrocarbon liquids and gas steadily in recent years. We intend to run this division for profit, and are investigating ways to spread the cost of new exploration through joint venture arrangements.

The worldwide economic environment for styrenics and our integrated acrylonitrile operations, including the products that flow from them, is a troubled one. Our objective is to keep these businesses earning their way until demand increases as anticipated. Actions we have initiated are beginning to show improved results.

Monsanto recognizes that much of the future growth in chemical industry markets will occur outside of the United States. One-third of our income already comes from international sales. We plan aggressively to support such growth and have authority from our Board of Directors to pursue an active investment program offshore. Given attractive investment opportunities, we are committed to investing \$1 billion abroad during the 1980s.

Focused Technology

An important part of Monsanto's strategic direction is the use of innovative science to develop new products which meet basic human needs. We intend to keep strong technology at the forefront of our business strategy.

Four areas have been selected for future R&D emphasis including plant growth regulators, animal nutrition, electronics materials and high-technology separations. All of these have significant worldwide potential and are areas of strength for Monsanto. Another area—the exciting field of biotechnology—

should also make major contributions to our long-term growth. A special section of this report highlights Monsanto's significant new research initiatives.

We are also aware of the need for technology to continually renew our existing businesses. Here we intend to maintain our leadership positions and develop exciting new uses for existing products.

Our strategy recognizes we cannot pursue an unlimited number of scientific avenues, but must carefully select directions based on our technical strengths and market needs. We realize that it takes a consistent effort over many years to achieve viable commercial products, and our R&D expenditures are expected to grow in real dollar terms for the foreseeable future.

Management Capability

To manage the new directions for stronger growth and higher profitability in the '80s, Monsanto must depend on aggressive leadership and dedicated, able employees.

Organizational moves in recent years have helped us to develop unusual depth and breadth in management. During 1981, these strengths were recognized in the realignment of responsibilities for managing the Corporation and our operating companies. Richard J. Mahoney was elected by the Board of Directors as Chief Operating Officer in addition to his Presidency. Earle H. Harbison, Jr., and Nicholas L. Reding were elected Executive Vice Presidents. Together with Executive Vice President F. J. Fitzgerald, they were assigned broader responsibilities for direction of Monsanto's operating companies and international operations.

Additionally, we created a new class of "advisory directors" drawn from a group of executives of the corporation who can bring to the deliberations of the Board, judgment, experience and expertise.

To understand the roles of outside director, inside director and advisory director, it may be well to describe the evolution of the Monsanto Board over the past eight years. In 1974 the Board of Directors carefully studied its responsibilities and its operations. It recognized that large corporations have an increasing obligation to be sensitive to the environment in which they operate and responsive to the interests of such

groups as shareholders, employees, customers, suppliers and the communities in which corporate facilities are located. Governing a corporation in a manner sensitive to these diverse objectives and interests requires that the Board of Directors must have at all times the capacity for independent and objective judgment.

This philosophy has guided the Board as it periodically reviews its charter to be certain that its objectives, structure and operations reflect its contemporary responsibilities. For example, it has been decided that over time the Board should steadily reduce the number of inside or employee directors, as retirements permit, so that ultimately they constitute not more than one-third of the Board. This development has been substantially completed.

Out of such a review grew a recognition of the desirability of having a Board-level Corporate Social Responsibility Committee which was established in 1981 under the chairmanship of Margaret Bush Wilson to oversee our extensive in-house efforts in this area. Out of such a review, too, came the recognition that while it is important to maintain the independence of the Board—assured by the outside members—it is also important for the Board to have access to the best of management's knowledge and expertise. It is for this reason that the advisory memberships were created.

Elected as Advisory Directors were Messrs. Fitzgerald, Harbison and Reding, Executive Vice Presidents; Robert L. Berra and Howard A. Schneidorman, Senior Vice Presidents; and Francis A. Stroble, Vice President and Chief Financial Officer.

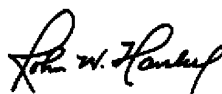
It is expected that these senior officers will not only play a role in the deliberations of the Board as a whole, but where appropriate will participate in the activities of our Board Committees.

The Board of Directors was further strengthened during 1981 with the election of Admiral Stansfield Turner. He has brought to our Board the wisdom gained from a distinguished career in public service.

Two former members of the Board retired from Monsanto—James J. Kerley and C. Preston Cunningham. Both contributed in substantial measure to the Board's deliberations and we are grateful for their dedicated service.

While we are depending on strengthened leadership in the years ahead, we are also counting on our most important asset—our people throughout the Corporation—to help implement our business strategies. Their dedication, their spirit and their creativity are the foundation stones upon which much of Monsanto's future must rest. We are firmly convinced that with this talent, it must be a very bright future indeed.

So despite the fact that 1982 has begun with corporate sales and profits under heavy pressure and the prospect of an unusually challenging year ahead, we are confident Monsanto's strategy of aggressively building on its strengths will ensure success throughout the decade of the 1980s and beyond.



John W. Hanley
Chairman of the Board and
Chief Executive Officer

March 8, 1982

Six senior Monsanto executives, who have been appointed to the newly-designated position of Advisory Directors.
Left to right:
Francis J. Fitzgerald,
Robert L. Berra,
Earle H. Harbison, Jr.,
Francis A. Stroble,
Dr. Howard A. Schneidorman,
Nicholas L. Reding.

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Technology Meeting Human Needs

Building on a skill base developed over the past 80 years, Monsanto scientists and engineers have accelerated their search for new technologies, new kinds of raw materials and new processes. To this end, significantly increased resources have been committed to four growth programs which will complement and expand Monsanto's existing research strengths and enlarge opportunities for new products which meet human needs around the world. They are: plant growth regulators, animal nutrition, high-technology separations and electronics materials.

The Company has also increased its efforts in biotechnology which has emerged as a valuable complement to Monsanto's chemical technology. Biotechnology offers novel ways for Monsanto to manipulate molecules. And, manipulating molecules has been and continues to be the basis of Monsanto's chemical businesses.

At the same time as Monsanto has increased its research and development efforts in these new areas, the Company's 5,000-member technical community has vigorously moved forward the technology which undergirds Monsanto's traditional products and uncovered attractive opportunities for growth in herbicides, plastics, resin products, synthetic fibers, industrial chemicals and building-block chemicals. Successful research projects in these areas led to a number of promising new products during 1981 including *Santoprene* thermoplastic elastomer, *Cadon* plastic and *Bronco* herbicide, all of which were introduced in the marketplace. A major process development, the manufacture of maleic anhydride from butane, is being incorporated in a new world-scale plant due for completion in 1983 at Pensacola, Florida.

Technology is clearly the driving force for Monsanto's business today and will be in the future. Recognition of this fact underlies a steady increase in R&D spending over the past five years, from \$136 million in 1978 to \$221 million in 1981 to an anticipated \$267 million in 1982.

Agricultural laborers till the fields in Northern Mexico. Herbicides and yield enhancement technology will play a major role in helping farmers meet the rising demands of the world's population.



To encourage originality and innovation in the technical community and to enhance the impact of Monsanto scientists and engineers, significant changes were made last year in Monsanto's technical career Fellow Program. Men and women in science and engineering can now choose technology as their life work and be nominated as an Associate Fellow early in their careers. Also, the Fellow Program was expanded at its upper end to provide career prospects in technology comparable to those in general management.

To increase interaction between Monsanto scientists and engineers and their academic counterparts, the Company has expanded its post-doctoral program for those who want experience in industrial research and its sabbatical program for university professors to work at Monsanto. The Company has also enlarged its academic research grants program as another means to promote useful interactions between Monsanto scientists and the larger scientific community in areas of special interest to the Company.

All of these steps taken during 1981 reflect a deliberate decision by the Company to bring highly original science and technology to bear on problems of great social and commercial significance.

Feeding A Hungry World—Crop Production

In a world where the population is climbing at a rate of almost two percent per year, the challenge to produce more food is urgent. To meet the rising demands of the world's population, food production will have to double in the next 30 years and much of that increase must come from higher agricultural productivity.

Monsanto research into plant growth regulators is aimed at providing technology which will help feed this growing number of people from a constantly diminishing cultivated land area. The first plant growth substances were discovered 50 years ago; they were used mainly as herbicides. Today's research is directed toward finding chemicals which will make crops more productive as well as more resistant to disease and adverse weather. Monsanto R&D for plant growth regulators draws on its traditional expertise as a leader in agricultural chemicals and on a major research program in plant cell biology.

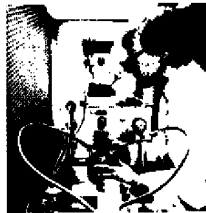
Plant scientists are continuing to identify new substances which destroy weeds. At the same time they are learning how herbicides work at the molecular level. This kind of fundamental research can hasten the discovery of new herbicides and other chemicals to enhance the yields of important crops.

Longer-range agricultural research seeks to improve yields by giving plants valuable traits such as insect and disease resistance. Basic investigations are underway to understand what goes on at the molecular level in plants—to unlock the mechanisms of how plants grow and reproduce.

Tissue culture, which involves regenerating plants from single cells, and microbiological techniques, are aspects of biotechnology that figure strongly in Monsanto agricultural product development for the future.

Other products also depend on biotechnology and the Company is committed to becoming a world leader in this field. Major exploratory probes are underway in molecular biology, genetic engineering, plant genetics, protein chemistry, monoclonal antibodies, membrane separations and biocatalysis. In connection with this commitment, Monsanto opened in October a state-of-the-art molecular biology laboratory in St. Louis. Scientists are conducting exploratory and fundamental research aimed at developing a greater understanding of plant biology and animal nutrition.

Biotechnology alone will not meet the needs of a hungry world, but it has the potential to make new products that are unobtainable by traditional techniques as well as to make existing products more efficiently and with less energy. It offers powerful new ways to manipulate molecules.



Top to Bottom:
Molecular biology, a search for new strains of plants;
Plant growth regulators research investigates altering productivity of plants;
Developing food plants immune to disease;
Dr. John Franz, winner of the first Edgar M. Querry Award. His work aided in the development of Roundup herbicide.

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Cattle, such as these Holstein-Friesians grazing peacefully in a Welsh valley, could one day make an even greater contribution to world demand for food. Animal growth hormones being developed under a collaborative agreement between Genentech, Inc., and Monsanto, could contribute significantly to greater meat and milk productivity.

Feeding a Hungry World—Animal Production

Monsanto's goal as an innovative producer of chemicals for animal nutrition is to reduce the cost of producing animal protein by making animals use feed more efficiently.

The Company continues to provide innovative technology to support existing products for animal nutrition, such as *Santoquin* antioxidant and *MHA* methionine hydroxy analog, an important amino acid supplement for animal feed. A new methionine plant, presently under construction at Chocolate Bayou, Texas, will be the world's largest and help meet growing world-wide demand.

In addition to devising and producing feed supplements to enhance animal protein production, Monsanto scientists are working to increase animal protein production with chemicals made by molecular biology techniques. These chemicals are copies of the animal's own hormones, which enhance the animal's growth. Monsanto is involved in a cooperative program with Genentech, Inc., an independent genetic engineering company, to produce growth hormones for cattle and swine. Genentech has developed micro-organisms which produce animal growth hormones. Monsanto is testing these new growth-stimulating products and is also developing processes to produce them on a commercial scale. These growth hormones should enable farmers to increase significantly milk production in dairy cows and weight gain in cattle and swine.

In addition to research aimed at improving the efficiency and profitability of both plant and animal agriculture, Monsanto research is directed at enhancing the shelf life and nutrient value of foods, once they are on their way to the consumer.

Research in 1981 continued to support Monsanto's wide range of food chemicals. In particular, significant effort was spent on broadening the market and improving the production processes for sorbic acid, a natural product, and sorbate derivatives. These are used to improve the flavor quality and lengthen the shelf life of certain foods.



Top to Bottom:
Lasso herbicide improves corn feed yields;
Synthetic methionine feed supplements
fortify and protect poultry;
Animal growth hormones may permit
improved milk and meat yields.
Pasture rotation with Roundup
herbicide helps New Zealand sheep
farmers increase production.

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Conserving Valuable Resources

The world needs reliable commercial sources of energy, and society expects industry to find new ways to conserve valuable energy. The commercial and social benefit of new energy-efficient processes can be enormous. Monsanto has focused special attention on designing new processes that conserve valuable gases such as hydrogen, which require large amounts of energy to produce. Our first commercial products in this area are *PRISM* separators, which were introduced to the world marketplace two years ago. These separators are based on a unique system of patented hollow-fiber membranes that separate hydrogen from gas waste streams in chemical plants and enable the valuable hydrogen to be reutilized.

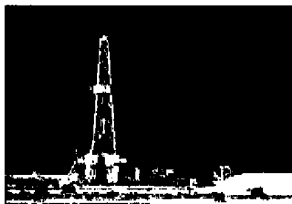
During 1981, Monsanto innovation in designing and commercializing *PRISM* separators was recognized by five international awards, including McGraw-Hill's prestigious Kirkpatrick Chemical Engineering award, a prize given every two years for the most significant achievement in chemical engineering.

Monsanto is investigating other ways in which hollow-fiber membrane technology may be useful. Among these is the energy-efficient separation of carbon dioxide for reuse in tertiary oil recovery operations.

Separation technology is also significant in biotechnology processes where fermentation is used to produce complex chemicals. End products, often very dilute, must be separated from waste materials. Monsanto researchers are investigating ways to combine separations and fiber technology to produce novel systems which can be applied to these processes.

Another approach to saving energy is to reduce the number of steps required to produce a finished product. Monsanto is introducing a new product—nylon block copolymers for reaction injection molding—which does this for the plastics industry. Initially designed for large automotive body parts, this advanced-technology system eventually should find broad use in appliance and other markets.

A new entry into the field of special resins, introduced by Monsanto's wholly-owned subsidiary, Radiation Dynamics, Inc., also saves natural resources in the production and protection of materials. Known as *Omni-Shrink*, this proprietary heat-shrinkable compound does a better job of protecting wire, cable and pipe from moisture and corrosion.



Top to Bottom:
Ed Stejskal, Jake Schaefer and
Bob McKay, who use nuclear magnetic
resonance techniques to determine
composition of materials;
Monsanto deep gas well in Wyoming;
PRISM separators save energy by
removing hydrogen from
waste gas streams;
9 nation solar plant in Spain
uses Thermal heat transfer fluid.

A variety of petrochemical-based
Monsanto products are used to
produce more economical and
fuel-efficient cars and trucks.

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Serving Information Needs of a Complex Society

As our basic needs for food, energy and shelter place more demands on the innovative abilities of industrial technology, so do the more complex aspects of modern society. In the 35 years since the invention of the transistor, many parts of the world have come to view sophisticated electronic equipment as an ordinary part of daily life. Computers, which once occupied whole rooms, now fit on a tabletop and have become the underpinning of business and technology. Microprocessors—composed of tiny silicon chips, each of which may contain tens of thousands of individual electronic devices—send messages, control industrial processes, make automatic engines more efficient, help cook meals, tell time, and provide entertainment.

Monsanto is the world's largest supplier of polished silicon wafers to the electronics industry. Since electronic circuits are built into chips about one-fourth-inch square which are cut from these silicon wafers, the flatness and quality of the surface becomes more critical as the circuitry becomes more complex.

During 1981, Monsanto's silicon wafer technology achieved new levels of quality, both in cleanliness and in absence of surface defects. A new package design introduced early in 1982 maintains this near-perfect condition of the wafers for delivery to customers.

Monsanto now produces wafers which have a variance of less than four microns (a micron is about one-fiftieth the thickness of a human hair) over the surface of a 100 millimeter (4 inch) diameter wafer. So flat are Monsanto's wafers, in fact, that they challenge the ability of the best measuring devices.

Research is underway to produce even flatter wafers, and Monsanto scientists are confident of accomplishing this—provided instrumentation to measure such flatness can keep pace.

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Earth stations in rural areas use silicon in collecting information from communications satellites circling the world.

Near-perfect flatness and wafers without contamination or defects of any kind have become more of an issue as the amount of information to be put on a silicon chip has increased. Some of today's chips hold 64,000 memory bits, amounting to 132,000 individual electronic devices.

As the electronics industry moves toward putting a half-million electronic devices on one silicon chip, Monsanto scientists are working closely with the world's leading producers of semiconductors and other electronic devices to ensure that we can provide materials which will meet their needs in the future.

Conclusion

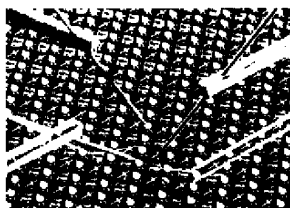
Success in each of these four growth areas and in Monsanto's main chemical businesses depends on Monsanto strengths, particularly its dedicated technical community. During 1981, a number of people were recognized, both inside and outside the Company, for outstanding technical contributions.

Four scientists were the first winners of Monsanto's two new awards. Dr. John E. Franz won the Edgar M. Queeny Award for his vital contributions to the development of *Roundup* herbicide. The Queeny Award recognizes a significant scientific achievement leading to major commercial success. The Charles Allen Thomas/Carroll A. Hochwalt Award for scientific excellence (even though commercial implications may not be apparent) was shared by Doctors William S. Knowles, Billy D. Vineyard, and M. Jerome Sabacky. These three scientists jointly invented a catalyst which resulted in Monsanto's unique process to manufacture L-Dopa, a drug used to treat Parkinson's Disease. Dr. Knowles also received an award for creative innovation for this same work from the American Chemical Society, the largest chemical society in the world.

The American Chemical Society also honored another Monsanto employee, Dr. Clayton Callis, by electing him chairman of its board of directors for 1982.

It is because Monsanto has people who can reach these levels of achievement that the Company is confident of ultimate success in developing entirely new kinds of products, despite the high risks involved. The four growth areas, like existing families of products, are based on Monsanto strengths and are supported by a broad base of experts in research, commercial development, manufacturing and marketing.

More important, the choice of these areas reflects a belief by Monsanto that there is significant long-term value in selectively seeking out difficult targets which will meet basic needs of society. Thus, when Monsanto is successful in these ventures, not only the Company but the world at large will reap the benefits.



Tip to Bottom:
Microprocessors use silicon chips to monitor engine functions.
Monsanto researchers make experimental integrated circuits.
Monsanto is a major producer of silicon wafers for the electronics industry.
Microcomputer silicon chips help monitor heart beats in cardiac intensive care units.

Citizenship As A Multinational Corporation



Widespread use of chemicals in everyday life — clothing, medicine, shelter, nutrition, transportation, work and pleasure — has convinced people that chemical products are necessary and useful.

At the same time, however, some people are fearful of the long-term health and environmental effects of chemicals. In addition, they question the role of business in society and seek evidence of business support for social goals. These concerns have raised public expectations of business far beyond its traditional and continuing philanthropic role.

As a chemical producer with operations in 100 countries, Monsanto must address these issues. The Company's three basic objectives — to optimize shareholder values, foster a climate in which employees can realize their potential, and act in a socially responsible manner — closely intertwine business and societal concerns.

Even though environmental, health, safety and societal issues facing Monsanto are being dealt with responsibly, new concerns may arise in the future. The Company is committed to meeting its responsibilities openly and candidly, and working to identify and address potential concerns.

During 1981, a Social Responsibility Committee was formed at the Board of Directors level to work with existing management committees to oversee this commitment. It not only monitors the Company's performance on current issues, but also assesses the likely business impact of future issues and determines how to meet them effectively. The Company's actions during 1981 underline these efforts.

Worker, Product and Environmental Health & Safety

Monsanto strives to maintain high worker, product and environmental health and safety standards. These include setting stringent regulations to reduce acute hazards such as fires, accidents and spills, and using state-of-the-art technology to identify and measure possible longer-term risks from chemical exposures. In 1981, nearly 1,000 professional managers, scientists and technicians worked full-time to deal with air, water, solid waste, product and workplace safety issues.

Monsanto spent more than \$263 million during the year on capital and operating funds to protect worker health and the environment. For example, a new medical van equipped with the latest testing equipment began visiting U.S. manufacturing plants to conduct sophisticated examinations and collect data to monitor potential employee health effects. This information is added to Monsanto's Medical & Environmental Health Information system to provide the data base for long-term health evaluations.

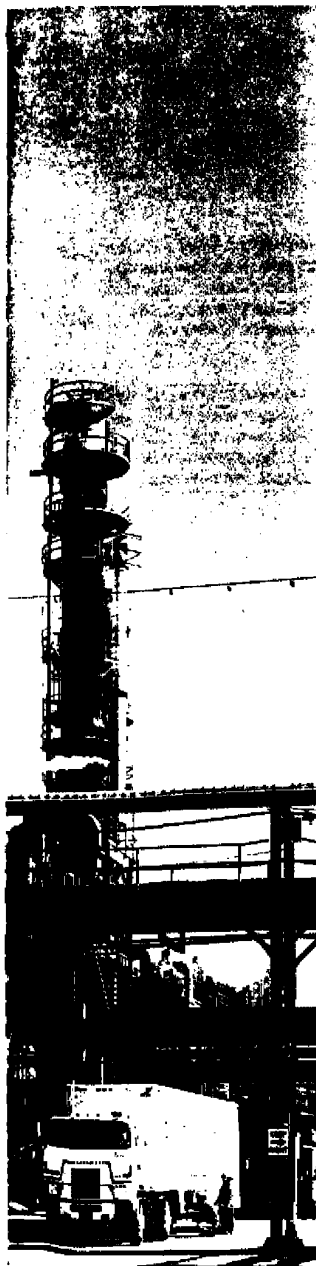
Maintaining an accident-free workplace also is essential. In 1981, Monsanto had its best safety record ever, with 114 of 137 locations worldwide significantly improving safety performance. During the year, the Company received the Lamont duPont Safety Award, recognizing the rate of improvement in Monsanto's safety record in 1979 and 1980 when the Company's performance was nearly five times better than the U.S. chemical industry average.

Environmental protection programs continued in 1981, including expansion of voluntary environmental audits at manufacturing plants. Thirty-two U.S. plants were inspected for compliance with government laws and Monsanto policies. These audits will continue.

Environmental protection can go beyond monitoring. For example, Monsanto manages the Big Sand Mound nature preserve at the Company's Muscatine, Iowa, plant to maintain a habitat for the Illinois mud turtle. The preserve was established voluntarily following a comprehensive study commissioned by Monsanto. Through this program, the plant operates in harmony with local wildlife.



Top to Bottom:
Chemical handling programs are constantly upgraded to protect workers. A Monsanto donation helped fund this post-operative recovery room near a company plant in England. New computerized stream monitoring system reduces energy costs at Texas City Plant. Waste water at Hudson Plant is cleansed before return in The Dee, a salmon fishing river in Wales.



Monsanto doesn't wait until laws and regulations are set to become involved in safety, health and environmental policy. Managers around the world participate in policy-setting discussions on important issues. In the U.S., the Company is active on the state and Federal level, including giving expert testimony in U.S. Senate and House of Representatives hearings.

Conservation

Conserving resources is good business and good social policy. Several Monsanto products help in this effort. One of these is the new *Bronco* herbicide which when used with no-till cropping practices reduces fuel consumption and slows soil erosion.

In manufacturing processes, Monsanto continued a program to recycle products which were once considered waste. This program reduces pollution, conserves materials and earns profit by developing markets for materials which were formerly discarded. Materials from nine waste streams are being sold, including a chemical which helps reduce air pollution from coal-fired boilers.

During 1981, worldwide conservation projects reduced energy consumption 26 percent compared with the pre-oil embargo year of 1972, saving the Company \$200 million in energy costs. Since 1973, Monsanto has invested \$370 million in energy conservation, and these investments have saved the Company \$700 million in the past nine years.

Monsanto was commended in 1981 by three Idaho conservation organizations for restoration projects at the Company's phosphate mine in southeast Idaho.

Philanthropy

A long-standing element of social responsibility is corporate philanthropy, most of which is conducted through the Company's philanthropic arm, Monsanto Fund. In 1981, commitment was reaffirmed to move contributions to a level of 2% of pretax income by the mid-80s. Total contributions from the Company and the Fund amounted to \$6.0 million in 1981, including over \$370,000 that matched employee giving to U.S. educational and cultural groups and hospitals.

In addition to money, Monsanto employees also donated their time. In St. Louis, a group of executives helped develop a United Way program which provided management training and expertise to health and welfare agencies. A Company-sponsored pilot Volunteer Clearinghouse Program also resulted in 200 employees offering their services to community organizations.

Affirmative Action

Career prospects for minorities and women at Monsanto continued to improve. In 1981, minorities and women numbered 10 percent of 6,263 management employees, held 22 percent of 6,143 professional positions and 23 percent of the 981 professional sales positions. During the past five years, the number of minorities and women among middle and upper management has risen from 26 to 117.

Purchases from U.S. minority-owned firms totaled \$29 million — a 7 percent increase over 1980. Additionally, Monsanto maintained a \$61 million contract with the largest minority-owned insurer in the U.S. and had deposits of \$41 million in minority-owned banks.

More information on Monsanto's worldwide social responsibility efforts and Monsanto Fund can be obtained by writing to the Public Affairs Department, Monsanto Company, 800 N. Lindbergh Blvd., St. Louis, Mo. 63167.

Providing a safe and healthful workplace for employees is a priority at Monsanto. Containing sophisticated medical testing equipment, this new mobile medical van (left) conducts comprehensive physical examinations at U.S. plants.

0674502

15

Current Performance

Monsanto faced difficult economic conditions in 1981. Two of our major markets in the U.S., automobiles and housing, remained depressed, and none of the other major economies around the world showed any important recovery.

In spite of this environment, Monsanto experienced record sales and earnings. The Corporation's financial strength significantly increased during the year. This has put Monsanto in a better position to take advantage of the inevitable economic upturn and pursue longer range growth opportunities.

In 1981, the Company continued with its strategy of fully supporting current crop chemicals while accelerating its thrust to develop promising new agricultural products. Research capabilities for herbicides and plant growth regulators were expanded in Latin America and Europe.

Part of Monsanto's strategy is the continued development of the industrial chemicals businesses which remained an important contributor to the Corporation in 1981. For example, the Company pushed ahead of schedule on construction of a plant in Florida which will strengthen its worldwide position for lower-cost production of maleic anhydride with our new technology. Monsanto is also a major supplier of chemicals to the rubber industry and entered the fastest-growing segment with a product that performs like rubber and processes like plastic.

Monsanto's increased productivity in the manufacture of styrene materials and improved performance in acrylonitrile and fiber operations substantially reduced previous operating losses. These businesses are ready to take advantage of the economic upturn when it occurs.

Fisher Controls continued to record strong sales growth and Monsanto increased its oil and gas reserves.

Overall, the Company made good headway in implementing key strategies to improve profitability and strengthen growth areas.

Chemical & Allied Products Production

1987 - 198

1981	215.5
1980	207.2
1979	211.8
1978	197.5
1977	185.7

Consumer Spending on Goods

Billions of 1972 \$

1981	506.5
1980	494.1
1979	501.2
1978	492.0
1977	472.4

New Housing Units

Millions of Units

1981	1.3
1980	1.5
1979	2.0
1978	2.3
1977	2.2

Motor Vehicle Production—North America

Millions of Units

1981	9.2
1980	9.4
1979	13.1
1978	14.7
1977	14.4

Nonresidential Investment

Billions of 1972 \$

1981	182.2
1980	158.4
1979	163.3
1978	153.4
1977	140.6

Corn & Soybean Acres

Millions of Acres

1981	152.2
1980	154.0
1979	153.0
1978	143.7
1977	142.4

Like many major industrial manufacturing concerns, Monsanto sells few of its products directly to end-users. Major customers are other industries which, in turn, manufacture the end products which reach the consumer. Thus, the demand for Monsanto's products is influenced by industry growth trends and economic conditions around the world. Monsanto's consolidated world-wide sales, by end-use industry served, are shown in the table below.

World Economy

Economic performance of the world's industrialized nations in 1981 was, at best, lackluster. In Europe, no major national economy displayed any significant recovery from the recession which began in 1980, although further declines in economic activity had ceased by mid-year in most countries. Canada and Japan showed positive, but below-average growth, with performance in both weakening as the year progressed. Brazil's economy reflected its first recession in over 20 years. Only Australia remained reasonably robust during 1981.

U.S. Economy

Following one of the shortest recoveries on record, the U.S. economy resumed a downward path starting in August. During the first half of the year, the principal weakness was concentrated in major interest-rate-sensitive areas such as

automobiles and housing. With relatively less money being spent on new cars and housing, an increasing portion of spendable income was made available for purchases of carpeting, household furnishing, appliances and apparel. It was this substitution of spending which helped keep chemical industry shipments relatively strong during the first half of the year while two of the industry's important end-use markets were severely depressed.

As high interest rates persisted, demand for consumer durable and non-durable goods weakened and inventories began to back up in the pipeline. To avert a repeat of the painful inventory liquidations that occurred in 1980, industry operating rates during the second half of 1981 were cut back to balance shipment and production levels. At the year end, these cutbacks had resulted in increased layoffs and rising unemployment.

Major Chemical Markets

Two major markets for chemicals in the U.S., autos and housing, remained depressed throughout the year. Motor vehicle production in North America reached a twenty-year low at 9.2 million units while housing starts of 1.1 million units were at their lowest level since World War II. Other markets fared relatively better, with consumer spending (after adjustment for inflation) on furniture, appliances, and home furnish-

ings up 3 percent, spending on apparel up 7 percent, and spending on miscellaneous non-durable goods (which include drugs, medicines, soaps, and toiletries) up 2 percent. However, the furniture, appliance and home furnishings area has been steadily eroding since spring 1981 and apparel sales declined in the last quarter.

Business investment, after adjustment for inflation, was up 2 percent from 1980's depressed level, with some weakness becoming apparent in the last quarter.

Chemical Industry

The chemical industry exhibited a mixed performance, with the production of basic chemicals showing a slight decline from depressed 1980 levels. Production of plastic materials was up 8 percent, while synthetic fiber output increased by 3 percent. However, all sectors in the basic chemical and synthetic material categories showed substantial declines during the final quarter.

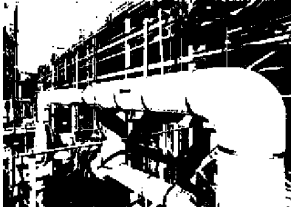
Downstream chemical output fared relatively better with most major categories exhibiting some growth. Drugs and medicines were the strongest performers, up 9 percent from 1980. Agricultural chemicals also turned in a strong performance with volume up 5 percent. This performance was even more impressive, given that farm income declined 6 percent in 1981 and corn and soybean acres planted were 1 percent lower than 1980's record levels. This provides evidence that the American farmer regards agricultural chemicals, particularly pesticides, as an indispensable tool to maximizing yields in bad times as well as good. Export demand was also an important source of strength for agricultural chemicals in 1981.

Sales Percentage by End-Use Industry Served

	1981	1980	1979
Agriculture	18%	17%	14%
Construction & equipment	14	14	14
Motor vehicles	10	11	13
Apparel & textile home furnishings	10	10	11
Chemical industry & petroleum refining	12	11	9
Carpets	5	7	8
Pharmaceuticals, soaps & toiletries	6	6	8
Appliances, furniture & fixtures	4	5	5
Packaging	5	5	6
Other	16	14	12
	100%	100%	100%

Four years have been revised to include petroleum refining in the same category as the chemical industry.

Agricultural Products: Record Results



Top to Bottom:
Coffee plants in new Brazilian
research station;
A new plant for Roundup herbicide in
Fayetteville, N.C.;
Spraying of new package mix Bronco
herbicide introduced into U.S. no-till
agricultural market;
Rumanian soybean crops protected
from grassy weeds by Lasso herbicide.

(Dollars in millions)	Sales	Operating Income	Total Assets
1981	\$1,216.7	\$468.2	\$1,000.8
1980	1,012.3	400.8	802.7
1979	839.9	328.8	660.2
1978	734.4	303.8	629.0
1977	654.0	274.3	579.4

Monsanto Agricultural Products Company continued its record pace during 1981. Sales and operating income rose 20 percent and 17 percent respectively, led by strong gains in worldwide herbicide sales.

Roundup herbicide maintained its outstanding sales growth. This post-emergent, nonselective herbicide controls a broad spectrum of problem weeds. Roundup has worldwide utility in major crop production systems and for industrial applications.

Marketing and manufacturing resources were increased more fully to exploit the worldwide growth potential for this versatile herbicide. By year-end, Roundup was being marketed in 115 countries. New sales growth was generated, and strong world demand continued, paced by major volume gains in the United States, Europe and Japan.

To meet rapidly growing demand, a new unit for Roundup started production in Fayetteville, North Carolina. Capacity also was increased for key intermediates used in the manufacture of this herbicide.

Lasso herbicide continued as the largest selling United States herbicide used for the control of many grassy weeds, primarily in corn and soybean crops. The market share for Lasso increased in both crops and sales reached a new high.

Strong market acceptance of Lasso for shallow incorporation into the soil was a major factor in record sales. Increased marketing emphasis on this method of application, trademarked "Surface Blend," created new demand and allowed farmers to use lighter, faster equipment resulting in time and fuel savings, while reducing soil compaction and erosion. Sales were further stimulated by increased use of herbicide mixtures where Lasso is the brand-share leader.

New herbicide compounds, based on the Company's proprietary technology, continued to be tested in field trials. These candidates show potential for extending the performance of the Company's herbicides in existing and new markets.

Sales of Atrax herbicides, used to control wild oats in wheat and sugar beets, were up substantially. Good farming conditions and a prominent marketing presence in North America were significant factors in the year-to-year growth.

Machete herbicide was in marked demand in Japan and India, and sales continued to gain in other major rice-growing countries. Machete controls many problem weeds in transplanted and directly-seeded rice crops. In United States markets, sales were substantially above 1980 levels.

Parathion insecticide sales were well ahead of the previous year, due in part to a heavy infestation of green bugs in wheat. Sales also increased to sorghum and soybean farmers.

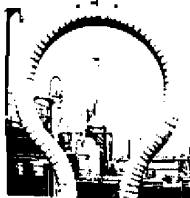
Sales of Polaris and Polado plant growth regulators, which increase the sucrose content of sugarcane, remained steady. Active investigation of plant growth regulators for other markets continued as a major research thrust.

During the year, the Company's worldwide research capability was extended. A new herbicide and plant growth regulator research station opened in Brazil, research facilities in Belgium were expanded and plans were underway to establish a research station in Asia.

At Farmers Hybrid Company, Inc., a wholly-owned subsidiary, sales of hybrid swine and beef cattle breeding animals were near 1980 levels as prices received by farmers remained under pressure.

Income from nitrogen-based products continued strong despite lower customer shipments. Selling prices for fertilizer and blasting agents were increased.

0674505



Top to Bottom:
World's largest maleic anhydride
plant under construction at Pensacola, Fla.;
Workers at Seal Sands acrylonitrile plant,
United Kingdom;
Fiberglass made with maleic anhydride
used in first covered lightweight U.S.
hopper car;
Styrene monomer from Texas City
Plant, is used in fuel-saving
plastic auto components.

(Dollars in millions)	Sales	Operating Income	Total Assets
1981	\$1,688.8	\$124.7	\$1,245.2
1980	965.7	17.8	1,178.6
1979	858.6	115.5	1,123.4
1978	523.2	75.1	849.8
1977	522.0	128.0	735.9

During 1981, Monsanto Chemical Intermediates Company pushed ahead of schedule on construction of a 130-million-pound-a-year maleic anhydride plant at Pensacola, Florida. Due for completion in 1983, the plant is designed to be the world's largest. It will use Monsanto technology to convert butane to maleic anhydride and eliminate the use of more costly benzene feedstock.

The Pensacola plant is the centerpiece of Monsanto's plan to expand its worldwide maleic anhydride capacity to more than 300 million pounds a year, while simultaneously converting to butane technology at its St. Louis facility.

This operating company's sales increase was heavily concentrated in the first half of the year, due to economic growth and additional shipments from the Chocolate Bayou plant near Alvin, Texas. A second-half softening of market demand and the worsening recession resulted in the plant operating at about 75 percent capacity, equivalent to the 1980 rate.

Petrochemicals—without considering the effect of the Monsanto/Conoco joint venture divestiture—recorded a year-to-year dollar sales improvement of 13 percent. Process chemical sales were essentially flat and year-end demand in all product lines was severely depressed.

A determined effort to reduce acrylonitrile manufacturing costs brought solid results. For example, the installation of a new, improved catalyst at the Seal Sands plant, Teesside, United Kingdom, increased yield and lowered production costs. Better utilization of nylon intermediate manufacturing capability and improved demand for acrylic fiber added to the dramatic improvements in the UK acrylonitrile business. Worldwide marketing efforts produced strong results with U.S. exports increasing substantially.

Momentum of the successful technology licensing program was maintained with agreements signed by two companies in the U.S. and Europe for plant modernization programs, using the Monsanto-C-E Lummus ethylbenzene/styrene technology. This brings the number of plants using the process to 14 with a capacity of 6.6 billion pounds a year.

Oil & Gas Division

Monsanto further strengthened its oil and gas exploration and development activities in 1981. Investment in leasehold acquisitions, exploration and development reached a record of \$198 million and the division's discoveries again exceeded production. Net sales of oil and gas rose 44 percent to \$194 million. Pretax earnings—before interest and general corporate expenses and excluding the profit on operation of the natural gas plants—increased 24 percent to \$34.1 million.

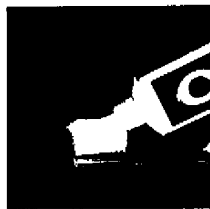
Most of Monsanto's investment was made in the drilling of 62 net exploratory wells, and 119 net development wells. Of the total, 81 percent were productive with notable successes in North Dakota, Oklahoma, West Texas, Wyoming and offshore Gulf of Mexico.

A number of high-potential leasehold acquisitions increased total undeveloped acreage from 950,000 to 1,045,000 net acres. Included in this total are interests in four Gulf of Mexico federal offshore blocks. A drilling contract was signed for an exploration program to begin in 1982 on the substantial acreage Monsanto has assembled in the U.K. North Sea.

The division added 7.7 million barrels of oil and 45.7 billion cubic feet (BCF) of gas to its proven reserves. After oil and gas sales and revisions of prior estimates, proven year-end reserves totaled 33.6 million barrels of oil and 598.6 BCF of gas.

0674506

Industrial Chemicals: Seeking New Growth



Top to Bottom:
Alimet feed supplement nourishes poultry;
Scientists Vinesard, Sabacky and
Kusnetz, winners of
first Thomas Huchcalt award. Their
work resulted in Monsanto's unique
process to make L-Dopa, used
to treat Parkinson's Disease;
X-ray machine checks tire quality;
Dentifrice ingredient improves fluoride
stability & taste

(Dollars in millions)	Sales	Operating Income	Total Assets
1981	\$1,623.6	\$ 90.4	\$1,160.6
1980	1,577.6	132.6	1,113.0
1979	1,513.8	202.1	984.1
1978	1,290.1	218.7	849.6
1977	1,156.4	211.9	750.3

Monsanto Industrial Chemicals
Company sales in 1981 increased about 3 percent from 1980. Second half weaknesses in housing, automotive and electronics markets were the principal factors for the decline in year-to-year operating income.

During 1981, this operating company entered the rubber industry's fastest-growing segment—the thermoplastic elastomer market—with successful commercialization of *Santoprene* thermoplastic elastomer. This first entry in a planned broad product line performs like rubber and processes like plastic. Initial customer acceptance is encouraging, particularly in the automotive industry where five 1982 models use *Santoprene* elastomer components under the hood.

Tire production cutbacks in many countries affected worldwide sales of rubber chemicals. During the year, use of X-ray units continued to expand as the primary non-destructive quality test for truck, bus and passenger car tires.

Detergent and phosphate product sales were up 1 percent for the year. A new dentifrice grade of dicalcium phosphate was introduced which allows toothpaste manufacturers to increase fluoride stability and improve the taste of their products.

Specialty chemical sales were led by a strong growth in pharmaceutical raw materials. Capacity for acetaminophen, a non-aspirin analgesic, was increased through process modifications.

Field tests were positive on a new *Thermal* heat transfer fluid with a high-temperature operating range designed especially for oil refineries and solar energy applications. *Dequest* anti-scaling agent made significant progress in formulations for water desalination plants.

Worldwide dollar sales of plasticizers enjoyed a strong first half, but business was slow in the second half due to weakness in our primary automotive and housing markets. A sampling program for *Santicizer* 900 plasticizer resulted in good initial customer reaction.

Monsanto continued to phase out low-potential plasticizer product lines while shifting resources to new growth opportunities.

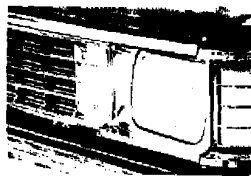
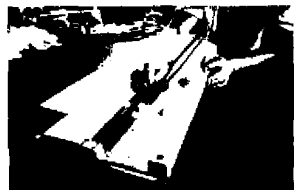
Monsanto Enviro-Chem Systems, Inc., which designs and constructs sulfuric acid plants, achieved record sales. A more efficient catalyst was introduced to the sulfuric acid industry as well as a line of energy-efficient mist eliminators to control air pollution.

Nutrition chemical sales improved 9 percent with sales of *Alimet* liquid methionine, a feed supplement for poultry and swine, almost tripling. A new methionine plant is scheduled for completion in 1983.

Sales for *PRISM* separators were impressive. These proprietary hollow fiber systems are now installed or under contract in 24 plants in five countries.

Monsanto continued its thrust to maintain quality leadership in electronic-grade silicon for the semiconductor industry. During the fourth quarter, the initial phase of the world's largest and finest quality silicon wafer plant at Spartanburg, South Carolina, was completed. An extensive renovation was underway at the St. Peters, Missouri, plant to bring silicon wafer production there up to the very highest quality standards. During the third quarter, Monsanto introduced the 150mm polished slice, the largest available commercial wafer. Also introduced were controlled oxygen and other wafer innovations to improve device yields among our customers.

0674507



Top to Bottom:
Architectural use of glass laminated
with Saflex interlayer.
A picture framer easily cuts Fome-Cor
graphic arts board with a knife.
Auto grille molded in Lustran ABS
plastic.
Spring Guard rain flaps for tracks cut
wet weather wheel spray.

(Dollars in millions)	Sales	Operating Income	Total Assets
1981	\$1,368.0	\$ (9.3)	\$ 958.2
1980	1,383.8	110.5	1,000.0
1979	1,414.2	9.6	1,110.7
1978	1,223.6	57.6	1,088.2
1977	1,111.2	76.3	891.9

Monsanto Plastics & Resins Company's total sales were below 1980 levels because of divestiture of the Spanish subsidiary, Aiscondel, S.A. However, sales from continuing businesses increased 7 percent in 1981 and, in spite of a sluggish economy, operating losses were substantially reduced.

Domestic performance improved largely due to gains in U.S. manufacturing productivity and exports of styrene materials. Domestic sales of *Lustran* polystyrene grew at greater than the industry rate, and export sales exceeded the 1980 level. Operating income in Europe was better because the Aiscondel sale more than offset a dramatic decline in income from continuing businesses affected by worsening economic conditions.

Major developments in 1981 included a new *Lustran* ABS molding grade resin that promises to become the industry standard and *Cadon*, a family of impact-modified styrene maleic anhydride terpolymers. Initial applications for this engineering plastic are in the automotive area. However, the special features of *Cadon* offer unique benefits for applications such as business machine and appliance housings, electrical equipment and electronic parts.

Sales of *Vydene* nylon 66 exceeded 1980 levels. Typical applications were electrical components, packaging and consumer items. In the last quarter of 1981 a new line of *Vydene* glass-reinforced nylons was introduced to meet high performance needs of industrial and automotive applications.

Shipments of *Saflex* polyvinyl butyral interlayer for use in laminated safety glass for automotive windshields declined following the reduction in automotive production. Sales for laminated architectural glass applications, however, continued to increase.

In other resin areas, paper chemicals such as *Scriptset* coating resin, *Monstze* internal sizing agents and *Santo-Res* wet strength resins, recorded higher sales.

Sales of *Fome-Cor* graphic arts boards increased significantly, aided by the introduction of a thinner new $\frac{1}{8}$ -inch board designed for display makers and professional picture framers. Sales of *Fome-Cor* board for other major uses in manufactured housing, home re-siding and as a headliner in automobiles were affected by the slump in the housing and automotive industries.

Commercial acceptance of the new *Monsanto 603* greenhouse film has been very strong. The new film offers up to 50 percent longer life over the former leading industry film.

Blownware had another solid performance in 1981 with improved profitability in spite of the recessionary environment.

AstroTurf-8 synthetic turf system's successful introduction continued with sales for professional, collegiate and high school installations.



Top to bottom:
Carpets of *Ultron* nylon are well suited for busy buildings;
Fabric wall coverings of *SEF* fiber are flame retardant and attractive;
Disposable gowns and surgical drapes reinforced by *Cerex* nonwoven nylon;
Acrylic fibers result in fabrics with a wide range of properties and aesthetics.

(Dollars in millions)	Sales	Operating Income	Total Assets
1981	\$1,014.2	\$ (2.2)	\$ 859.6
1980	1,041.1	(261.1)	1,019.5
1979	1,069.4	(168.7)	1,022.7
1978	963.2	(29.2)	1,050.1
1977	884.3	(39.0)	1,011.2

Monsanto Textiles Company's performance in 1981 was significantly better than the previous year. Despite slightly reduced fiber volume and sales revenue 3 percent lower, operating losses were substantially reduced. This resulted from the company's ability to pass through price increases for nylon carpet fiber and acrylic that have held despite decreased demand in the latter half of the year.

The company's strong first half was tempered by a weak second half as high interest rates continued to depress housing and automobile markets and weaken demand for carpet. However, Monsanto is well positioned for increased profitability when the carpet market rebounds.

Expansions to increase nylon carpet staple production were completed and will be needed when carpet demand strengthens. Monsanto's newest carpet fiber, *Ultron Z* nylon—which represents a real advancement in soil resistance and appearance retention—achieved an enviable position with the major U. S. carpet mills in its first full year on the market.

In the contract carpet area, carpets of Monsanto fibers are increasingly found in office buildings, hotels, banks and department stores, indicative of the fine performance offered by *Ultron* nylon and *Ultron Z* nylon in commercial installations. The products for this market segment were strengthened with the introduction of *Ultron 3D* nylon. This product comprises three heavy-denier advanced-generation fibers developed specifically for the contract carpet market. It allows a much broader range of yarn sizes, carpet constructions and weights than with existing competitive heavy-denier fibers.

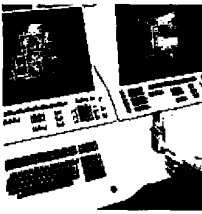
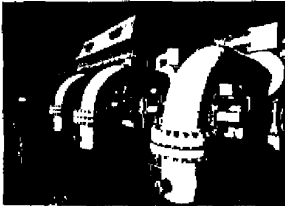
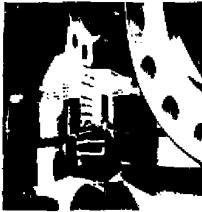
Product development work in nylon also addressed fibers for apparel. Work currently is underway to develop fibers that provide new and different looks in fabrics along with cost reductions for Monsanto and its customers.

As the leading producer of acrylic fiber, Monsanto has long promoted its use in knits and sweaters. The company further strengthened this segment of its business with the introduction of *Fi-Lana* acrylic, the newest in a broad line of acrylic fiber products for the textiles industry. *Fi-Lana* makes it possible to achieve softer and more luxurious effects without losing resilience and body. What before was available only with natural fibers now can be obtained with a wide range of acrylic fibers that offer choices of hand, varied colorations, increased flexibility through blending and home washability. *Remember* bi-component acrylic for the handcraft yarn market made excellent commercial progress. Craft yarns of *Remember* are rapidly being made available through chain and department stores.

The future of Monsanto Textiles Company is not limited to fibers with new or enhanced properties, but also involves new applications for existing ones. *Cerex* spun-bonded nylon, for example, which traditionally has been used for industrial applications, is now finding new uses such as in disposable surgical gowns. Another example is *SEF* mod-acrylic which in 1981 celebrated 10 years in the marketplace, predominantly in the baby blanket sleeper market. Recently, this flame-retardant fiber has been used in fabric wall coverings for commercial buildings, helicopters and airports as well as in contract upholstery and drapery fabrics. These applications, which stem from increased awareness of fire safety in public buildings, greatly expanded the horizons for this product.

0674509

Fisher Controls: Strong Sales Growth



Top to Bottom:
Fisher valves made at world's
largest automatic control valve plant
in Iowa;
Fisher instrumentation at Bacton, England,
aids North Sea gas distribution;
PR6VOX system monitors and controls
production processes;
Fisher instrumentation controls
California tomato-processing plant.

(Dollars in millions)	Sales	Operating Income	Total Assets
1981	\$636.4	\$68.6	\$434.7
1980	593.1	71.9	412.8
1979	496.7	44.4	353.3
1978	284.2	37.0	202.5
1977	263.5	37.9	181.7

Fisher Controls' totals for 1981, 1980 and 1979 reflect the operations of a new subsidiary, Fisher Controls International, Inc., formed by Monsanto and The General Electric Company Limited of the United Kingdom. Totals for 1978 and prior years reflect the operations of Monsanto's then existing wholly owned subsidiary, Fisher Controls Company, Inc.

Fisher Controls International, Inc. recorded strong sales growth in 1981 despite a faltering European economy. Domestic operations generated increased income, but the effect of the strengthened U.S. dollar on international results caused an overall year-to-year decline. Both shipments and new orders for industrial process controls continued at record levels worldwide.

A world leader in process controls, Fisher provides a range of products and services including control room instrumentation, field measurement instruments and control valves and regulators. Customers in such diverse industries as chemical, petrochemical, food processing, power, paper, metal processing and oil and gas look to Fisher Controls for solutions to process control problems through products, application engineering, education, installation and after-sale service.

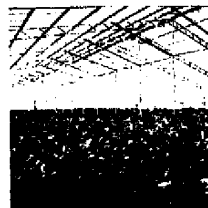
Fisher Controls continued to manage its assets aggressively while positioning the company for significant future growth as an international supplier of integrated process control systems. Cost reduction programs were maintained in all world areas. Two small business lines were sold and one small U.S. manufacturing facility is being closed in 1982.

Capital investment accelerated, capacity was expanded, and a significant number of new products was introduced. PR6VOX, a major new product family of digital distributed control systems, was further expanded. Sales increased significantly with particular success in North America where the product was first introduced. Fisher Controls applications in energy management control systems continued to meet customer needs to conserve resources and lower costs.

New field measurement instrument products were introduced to help customers measure and control such process variables as pressure, temperature, flow and level. They included a pneumatic indicating controller product line, an innovative temperature controller, and a new family of control valve positioners.

Control valve and regulator products with a wide variety of process control applications were introduced. New products included additions to the high performance rotary control valve line for general service applications, a high pressure globe valve, and several additional regulator products.

Fisher Controls employs more than 10,000 people at 23 manufacturing and service centers in 14 countries. Sales offices staffed by engineers with extensive application engineering capabilities are located in principal cities worldwide to serve customer needs.



Top to Bottom:
Plant growth regulator
sugarcane trials at Brazilian
research farm;
Glass with Saflex interlayer
protects driver in
240 mph French supertrain;
Machete herbicide improves yields of
Asian rice crops;
Mitsubishi Monsanto Chemical
Company plastic film controls
temperature in Japanese greenhouses.

Monsanto International sales approached last year's record level despite the severe worldwide economic slump. Consolidated sales outside of the United States, including U.S. exports, were \$2,562.2 million and represented 37 percent of Monsanto's total net sales. Export sales from domestic manufacturing locations reached \$1,042.0 million even though international competition intensified and the strong surge in the U.S. dollar adversely affected exports.

Consolidated international operating income, including operating profits from U.S. exports and the Company's share of net income from overseas affiliates, reached a record \$213.9 million, a 42 percent increase from 1980. Earnings improved in all world areas with the Europe-Africa region achieving a significant turnaround following two years of losses.

Continued weakness of major European economies and a strong dollar dampened Europe-Africa sales growth which declined 11 percent to \$1,271.2 million. Monsanto's withdrawal from the Spanish subsidiary, Aiscondel, was also a factor in the drop in sales. However, the end of losses associated with Aiscondel and cost improvements helped the return to profitability in Europe.

The herbicide business, supported by record volume sales of *Roundup* and *Lasso*, was a major contributor to the profit gain. The new facility for manufacturing *Roundup* herbicide at Antwerp operated near design capacity throughout the year. *Saflex* interlayer for laminated safety glass again achieved record sales. In industrial and specialty chemicals, as well as plasticizers, significant contributions were also made to earnings.

In the Canada-Latin America area, sales increased by 6 percent to \$691.3 million, generating \$88.7 million in operating income. This strong performance occurred in spite of Brazil's first recession in 25 years, the massive devaluation of the Argentine peso, and a general recession in Canada.

Canada achieved a record year in sales and income led by the growth in sales of *Avodex* and *Lasso*. The startup of a facility to manufacture *Roundup* has further strengthened our crop chemical position in Canada.

Brazil's earnings continued positive with improved sales and income from our phosphate, rubber chemical and styrene monomer businesses. During the early part of 1982 the Company will start up a new polystyrene plant at Sao Jose dos Campos.

In Mexico, our joint venture, IRSA, recorded another successful year. Imports of Monsanto's broad product lines to Mexico also contributed to strong earnings.

The Asia-Pacific area continued to improve with sales up 15 percent to \$599.6 million. Consolidated operating income was \$61.1 million.

Export sales to the region increased despite the slowdown in the Japanese economy and stiffer competition. Demand outside Japan was led by increased sales of herbicides, as well as growth in chemical intermediates and fibers, with exports to the People's Republic of China accelerating. The strong growth of the Australian economy also contributed to record gains in operating income. In New Zealand, Monsanto Australia Ltd. strengthened its manufacturing position by acquiring a 65 percent interest of Revertex Industries (N.Z.) Ltd., a producer of industrial resins and chemicals.

Monsanto launched a concerted effort to increase business in the Japanese market. Two orders were won for *PRISM* separators and the Company began to sell *Roundup* after receiving registration in late 1980.

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Financial Report

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Except where otherwise indicated by the context, the term "Monsanto" means Monsanto Company and its consolidated subsidiaries and the term "Company" means Monsanto Company alone. All dollar amounts are in millions, except per share.

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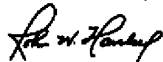
Management Report

Monsanto Company's management is responsible for the fair presentation of all financial data, audited or unaudited, included in this Annual Report. All financial data in this Annual Report are consistent with that in the consolidated financial statements. The consolidated financial statements have been prepared in accordance with generally accepted accounting principles consistently applied in all material respects, except where otherwise noted, and reflect necessary estimates by management.

The management of Monsanto is responsible for establishing and maintaining a system of internal accounting control. The objectives of such a system are to provide reasonable, but not absolute, assurance that assets are safeguarded against material loss from unauthorized use or disposition, and that transactions are properly authorized and recorded to permit the preparation of financial data. In fulfilling its responsibility, management exercises judgment in assessing the expected benefits and related costs of control procedures. Inherent limitations in systems of internal accounting control include the possibility that errors or irregularities may occur and not be detected. Significant changes in circumstances subject any system to the risk that current procedures may become inadequate, or that compliance with the procedures may deteriorate. Management believes that the effectiveness of Monsanto's system of internal accounting controls is maintained by: (1) the selection and training of personnel; (2) a division of responsibility in all organizational arrangements; (3) the establishment and communication of accounting and business policies; and (4) on-going internal review programs and audits with necessary follow-up by management.

As ratified by shareholder vote at the 1981 Annual Meeting, Deloitte Haskins & Sells, independent auditors, were appointed to examine the consolidated financial statements contained in this Annual Report. The principal result of this examination is the expression of an opinion, which appears on page 76, as to the fairness of the presentation of the consolidated financial statements in accordance with generally accepted accounting principles. At management's request, Deloitte Haskins & Sells also performed a study and evaluation of Monsanto Company and its United States subsidiaries' system of internal accounting control. Their opinion on the system follows this Management Report.

The Audit Committee of the Board of Directors is responsible for reviewing and monitoring Monsanto's internal controls, financial reports and accounting practices. The Committee consists of four non-employee directors who periodically meet to discuss audit and financial reporting matters with representatives of financial management, the internal audit function and Deloitte Haskins & Sells. Both the independent and internal auditors have full and free access to meet with the Audit Committee — with or without the presence of management representatives — to discuss the results of their examinations, the adequacy of internal accounting controls and the quality of financial reporting.



John W. Hanley
Chairman of the Board and
Chief Executive Officer

February 26, 1982



Francis A. Stroble
Vice President and
Chief Financial Officer

**Independent Auditors' Opinion
on System of
Internal Accounting Control**

We have made a study and evaluation of the system of internal accounting control of Monsanto Company and its United States subsidiaries in effect during the year ended December 31, 1981. These companies constitute approximately 73 percent of consolidated total assets at December 31, 1981 and approximately 70 percent of consolidated revenues for the year then ended. Our study and evaluation was conducted in accordance with standards established by the American Institute of Certified Public Accountants.

The above report explains management's responsibility to establish and maintain a system of internal accounting control and the broad objectives and inherent limitations of such a system.

In our opinion, the system of internal accounting control of Monsanto Company and its United States subsidiaries in effect during the year ended December 31, 1981, taken as a whole, was sufficient to meet the objectives referred to above insofar as those objectives pertain to the prevention or detection of errors or irregularities in amounts that would be material in relation to Monsanto Company's consolidated financial statements.



Saint Louis, Missouri
February 26, 1982

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Review of the Results of Operations

The following discussion reviews Monsanto's consolidated sales and net income for 1981 vs. 1980 and 1980 vs. 1979.

Consolidated Sales

1981	\$6,947.7
1980	6,573.6
1979	6,192.6

1981 vs. 1980 Sales for 1981 reached \$6,947.7, a 5.7 percent increase over 1980. The 1981 sales increase was due principally to higher selling prices. Volume levels overall were off 2.2 percent year-to-year, reflecting the impact of two 1980 divestitures — Aiscondel, S.A., a two-thirds owned Spanish plastics subsidiary, and the polyester filament business. Otherwise, volumes overall were up a modest 1.9 percent, with continued softness being experienced in those businesses dependent on the sluggish automotive and housing industries. Another economic factor, the strengthening of the United States dollar in 1981 against many foreign currencies, adversely impacted domestic export sales. Agricultural products, however, did have further notable volume gains worldwide in 1981.

1980 vs. 1979 Sales for 1980 reached \$6,573.6, a 6.2 percent increase over 1979. This increase was principally driven by higher selling prices, as volumes for 1980 declined 5.6 percent from 1979 levels. Recessionary factors in the U.S. and in Europe were the primary reasons for the decline in sales volumes. Declining demand from two of Monsanto's largest customer industries — automotive and housing — impacted the results of Monsanto's petrochemicals, industrial chemicals, plastics and man-made fibers businesses. In contrast, 1980 volume gains were recorded from agricultural products and the Fisher Controls subsidiary.

Consolidated Net Income

1981	\$445.1
1980	148.8
1979	331.0

1981 vs. 1980 Net income in 1981 was \$445.1 (\$11.50 per share), a significant increase over the \$148.8 (\$4.10 per share) reported for 1980. The 1980 net income reflects charges totaling \$107.7 (\$2.97 per share) related to the disposal of Aiscondel, S.A. and the polyester filament business. In 1981, net income includes a \$67.7 (\$1.75 per share) gain on the sale of the Company's interest in the Monsanto/Conoco joint venture. (See "Divestitures" note to the financial statements.) Excluding the impact of this unusual gain in 1981, and the two unusual losses in 1980, net income increased 47.1 percent to \$377.4 (\$9.75 per share) in 1981 from \$256.5 (\$7.07 per share) in 1980.

In addition to the economic conditions and unusual items discussed previously, certain other factors influenced the year's results. The financial programs Monsanto began in 1980 to improve profitability and the utilization of working capital clearly enhanced 1981 results. Interest expense was lower in 1981 as compared to 1980, reflecting reduced borrowing levels. Interest income in 1981 increased significantly because of Monsanto's improved cash and short-term securities position. Equity income from affiliated companies, excluding gains or losses from foreign currency translation, decreased in 1981 compared to 1980.

Total pretax foreign currency gains (losses) were \$(27.6) in 1981 compared to \$11.5 in 1980. Because gains or losses realized on forward currency contracts and other transactions are tax effected, while the translation impacts generally are not, foreign currency gains included in net income were \$29.0, or \$0.75 per share, in 1981 vs. \$1.2, or \$0.03 per share, in 1980.

The effective tax rate increased in 1981 to 35.8 percent, from 27.7 percent in 1980. This increase is a result of reduced levels and impact of investment tax and Domestic International Sales Corporation (DISC) credits available, offset somewhat by the effect of ex-U.S. subsidiaries with no tax benefits or provisions.

Earnings per share in 1981 also include the effect of three million additional shares issued in April, 1981. The pro forma earnings per share are disclosed in the "Earnings Per Share" note to the financial statements.

1980 vs. 1979 Net income for 1980 was \$148.8 (\$4.10 per share) compared with net income of \$331.0 (\$9.11 per share) for 1979. Two major unusual factors occurring in the fourth quarter of 1980 significantly impacted the decline. The Company decided to terminate all of its interests in Aiscondel, S. A., resulting in a charge of \$38.7, or \$1.07 per share and it withdrew from the polyester filament business, incurring a charge of \$69.0, or \$1.90 per share. Both businesses had experienced losses from operations in recent years. In 1979, net income was reduced by \$53.2, or \$1.47 per share, due to shutdown costs of European nylon operations and certain ex-U.S. plastics businesses.

Prior to these unusual factors, the disappointing results for 1980 were due in large part to recessionary conditions in the U.S. and Europe. In response to these conditions, Monsanto launched a program early in 1980 to improve profitability and the utilization of working capital. While this program was successful overall, it did have the effect of reducing earnings as the Company absorbed idle capacity costs significantly higher in 1980 than had been experienced in 1979.

A change in accounting for interest costs — as required by a recent Financial Accounting Standards Board Statement — had a positive effect on 1980 profitability. In 1979 and prior years, all interest costs were charged to expense as incurred. In 1980, Monsanto capitalized \$51.6 of interest costs related to financing construction-in-progress expenditures.

As a result, net income was increased \$27.5, or \$0.76 per share. The required capitalization of interest costs moderated the earnings impact of a significant increase in interest costs incurred — from \$123.3 in 1979 to \$163.4 in 1980. This increase was driven principally by the issuance of commercial paper, the relatively high interest rates in 1980 and additional financing costs associated with Aiscondel, S.A.

Other nonoperating factors influence a comparison of 1980 results with the prior year's. Interest income in 1980 was \$36.4, down sharply from \$63.6 of interest income in 1979. In 1980, there were foreign currency translation and transaction gains of \$1.2, after taxes, as compared with losses of \$32.1, after taxes, in 1979. The effective tax rate was 27.7 percent for 1980 as contrasted to 31.2 percent for 1979, primarily reflecting higher investment tax credits.

Analysis of Change in Earnings Per Share — Increase (Decrease)		
	1981 vs. 1980	1980 vs. 1979
Selling Prices	\$10.31	\$13.86
Sales volume and mix	2.87	(3.85)
Raw material prices	(3.47)	(5.27)
Other manufacturing costs	(4.10)	(5.87)
Divestitures	4.72	(1.50)
Start-up costs	8.62	(0.46)
Nonmanufacturing expenses	(1.14)	(2.15)
Operating Income	9.81	(5.24)
Interest costs incurred	0.38	(0.54)
Interest costs capitalized	(0.18)	0.76
Other income credits—net	(0.31)	(0.19)
Effective tax rate	(1.55)	0.20
Shares outstanding	(8.77)	
Net Income Per Share	\$ 7.40	\$ (5.01)

Sales by Product Group

The table below sets forth the dollar amount and percentage of Monsanto's consolidated net sales contributed by each operating company and Fisher Controls and each product group during the last three years.

	1981		1980		1979	
Agricultural Products:						
Herbicides, insecticides & other products	\$1,216.7	17.5%	\$1,012.3	15.4%	\$ 839.9	13.6%
Chemical Intermediates:						
Petrochemicals	720.9	10.4	643.5	9.8	585.1	9.4
Process chemicals	181.8	2.8	196.8	3.0	192.1	3.1
Oil & gas	166.8	2.7	125.4	1.9	61.4	1.3
Total	1,068.8	15.7	965.7	14.7	858.6	13.8
Industrial Chemicals:						
Detergents & phosphates	410.5	5.9	405.3	6.2	399.9	6.5
Specialty and nutrition chemicals	397.6	5.7	385.1	5.9	353.8	5.7
Rubber chemicals	281.7	4.1	298.8	4.5	292.5	4.7
Plasticizers	302.4	4.4	299.4	4.5	278.2	4.5
Electronic materials and chemical & environmental systems	231.4	3.3	189.3	2.9	189.4	3.1
Total	1,623.6	23.4	1,577.6	24.0	1,513.8	24.5
Plastics & Resins:						
Plastic materials	751.2	10.8	793.2	12.1	799.2	12.9
Resin products	433.9	6.3	378.2	5.8	404.7	6.5
Fabricated products	182.9	2.6	212.4	3.2	210.3	3.4
Total	1,368.0	19.7	1,383.8	21.1	1,414.2	22.8
Textiles:						
Man-made fibers	1,014.2	14.6	1,041.1	15.8	1,069.4	17.3
Fisher Controls:						
Valves, regulators & electronic process controls	636.4	9.1	593.1	9.0	496.7	8.0
Total consolidated	\$8,947.7	100.0%	\$6,573.6	100.0%	\$6,192.6	100.0%

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Raw Materials and Energy

Purchased Raw Material Costs

1981	\$2,489.2
1980	2,459.0
1979	2,345.2

Purchased Energy Costs

1981	\$553.1
1980	531.4
1979	484.7

Purchased raw materials include petrochemical feedstocks that are very significant to Monsanto. The relatively small increase in purchased raw material costs in 1981 over 1980 is a result of two offsetting factors: lower volumes and higher raw material prices. Raw material prices advanced approximately 13 percent in 1981, following approximate 25 and 30 percent increases in 1980 and 1979, respectively. Raw material and energy prices reflect continual escalation in the United States due to decontrol of crude oil and gas prices.

Monsanto continues to pursue a policy of securing its raw material position for the years ahead. Until August 1981, this policy included participation in a joint venture with Conoco Inc. for the production of ethylene and co-products. This joint venture was terminated when Monsanto sold its interest in the venture, as discussed in the "Divestitures" note to the financial statements. Subsequent to this sale, the Company secured long-term contracts for its basic raw materials, including ethylene, benzene and propylene. These long-term contracts contain terms and conditions which provide the Company security of supply at very competitive prices. In addition, Monsanto continues to have available the hydrocarbon resources from its Oil & Gas Division which can be used in its hydrocarbon sourcing programs, if required.

Research and Development Costs

1981	\$220.6
1980	204.4
1979	161.3

As a percent of sales, research and development costs have increased to 3.2 percent in 1981, compared to 3.1 and 2.6 percent in 1980 and 1979, respectively. This level of funding represents Monsanto's continuing commitment to generate new products and processes, with particularly intensive research programs related to agricultural products, electronic materials and biotechnology. In 1981, the Molecular Biology Center, established in 1980, occupied state-of-the-art facilities in a new research building at the Company's St. Louis Research Center. Supplementing this substantial commitment to research funding are investments in high technology companies. In 1980, the Company made

three such investments, totaling \$57.3, as follows: an acquired subsidiary, Radiation Dynamics, Inc., principally involved in the manufacture and sale of high-voltage electron accelerators and in developing irradiation processes and irradiated products; a minority interest in Collagen Corporation, a developer of patented and proprietary methods of processing and purifying collagen from animal sources into products which can be implanted in the human body to replace lost or defective tissue; and a minority interest in Biogen, S.A., a Swiss-based company engaged in the field of molecular biology and recombinant DNA research.

Research and Development Costs by Operating Unit

Agricultural Products

1981	\$59.5
1980	41.3
1979	29.6

Chemical Intermediates

1981	\$35.2
1980	30.9
1979	21.9

Industrial Chemicals

1981	\$53.9
1980	51.8
1979	39.9

Plastics & Resins

1981	\$38.5
1980	36.1
1979	32.7

Textiles

1981	\$21.4
1980	33.3
1979	30.1

Fisher Controls

1981	\$12.1
1980	11.2
1979	7.1

Foreign Currency Gains (Losses)

	1981	1980	1979
Foreign currency transactions and translation of ex-U.S. subsidiaries' financial statements	\$26.4	\$15.5	\$(35.8)
Translation of ex-U.S. affiliated companies' financial statements	16.2	(17.5)	2.3
Forward exchange contracts	(70.2)	13.5	6.6
Pretax gains (losses)	(27.6)	11.5	(26.9)
Related income taxes	(56.6)	10.3	5.2
Aftertax gains (losses)	\$29.0	\$ 1.2	\$(32.1)
Per share	\$0.75	\$0.03	\$(0.88)

Of the total effect of foreign currency transactions and translation of ex-U.S. subsidiaries' financial statements, gains (losses) of \$1.0, \$(2.7), and \$(22.3) were classified in cost of goods sold in 1981-1979, respectively. The remaining pretax gain (loss) on foreign currency of \$(28.6), \$14.2, and \$(4.6) for 1981-1979, respectively, is reflected in other income — net.

For 1981, Monsanto reported significant net foreign currency gains. Translation gains were offset, in part, by losses from forward exchange contracts. During 1981, in a period when the dollar was gaining strength and gains were being experienced from the translation of ex-U.S. subsidiaries' and affiliates' financial statements, the Company generally reduced its level of hedging from what it had been in prior years. Because the Company's general level of outstanding forward exchange contracts was higher in 1980, as compared to 1981, the 1980 translation losses were considerably offset by hedging gains. In 1979, the Company also had significant forward exchange contract positions, but nevertheless experienced a substantial translation loss from the maxi-devaluation of the Brazilian cruzeiro, a currency in which hedging is prohibitively expensive.

Monsanto has reported its foreign currency gains and losses for 1981-1979 using the requirements of Financial Accounting Standards Board Statement No. 8 (FAS No. 8). Under FAS No. 8, working capital items (except inventory) and long-term debt — when denominated in foreign currencies — are translated at current exchange rates. The net balance sheet amounts translated at the current rates of exchange determine the level of translation gains or losses that are charged immediately to earnings. In Monsanto's case, except in a limited number of countries, these net balance sheet amounts represent a net liability exposure.

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In December 1981, the Financial Accounting Standards Board finalized new foreign currency translation rules (FAS No. 52) that Monsanto will adopt beginning in 1982. Under FAS No. 52, most of Monsanto's ex-U.S. assets and liabilities will be translated at the current rate and most translation gains or losses will be deferred in a shareholders' equity account until realized. Monsanto will generally be in a net exposed asset position under FAS No. 52, as compared with the generally net exposed liability position under FAS No. 8. Had these new rules been in place for 1981-1979, Monsanto would not have reported foreign currency translation losses or gains in net income for most of its ex-U.S. operations and, as a result, its forward exchange contract position would have been significantly different.

Quarterly Foreign Currency Gains (Losses)			
Quarter	1981	1980	1979
First	\$ 9.7	\$ 5.9	\$ 6.4
Second	23.0	(12.8)	(10.4)
Third	(1.2)	5.3	(17.4)
Fourth	(2.5)	2.8	(10.7)
Total	\$29.0	\$ 1.2	\$(32.1)

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Quarterly Results

Year	Quarter	Net Sales	Cost of Goods Sold	Net Income	Earnings Per Share
1981:	First	\$1,900.0	\$1,390.0	\$176.0	\$ 4.81
	Second	1,855.6	1,472.9	93.8	2.35
	Third	1,633.8	1,190.0	123.8	3.09
	Fourth	1,556.3	1,247.9	51.7	1.25
	Total	\$6,947.7	\$5,300.8	\$445.1	\$11.50
1980:	First	\$1,822.5	\$1,330.4	\$164.2	\$ 4.53
	Second	1,548.6	1,281.7	23.2	0.64
	Third	1,536.7	1,308.8	29.6	0.81
	Fourth	1,663.8	1,555.1	(88.2)	(1.88)
	Total	\$6,573.6	\$5,476.0	\$148.8	\$ 4.10
1979:	First	\$1,823.8	\$1,153.7	\$161.8	\$ 4.44
	Second	1,526.8	1,264.9	59.5	1.64
	Third	1,496.7	1,178.4	98.9	2.73
	Fourth	1,545.3	1,335.0	10.8	0.30
	Total	\$6,192.6	\$4,932.0	\$331.0	\$ 9.11

Quarterly consolidated sales typically exhibit the seasonality of the agricultural products segment of Monsanto's business. Agricultural products accounted for 17.5, 15.4 and 13.6 percent of consolidated sales in 1981-1979, respectively. Of the total agricultural products sales, 35.8, 38.9 and 44.0 percent were concentrated in the first quarter of 1981-1979, respectively. In addition to this seasonal factor, both 1981's and 1980's last three quarters' sales were depressed by the lower volumes resulting from the sluggish U.S. and European economies. Sales for 1979 were strong in the second and third quarters due to accelerated customer purchases in anticipation of price increases from rapidly rising costs of raw materials in that year. The fourth quarter 1979 sales, however, began to reflect the softening of customer demand that carried into and depressed sales volume for 1980.

Quarterly net income is particularly affected by the seasonality of the agricultural products segment of the Company's business because of the relatively greater profitability of this operating unit. Agricultural products accounted for 66.7, 190.7 and 67.5 percent of consolidated operating income for 1981-1979, respectively. Following its sales pattern, agricultural products' operating income is heavily concentrated in the first quarter. Of the total agricultural products operating income for the year, 42.5, 42.3 and 52.3 percent was reported in the first quarter of 1981-1979, respectively. Beginning in 1981, certain marketing, administrative and technological costs associated with agricultural products, which were previously allocated to income based on sales

activity, were expensed as incurred. This accounting change was made to better reflect seasonal operating results of the agricultural products segment and increased the 1981 first quarter net income by \$11.7, or \$0.32 per share. The 1981 second, third and fourth quarters' net income were reduced correspondingly by \$1.9, (\$0.06 per share), \$4.9 (\$0.13 per share) and \$4.9 (\$0.13 per share), respectively. Total year results were not affected by the accounting change.

Beyond the seasonal factor of agricultural products, 1981's quarterly net income pattern reflects general economic conditions. First quarter 1981 results show strengthening demand in certain areas, but the second and third quarter results were impacted by more sluggish economic conditions. The 1981 recession is evident in the fourth quarter results. Similar to 1981, 1980's quarterly net income pattern reflects the effects of the recession in that year, most notably in the second and third quarters as compared to the prior year. The second and, particularly, the third quarter of 1980 also include higher idle plant costs incurred to control inventory levels during those difficult periods. In contrast, the 1979 second and third quarters had significant gains resulting from strong demand in those quarters. As mentioned above, 1979's fourth quarter net income was impacted by softening demand.

Certain nonrecurring gains and losses also impacted the quarterly results, which items are discussed in the "Divestitures" note to the financial statements. In addition to the agricultural products accounting change in 1981 referred to above, an accounting change in 1980 to implement the required capitalization of interest costs increased 1980's quarterly net income by \$4.9 (\$0.14 per share), \$5.3 (\$0.14 per share), \$8.3 (\$0.23 per share) and \$9.0 (\$0.25 per share) for the first through fourth quarters, respectively.

A 1980 third quarter change in estimate of the effective tax rate increased net income \$14.9 (\$0.41 per share), which amount principally relates to the first quarter. In 1979's fourth quarter, a change in estimate of the effective tax rate increased net income \$12.3 (\$0.34 per share), and a change in estimate of the LIFO provision decreased net earnings \$8.1 (\$0.22 per share). The changes in estimates for the LIFO provision and the effective tax rate in the fourth quarter of 1979 were not significant to any other quarter of that year. A 1979 third quarter reversal of prior periods' income taxes due to a change in tax laws in the United Kingdom increased net income \$16.8 (\$0.46 per share).

Operating Unit Segment Data

	Net Sales			Operating Income (Loss)		
	1981	1980	1979	1981	1980	1979
Agricultural Products	\$1,216.7	\$1,012.3	\$ 839.9	\$ 468.2	\$ 400.8	\$ 328.8
Chemical Intermediates	1,088.8	965.7	858.6	124.7	17.8	115.5
Industrial Chemicals	1,623.6	1,577.6	1,513.8	90.4	132.6	202.1
Plastics & Resins	1,368.0	1,383.8	1,414.2	(9.3)	(110.5)	9.6
Textiles	1,014.2	1,041.1	1,069.4	(2.2)	(261.1)	(168.7)
Fisher Controls	636.4	593.1	496.7	68.6	71.9	44.4
	6,947.7	6,573.6	6,192.6	740.4	251.5	531.7
Eliminations				(2.1)	(2.0)	(8.2)
Corporate Expenses				(35.9)	(39.3)	(36.6)
Total Operating	6,947.7	6,573.6	6,192.6	702.4	210.2	486.9
Income Charges — net				9.4	4.5	5.8
Nonoperating Assets						
Total Consolidated	\$6,947.7	\$6,573.6	\$6,192.6	\$ 693.0	\$ 205.7	\$ 481.1

The above data should be read in conjunction with the "Segment Information" note to financial statements on page 74.

World Area Segment Data

	Net Sales					
	1981		1980		1979	
	Outside Customers	Inter-Area	Outside Customers	Inter-Area	Outside Customers	Inter-Area
United States	\$4,873.6	\$ 553.9	\$4,464.4	\$ 534.5	\$4,233.7	\$ 451.0
Europe-Africa	1,247.0	115.1	1,377.8	59.2	1,316.6	65.5
Canada-Latin America	485.8	4.2	459.2	4.0	409.1	4.6
Asia-Pacific	341.3	25.0	272.2	27.4	233.2	26.2
	6,947.7	698.2	6,573.6	625.1	6,192.6	547.3
Eliminations		(698.2)		(625.1)		(547.3)
Corporate Expenses						
Total Operating	6,947.7		6,573.6		6,192.6	
Income Charges — net						
Nonoperating Assets						
Total Consolidated	\$6,947.7	\$ —	\$6,573.6	\$ —	\$6,192.6	\$ —

The above data should be read in conjunction with the "Segment Information" note to financial statements on page 74.

Total Assets			Depreciation and Obsolescence			Capital Expenditures		
1981	1980	1979	1981	1980	1979	1981	1980	1979
\$1,000.8	\$ 802.7	\$ 660.2	\$ 53.6	\$ 44.5	\$ 38.4	\$111.8	\$ 74.1	\$ 43.4
1,245.2	1,178.6	1,123.4	121.5	85.6	76.4	294.1	308.4	222.2
1,160.6	1,113.0	984.1	91.5	88.2	71.1	123.8	181.3	126.7
958.2	1,000.0	1,110.7	63.1	135.7	78.0	59.4	88.3	91.6
859.6	1,019.5	1,022.7	42.5	180.8	138.4	49.1	99.6	59.1
434.7	412.8	353.3	13.2	10.5	9.1	24.2	22.8	18.9
5,659.1	5,526.6	5,254.4	385.4	545.3	411.4	662.4	774.5	561.9
			2.0	1.6	1.3			
5,659.1	5,526.6	5,254.4	387.4	546.9	412.7	662.4	774.5	561.9
410.1	269.8	284.7				5.5	6.0	4.0
\$6,069.2	\$5,796.4	\$5,539.1	\$387.4	\$546.9	\$412.7	\$667.9	\$780.5	\$565.9

Operating income (Loss)			Total Assets		
1981	1980	1979	1981	1980	1979
\$650.1	\$255.4	\$564.2	\$4,436.7	\$4,256.0	\$3,840.3
38.4	(43.8)	(66.8)	1,049.0	1,026.3	1,198.3
40.9	24.2	3.6	280.2	291.3	300.5
24.9	12.9	20.4	227.2	176.1	181.0
754.3	248.7	521.4	5,993.1	5,749.7	5,520.1
(16.0)	0.8	2.1	(334.0)	(223.1)	(265.7)
(35.9)	(39.3)	(36.6)			
702.4	210.2	486.9	5,659.1	5,526.6	5,254.4
9.4	4.5	5.8	410.1	269.8	284.7
\$693.0	\$205.7	\$481.1	\$6,069.2	\$5,796.4	\$5,539.1

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Operating Unit Segment Data

Certain major chemicals, such as acrylonitrile, ammonia, styrene monomer, nylon salt, phosphorus and phenol are used by several Monsanto operating units as intermediate "building block" materials. To control process development and reduce manufacturing costs, Chemical Intermediates is responsible for the management of the manufacturing operations related to most of these materials. However, each operating unit that uses the "building block" chemicals in the manufacture of end products is considered to be the joint owner of the manufacturing facilities and shares the product manufacturing costs and investments based on its annual production commitment. Each operating unit's share of these costs and investments is reflected as part of its financial data.

Agricultural Products had a 20.2 percent increase in 1981 over 1980 sales, benefiting from both price and volume increases. Operating income increased 16.8 percent in 1981 compared to the prior year. Sales and operating income for 1980 vs. 1979 reflect increases over the prior year of 20.5 and 21.9 percent, respectively. Highly successful proprietary products, particularly *Lasso* and *Roundup* herbicides, contributed significantly to its increased sales and income.

Chemical Intermediates 1981 sales increased 12.7 percent over 1980, principally as a result of volume improvements related to the Monsanto/Conoco joint venture, and some selling price increases. Operating income advanced significantly in 1981 compared to 1980, but this increase was entirely due to a gain on the third-quarter sale of the Company's interest in the Monsanto/Conoco joint venture. Without this nonrecurring gain, operating results were lower in 1981 than in 1980. Sales for 1980 vs. 1979 increased 12.5 percent, while operating income declined 84.6 percent. Except for increases from the Oil & Gas Division, operating results were impacted in 1980 and 1981 by the sluggish demand for its basic intermediate chemicals.

Industrial Chemicals results reflect a 2.9 percent sales increase in 1981 compared to 1980. This increase generally was driven by selling price improvements. Operating income in 1981 fell 31.8 percent from the 1980 level. Sales for 1980 vs. 1979 increased 4.2 percent, but operating income declined 34.4 percent. Operating results over the last two years have been impacted by the general worldwide economic difficulties during the period, and particularly by the prolonged slowdown in the semiconductor, housing and automotive markets. The environmental systems subsidiary, however, has been an area of strength.

Plastics & Resins had a 1.1 percent sales decrease in 1981 as compared to 1980, due to lost volume resulting from the 1980 withdrawal from Aiscondel, S. A. However, sales from continuing businesses improved 7.1 percent reflecting volume and selling price gains in selected product groups. Operating losses were measurably reduced year-to-year. The 1980 results reflect the significant charge to terminate Monsanto's interest in Aiscondel, S. A. Sales for 1980 vs. 1979 decreased 2.1 percent, and operating results turned negative from the

modest operating income reported for 1979. Alcondef's substantial operating losses in 1979 and 1980 heavily impacted the reported results of Plastics & Resins in those years. In addition, many of the products of Plastics & Resins have automotive and housing related end-uses. The difficulties of operating in these end-use markets in 1980 and 1981 have been noted previously.

Textiles had a modest 2.6 percent decrease in sales for 1981 as compared to 1980, reflecting the volume lost by the disposition of its polyester filament business at the end of 1980, partially offset by strong nylon demand in the first half of 1981. The business operated at a modest loss in 1981, which represented a significant turnaround from the major losses of 1980 and 1979. The 1981 reported results include a \$6.6 gain from the reversal of an overestimation of costs associated with the 1980 closure of the polyester filament operation. Also included in 1981 is a favorable impact of approximately \$24.7 on cost of goods sold from the nonreplacement of low cost inventory tiers resulting from the LIFO method of accounting. During the first half of 1981, Textiles was operating at a profitable level, but the spreading weakness in the U.S. economy heavily impacted fibers demand and the results for the year as a whole. Sales for 1980 vs. 1979 decreased 2.6 percent, and operating losses were substantially larger. In 1980 and 1979, significant losses were incurred by the now discontinued polyester filament business and, in 1979, by the Company's European nylon business which was disposed of in that year.

Fisher Controls sales improved 7.3 percent in 1981 over 1980, reflecting a combination of selling price and volume increases. Operating results on a year-to-year basis were down slightly in 1981. Sales and operating income for 1980 vs. 1979 reflect increases of 19.4 and 61.9 percent, respectively. Results for 1980 were strong due to North American sales of control valves and instrumentation, and this strength continued in 1981. Foreign currency losses adversely impacted 1981 operating results as compared to 1980, however.

World Area Segment Data

The World Area Segment Data on page 38 was prepared on an "entity basis" — i.e., sales and income as recorded in the financial statements of the legal entity are assigned to the world area where the entity is located (e.g., a sale from a United States subsidiary to a customer in Brazil is reported as a United States transaction). This presentation is required by generally accepted accounting principles. However, Monsanto International, the unit responsible for coordinating ex-U.S. operations, views financial results on an "area basis" with a final sale perspective. On an "area basis," sales and income are assigned to the world area where the customer is located (e.g., a sale from a United States subsidiary to a customer in Brazil is reported as a Latin America transaction). The table which follows summarizes Monsanto ex-U.S. results of operations. The discussion focuses on Monsanto "area basis" results.

International Sales and Operating Income	1981	1980	1979
Sales by ex-U.S. subsidiaries:			
Europe-Africa	\$1,382.1	\$1,437.0	\$1,382.1
Canada-Latin America	490.0	463.2	413.7
Asia-Pacific	366.3	299.6	259.4
	2,218.4	2,199.8	2,055.2
U.S. export sales	1,042.0	1,026.4	657.4
Inter-area eliminations	(599.2)	(625.1)	(547.3)
Total Consolidated International Sales (Area Basis)	\$2,562.2	\$2,601.1	\$2,365.3
Operating income (loss) of ex-U.S. subsidiaries:			
Europe-Africa	\$ 38.4	\$ (43.8)	\$ (66.8)
Canada-Latin America	40.9	24.2	3.6
Asia-Pacific	24.9	12.9	20.4
	104.2	(6.7)	(42.8)
U.S. export operating profit, net of allocated administrative expenses	75.2	141.8	174.3
Equity in ex-U.S. affiliates' net income	33.5	15.7	26.3
Total Consolidated International Operating Income (Area Basis)	\$ 213.9	\$ 150.8	\$ 157.8

Europe-Africa sales for 1981 were lower than in 1980, reflecting the divestiture of Alconcel, S.A. and a general weakness throughout the year in many European economies. Significantly decreased losses from Monsanto's Seal Sands, United Kingdom, operation and the disposal of Alconcel, S.A. resulted in a profitable level of operations for 1981, as compared to a net loss in 1980.

Canada-Latin America sales in 1981 improved modestly over 1980. The Canadian economy's activity generally tracked the United States' activity. Latin America countries' economic activity levels were mixed, with Brazil experiencing its first recession in many years. Operating results reflect a good improvement in 1981 over 1980 and include a small gain from the sale of the remaining operations of a plastics subsidiary whose principal operations were shutdown in 1979.

Asia-Pacific sales for 1981 had a significant increase, led by excellent results from a strong Australian economy. Agricultural products sales in this world area for 1981 had a good increase over 1980, but other export products' sales were adversely impacted by the strength of the United States dollar against many foreign currencies. Overall, operating results improved in 1981 over 1980.

**Supplemental Financial Data
Adjusted for the Effects of Changing Prices**

	Historical Cost	Adjusted for General Inflation	Adjusted for Changes in Current Costs
	(In Average 1981 Dollars)		
Net sales	\$6,947.7	\$6,947.7	\$6,947.7
Cost of goods sold, excluding depreciation and depletion	4,939.7	5,006.8	4,972.4
Depreciation and depletion expense	361.1	521.7	561.7
Marketing, administrative and technological expense	944.5	944.5	944.5
Other expense and income—net	9.4	9.4	9.4
Income taxes	247.9	247.9	247.9
Net income from operations	\$ 446.1	\$ 217.4	\$ 211.8
Income from operations per share	\$ 11.50	\$ 5.61	\$ 5.47
Gain from decline in purchasing power of net amounts owed		\$ 98.3	\$ 98.3

Monsanto's financial statements are prepared in accordance with generally accepted accounting principles, which include the concept of historical cost. Under this concept, inventory and property generally are reported at the amounts originally paid and do not reflect subsequent changes in (1) the general purchasing power of the dollar, (2) the current cost of replacing the asset, or (3) the amount for which the asset could be sold — its market value.

Financial Accounting Standards Board Statement No. 33 (FAS No. 33), entitled "Financial Reporting and Changing Prices," requires the disclosure in the above table of selected data under two different sets of assumptions. One set of data — the "constant dollar" disclosures — reflects the adjustment of the historical cost financial statements for changes in the general purchasing power of the dollar. The other set of data — the "current cost" disclosures — reflects adjustments based on estimates of the current cost to replace, in kind, existing assets. The current cost data attempt to measure the impact of price changes which are specific to Monsanto.

Only the following items are adjusted in the current year under the constant dollar and current cost disclosures: inventories; property,

plant and equipment; cost of goods sold; and depreciation and depletion expense. Income tax provisions are not adjusted for the inflation effects.

Monsanto generally believes that the current cost method best reflects certain impacts of inflation. However, in most years the difference between the current cost and constant dollar methods will not be significant in terms of their ability to demonstrate inflation impacts. It is clear from both methods that, in a period of inflation, historical cost earnings overstate the ability of most manufacturing companies to generate cash flow from operations sufficient to provide for business growth and dividend growth in a "real" sense. Inflation's effects must first be "financed" from historical cost earnings by increased expenditures to replace worn out and obsolete facilities. While these facilities will not be replaced in their current form as the computational methods of the data suggest — technological advances will be incorporated as replacement occurs and some facilities will never be replaced — nevertheless, the impact reflected in the FAS No. 33 data is a useful approximation of certain inflation effects. However, impacts from inflation can be mitigated by management actions and, from the shareowners' perspective, are mitigated through the existence of debt.

Recognizing the impact of rising costs in selling prices is frequently mentioned as one way management responds to inflation. Cyclical overcapacity in the chemical industry, aggravated by the recent recessions in 1980 and 1981, has allowed Monsanto to pass along in the form of higher selling prices only a portion of the higher costs incurred as the market for many products will not currently support full cost pass-through. Accordingly, to maintain profitability in an inflationary environment, the Company continually searches for ways to reduce costs. Improved technology, increased productivity and programs such as the Company's successful energy conservation efforts allow Monsanto to remain competitive from a selling price standpoint, while mitigating some of the impact of rising costs. In addition, the Company is constantly reviewing its businesses to determine those whose long-term economics will not justify continued investment. Monsanto has disposed of several such businesses in recent years.

To the extent that creditors also bear some of the impact of inflation, shareowners' equity is protected. An approximation of the net effects of inflation borne by creditors is shown in the table on page 43 as "gain from decline in purchasing power of net amounts owed."

Also shown in the table on page 43 are a statement of net income from operations and certain other information for the year ended December 31, 1981, adjusted for changing prices in accordance with FAS No. 33, and the historical cost information reported in the primary financial statements for the same period. The increase in current cost of inventories and property, plant and equipment for the year ended December 31, 1981, stated in average 1981 dollars, was

\$448.7. This amount was \$29.7 less than the increase that would have been caused solely by general inflation. At December 31, 1981, the current cost of inventory and property, plant and equipment (net of accumulated depreciation) was \$1,423.7 and \$4,345.5, respectively, stated in year-end 1981 dollars.

Net income from operations reflects higher depreciation and depletion expense and cost of goods sold. Income taxes have not been adjusted for these higher costs resulting in an effective tax rate of 53.3 and 53.9 percent for the constant dollar and current cost data respectively. These rates are significantly higher as compared to an effective tax rate of 35.8 percent under historical cost.

Adjustments for general inflation have been made using the Consumer Price Index — All Urban Consumers as required by FAS No. 33. The amounts reported as the estimated current costs are calculated as described below. These estimates, although based on the best judgments of management, are not necessarily indicative of either the amounts for which the assets could be sold or the cost at which such assets might be replaced in the future.

Inventories determined on a FIFO basis were used to approximate inventories on a current cost basis. Cost of goods sold as determined on a LIFO basis, or techniques that approximate the results obtained on a LIFO basis, was used to approximate cost of goods sold on a current cost basis. The current costs (specific prices) of property, plant and equipment were generally estimated using appropriate construction and equipment indices. Accumulated depreciation and depletion for the current cost of existing facilities and related expenses were estimated using the same methods and rates as used in the historical cost financial statements.

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Certain additional historical cost, constant dollar and current cost data appear in the following table.

Selected Financial Data	1981	1980	1979	1978	1977
Historical Cost, as reported:					
Net sales	\$6,947.7	\$6,573.6	\$6,192.6	\$5,018.7	\$4,594.5
Net income	445.1	148.8	331.0	302.6	275.6
Earnings per share	11.50	4.10	9.11	8.29	7.46
Total assets	8,069.2	5,796.4	5,538.1	5,035.7	4,350.1
Net assets	3,330.2	2,808.2	2,781.8	2,579.4	2,400.9
Long-term debt	1,110.3	1,370.5	1,202.5	1,223.5	1,030.8
Dividends per common share	3.75	3.55	3.35	3.175	3.025
Constant Dollar Data, in average 1981 dollars:					
Net income (loss) from operations	217.4	(77.1)	213.3		
Net income (loss) from operations per share	5.81	(2.13)	5.86		
Net assets	4,561.3	4,352.9	4,574.4		
Current Cost Data, in average 1981 dollars:					
Net income (loss) from operations	211.8	(33.8)	235.2		
Net income (loss) from operations per share	5.47	(0.94)	6.47		
Net assets	4,879.4	4,486.5	4,865.9		
Increase in specific prices of inventory and property over (under) increase caused solely by general inflation	(29.7)	(307.7)	120.1		
Other Data, in average 1981 dollars:					
Net sales	6,947.7	7,257.3	7,759.6	6,996.7	6,895.8
Gain from decline in purchasing power of net amounts owed	98.3	148.4	153.8		
Dividends per common share	3.75	3.95	4.25	4.46	4.56
Market price of common stock at year-end	\$ 67.96	\$ 72.36	\$ 70.64	\$ 63.10	\$ 84.72
Average Consumer Price Index	272.4	246.8	217.4	195.4	181.5

Review of Liquidity and Capital Resources

The following discussion reviews Monsanto's ability to generate cash and describes its principal capital resources.

Cash (Funds) Flow

Cash, Time Deposits and Short-Term Securities

1981	\$426.1
1980	210.6
1979	271.3

Funds Provided by Operations (Before Working Capital Changes)

1981	\$606.1
1980	667.5
1979	666.7

Monsanto's 1981-1979 sources and uses of funds, defined as cash, time deposits, certificates of deposit and short-term securities, are shown in the Statement of Changes in Consolidated Financial Position on page 62.

Funds provided by operations, before working capital changes, increased significantly in 1981 as compared to the two prior years reflecting the improved operating results for the period. Sources of funds in 1981 also include substantial proceeds from the sale of a joint venture interest and a common stock offering. Combined with lower capital expenditures for the period and a continued emphasis on working capital support levels, these substantial sources of funds resulted in a much improved cash and short-term securities position at the end of 1981. Funds provided by operations, before working capital changes, increased slightly in 1980 as compared to 1979.

While cash is generated by operations throughout the year, significant receipts from agricultural product sales are concentrated in the first quarter. Tax and dividend payments are made quarterly, but most other significant sources and uses of funds do not occur on a predetermined, regular basis throughout the year.

Short-Term Liquidity and Capital Resource Measures**Working Capital**

1981	\$1,485.6
1980	1,226.4
1979	1,322.7

Short-Term Debt

1981	\$174.7
1980	238.8
1979	233.1

The current ratio, after decreasing to 2.1:1 in 1980 from 2.2:1 in 1979, improved to 2.4:1 at the end of 1981. The 1981 improvements in working capital levels and current ratio reflect increased operating results for the year and the proceeds from the sale of a joint venture interest. In 1980, working capital levels were affected by the recession in that year, requiring higher than expected short-term financing. Management believes that a working capital ratio of at least 2.0:1 is desirable.

Monsanto's additional investment in working capital, excluding cash and cash equivalents and considering inventories valued on a "first-in, first-out" FIFO basis, for 1981 and 1980 was \$82.4 and \$44.4, respectively. These 1981 and 1980 increases contrast with an additional investment in working capital on the same basis of \$274.4 in 1979. Although 1979 was a stronger year in terms of business growth, the Company's working capital utilization programs in 1981 and 1980 have been successful in light of continuing high inflation. Most significant has been the control of inventory investment, which, on a FIFO basis, increased only 5.9 percent in 1981, was virtually flat in 1980, but grew by 36.6 percent in 1979. Trade receivable levels have been relatively stable in dollar terms over the last two years, despite a cumulative increase in sales of 12.2 percent over that period. Reflecting stronger business conditions, trade receivables increased 19.9 percent in 1979 over the prior year. Accounts payable and accrued liabilities have been relatively flat over 1981 and 1980, although a significant reduction in trade payables was offset, in 1980, by the related liabilities at year-end for the Aiscondel, S.A. and polyester filament shutdowns. Following the increase in inventory investment, trade payables in 1979 were at a substantially higher level than in the prior year.

The Company has available \$100.0 of existing domestic revolving credit, \$100.0 of short-term lines of credit, \$100.0 of Eurocurrency revolving credit and \$416.2 through ex-U.S. subsidiaries' short-term facilities. Only \$77.4 under these existing credit arrangements was utilized at December 31, 1981, all of which related to short-term facilities of ex-U.S. subsidiaries. Short-term lines of credit and commercial paper, when necessary, are intended to be used to periodically finance working capital needs and to provide "bridge" financing until more attractive rates prevail in long-term debt markets.

Long-Term Liquidity and Capital Resource Measures

Capital Expenditures

1981	\$624.4
1980	728.9
1979	565.9

Long-Term Debt

1981	\$1,110.3
1980	1,370.5
1979	1,202.5

Capital expenditures shown above exclude \$43.5 and \$51.6 of capitalized interest for 1981 and 1980, respectively.

Expenditures for capital equipment have typically been financed by a combination of cash provided from operations and long-term debt. In 1981, however, the Company issued 3,000,000 new common shares whose proceeds were used to reduce debt that was incurred to fund the capital expenditure program. Long-term debt at the end of 1981 decreased to \$1,110.3, as compared to \$1,370.5 and \$1,202.5 at the end of 1980 and 1979, respectively. As a result of the common share offering and the reduction of long-term debt, the long-term debt to capitalization ratio decreased to 25.0 percent in 1981 as compared to 32.8 and 30.2 percent in 1980 and 1979, respectively. Over the long term, Monsanto believes that its appropriate long-term debt to capitalization ratio is approximately 33.3 percent.

The interest coverage ratio (times), excluding the effect of capitalized interest in 1981 and 1980, was 5.5 in 1981, as compared to 1.9 and 4.9 in 1980 and 1979, respectively. The 1980 interest coverage ratio was impacted significantly by nonrecurring charges, recession depressed earnings and sharply higher interest costs.

The Company has made extensive use of pollution control and industrial development bond financing when the projects qualify. Because of the tax-free nature of these obligations, the associated interest rates are quite favorable. Total outstanding pollution control and industrial development bond obligations at December 31, 1981, were \$210.8. While the Company will continue to pursue this form of financing when available in the future, the individual issues have generally not exceeded \$10.0 in the past and the average offering has been substantially smaller.

In addition to the use of long-term debt, Monsanto has occasionally used other forms of financing, principally lease arrangements and joint venture arrangements involving take-or-pay contracts. These alternative forms of financing are used when the effective interest cost is attractive or the nature of the capital project requires their use. The Company will continue to use lease, joint venture and other innovative financing arrangements in the future as appropriate, but the extent of their use in Monsanto's overall financial structure has not been significant in the past.

Virtually all of the assets reflected in Monsanto's financial statements are free from lien and are not used to collateralize debt. Accordingly, these assets represent a source of additional debt capacity, although the Company has no present plans to pursue this source of financing.

Monsanto is involved in oil and gas exploration activities and owns reserves whose current value is not reflected in the accompanying financial statements. (See "Oil and Gas Reserve Data" on page 54.) The Company's proved reserves represent a valuable asset that could be used to increase its total debt capacity. In addition, the Oil & Gas Division's undeveloped acreage, or some portion of it, may be used in the future in joint arrangements with outside parties to provide funding for exploration and development of the acreage.

Capital Expenditures by World Area

United States

1981	\$569.6
1980	636.6
1979	430.7

Europe-Africa

1981	\$ 57.6
1980	102.7
1979	96.9

Canada-Latin America

1981	\$ 26.9
1980	27.1
1979	26.8

Asia-Pacific

1981	\$ 8.3
1980	7.8
1979	7.5

Common Stock Data

Dividends Per Common Share				
Quarter	1981		1980	
First	\$0.90		\$0.85	
Second	0.95		0.90	
Third	0.95		0.90	
Fourth	0.95		0.90	
Total	\$3.75		\$3.55	
Common Stock Prices				
Quarter	1981		1980	
	High	Low	High	Low
First	\$77½	\$67	\$62½	\$46½
Second	87½	68½	54½	42½
Third	61½	59½	59½	50½
Fourth	72½	60½	70½	50½

Monsanto's common stock is traded principally on the New York Stock Exchange. The number of common shareowners as of February 22, 1982, was 78,772. In April, 1981, the Company issued 3,000,000 common shares in a public offering. The Company last issued convertible securities in the 1969-1974 period. Currently, Monsanto has convertible preferred stock, convertible debentures and convertible loan stock outstanding. In addition, common shares are regularly issued under employee stock option plans. The total common shares reserved for convertible securities and stock option plans was 2,554,067 at December 31, 1981. A treasury stock acquisition program is in place to mitigate, when appropriate, the dilutive effect of the issuance of common shares under stock option plans and outstanding convertible securities. However, certain financial criteria permitting purchases under the program were not met in 1981 or 1980 and, accordingly, no treasury shares were acquired in those years. Also, the Company has an employee stock purchase program whose requirements are immediately funded with the purchase of treasury shares.

The Company has paid dividends on its common shares — without interruption or reduction — since 1929. The dividend is paid quarterly and has been increased in each of the past nine years. The dividend payout of 32.6 percent for 1981 is indicative of dividend payouts in recent years, although the Company's dividend policies are not necessarily tied to a set payout percentage. In 1980, due to the depressed level of earnings, the dividend payout percentage was considerably higher than in either 1981 or 1979.

Shareowners' Equity Per Common Share

1981	\$84.37
1980	77.63
1979	77.20

Common Stock Price (Low and High)

1981	\$ 59½	\$87½
1980	42¼	70¼
1979	45	62

Pension Plans' Funding Status

Actuarial Present Value of Accumulated Plan Benefits

1981	\$1,378.2
1980	890.2
1979	892.2

Net Assets Available for Benefits

1981	\$1,357.7
1980	1,260.3
1979	957.8

Monsanto provides pension benefits for substantially all of its employees. Funding these obligations represents a significant future commitment.

The actuarial present value of accumulated plan benefits and the related net assets available for benefits shown above reflect the combined funding status for United States and ex-U.S. pension plans representing approximately 99.6 percent of pension expense. This accumulated benefits information was determined in accordance with the requirements of Financial Accounting Standards Board Statement No. 36, "Disclosure of Pension Information." Under these requirements, it is not permissible to use a salary increase assumption. Accordingly, the accumulated benefits represent vested and nonvested benefits that have been accrued based on employee service and earnings to date. The plans' net assets are stated at market values determined at the end of each respective period.

Annual valuations of the major pension plans are made by an outside firm of actuaries to determine funding requirements and pension expense. The "entry age normal" actuarial method is used. The "Pension Plans" note to financial statements discusses changes in the major plans' assumptions and benefits for 1981 and 1980. The key actuarial assumptions currently used for the largest domestic plans include an annual average investment return on pension assets of 7.5 percent and an average salary increase, when applicable, of 6.5 percent. The plans' status and assumptions are reviewed regularly by the Company's outside actuaries and the Pension and Savings Funds Committee of the Board of Directors. Monsanto believes that the methods and assumptions used, in the aggregate, are reasonable for the purpose of determining the annual pension funding requirements and pension expense.

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In recent years, Monsanto has expanded its exploration efforts for hydrocarbon reserves. Certain reserve and related data regarding the Company's oil and gas activities follow. The following definitions are important to understanding these data:

Proved Oil and Gas Reserves are the estimated quantities of crude oil, natural gas, and natural gas liquids which geological and engineering data demonstrate with reasonable certainty to be recoverable in future years from known reservoirs under existing economic and operating conditions, i.e., prices and costs as of the date the estimate is made. Prices include consideration of changes in existing prices provided only by contractual arrangements, but not on escalations based on future conditions.

Proved Developed Oil and Gas Reserves are reserves that can be expected to be recovered through existing wells with existing equipment and operating methods.

Proved Undeveloped Oil and Gas Reserves are reserves that are expected to be recovered from new wells on undrilled acreage, or from existing wells where a relatively major expenditure is required for completion.

Estimated Future Net Revenues are computed by applying current prices of oil and gas (with consideration of price changes only to the extent provided by contractual arrangements) to estimated future production of existing proved oil and gas reserves, less estimated future expenditures (based on current costs) to be incurred in developing and producing the proved reserves, and assuming continuation of existing economic conditions.

Present Value of Estimated Future Net Revenues is computed using a discount factor of 10 percent applied to the Estimated Future Net Revenues.

Reserve Recognition Accounting (RRA) is an accounting method that reflects:

1. Proved oil and gas reserves as assets in the balance sheet;
2. Additions to proved reserves and changes in valuations of proved reserves in the income statement; and
3. All costs associated with finding and developing additions to proved oil and gas reserves, together with all costs determined to be nonproductive during the current period, in the income statement.

RRA is prescribed by the Securities and Exchange Commission for supplemental disclosure only and is the basis used in determining the results of oil and gas producing activities reflected in the "Summary" included in this section. The "value" assigned to proved reserves under RRA is the present value of the estimated future net revenues from those reserves. However, the basic financial statements include Monsanto's oil and gas activities using the successful efforts method of

accounting, which does not recognize the value of reserves as assets, reflect income only to the extent that oil and gas are sold, and provide for capitalization of costs to find reserves and drill and develop successful wells.

Net Quantities of Proved Reserves

	United States		Canada		Total	
	Oil (1)	Natural Gas (2)	Oil (1)	Natural Gas (2)	Oil (1)	Natural Gas (2)
Developed and Undeveloped Reserves:						
December 31, 1979	27.3	554.9	1.2	58.8	28.5	613.7
Revisions of previous estimate	(0.1)	(14.3)		(10.1)	(0.1)	(24.4)
Purchases of minerals-in-place	0.1	1.3			0.1	1.3
Extensions, discoveries and other additions	3.9	62.1		1.9	3.9	64.0
Production	(2.6)	(33.6)	(0.1)	(2.4)	(2.7)	(36.0)
December 31, 1980	28.6	570.4	1.1	48.2	29.7	618.6
Revisions of previous estimate	(0.9)	(26.2)		0.5	(0.9)	(25.7)
Purchases of minerals-in-place	2.0	0.9			2.0	0.9
Extensions, discoveries and other additions	5.7	39.5		5.3	5.7	44.8
Production	(2.8)	(37.6)	(0.1)	(2.4)	(2.9)	(40.0)
December 31, 1981	32.6	547.0	1.0	51.5	33.6	598.5
Developed Reserves:						
December 31, 1979	25.1	452.1	1.1	56.2	26.2	508.3
December 31, 1980	26.5	449.4	1.0	45.6	27.5	495.0
December 31, 1981	31.2	433.1	0.9	49.0	32.1	482.1

(1) Stated in millions of barrels.

(2) Stated in billions of cubic feet (Bcf).

(3) Oil and gas reserves relating to royalty interests are not available and, therefore, are not included in the net quantities of proved reserves. Monsanto's share of production from these royalty interests is not significant.

In determining the estimated future net revenue data which follow, current prices were based on actual 1981 year-end selling prices for oil and gas. In accordance with the Securities and Exchange Commission's requirements, effects of future price decontrol or inflation were not considered. Similarly, future expenditures were determined by using the actual 1981 year-end cost levels to develop and produce reserves.

Estimated Future Net Revenues of Proved Reserves At December 31, 1981:				
		United States	Canada	Total
Developed and Undeveloped Reserves:	1982	\$ 150.6	\$ 4.6	\$ 155.2
	1983	143.6	5.4	149.0
	1984	121.1	5.8	126.9
	Remainder	1,970.8	70.7	2,041.5
	Total	\$2,386.1	\$86.5	\$2,472.6
Developed Reserves:	1982	\$ 150.6	\$ 4.6	\$ 155.2
	1983	143.6	5.6	149.2
	1984	121.0	5.8	126.8
	Remainder	1,417.3	66.3	1,483.6
	Total	\$1,832.5	\$82.3	\$1,914.8

Present Value of Estimated Future Net Revenues of Proved Reserves at December 31:				
		United States	Canada	Total
Developed and Undeveloped Reserves:	1979	\$331.8	\$30.5	\$362.3
	1980	\$535.0	\$39.7	\$574.7
	1981	\$761.7	\$43.2	\$804.9
Developed Reserves:	1979	\$317.0	\$30.1	\$347.1
	1980	\$482.5	\$38.6	\$521.1
	1981	\$733.7	\$41.9	\$775.6

A summary of oil and gas producing activities using RRA and an analysis of the net change in present value of estimated future net revenues for 1981 and 1980 follow. This summary is prescribed by the Securities and Exchange Commission. Monsanto recommends that the RRA results be evaluated with caution and an awareness of the inherent limitation of any prescribed method for determining changes in value. Changes in the discount rate, future selling prices, costs or reserve estimates made in developing the RRA data could significantly affect the results. As indicated above, the future selling prices and costs used in calculating the present value of oil and gas reserves are based on current — not probable future — selling prices and costs.

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The results of oil and gas activities in the Summary do not include the operation of natural gas plants, which operations are included in the product group data on page 31. Monsanto's historical cost financial statements include pretax earnings of \$34.1 and \$27.6 for 1981 and 1980, respectively, corresponding to the oil and gas activities reflected in the Summary. No interest costs or general corporate expenses have been allocated to either the historical cost or RRA results of oil and gas activities. The 1980 RRA results have been restated to reflect a consistent method of determining evaluated costs. Aggregate property acquisition costs, costs of uncompleted exploratory wells and major development costs that have been deferred pending further evaluation, and, accordingly, are not reflected in the Summary, were \$118.5 and \$76.8 as of December 31, 1981 and 1980, respectively. Related to this amount, valuation allowances of \$9.6 and \$6.6, were provided during 1981 and 1980, respectively. Total valuation allowances related to the deferred costs were \$25.2 and \$19.1 as of December 31, 1981 and 1980, respectively.

**Summary of Oil and Gas Producing Activities
For the Year Ended December 31:**

	Change in Present Value of Estimated Net Revenues		RRA Results of Oil & Gas Producing Activities	
	1981	1980	1981	1980
Additions to estimated proved reserves, gross	\$143.7	\$101.8	\$143.7	\$101.8
Revisions to estimates of reserves proved in prior years:				
Changes in prices	69.4	221.3	69.4	221.3
Other	45.0	(26.7)	45.0	(26.7)
Accretion of discount	57.5	36.2	57.5	36.2
Total Additions and Revisions	315.6	332.6	315.6	332.6
Evaluated acquisition, exploration and development costs incurred, including valuation allowances			(133.7)	(99.4)
Present value of estimated future development and production costs	(20.8)	(43.6)	(20.8)	(43.6)
Expenditures during the year that reduced future development costs estimated at the prior year-end	22.7	8.3		
Purchase of minerals in place	38.9	9.4		
Sales of oil and gas and value of transfers, net of production costs of \$54.4 and \$34.9 for 1981 and 1980, respectively	(126.2)	(86.3)		
Net Change	\$230.2	\$212.4		
Additions and revisions to proved reserves in excess of evaluated costs			181.1	189.6
Provision for income taxes			81.5	71.4
Aftertax Results			\$ 99.5	\$118.2

Summary of Significant Accounting Policies

Management has selected the following accounting principles from acceptable alternatives in preparing the consolidated financial statements.

Basis of Consolidation The consolidated financial statements include the Company and its majority-owned subsidiaries. Significant intercompany transactions have been eliminated in consolidation. Ex-U.S. subsidiaries' financial statements are translated to United States dollars for consolidation purposes in accordance with the requirements of Financial Accounting Standards Board Statement No. 8.

Investments in affiliates in which Monsanto has an ownership interest greater than 20 percent, but which are not majority-owned, are accounted for by the equity method.

Depreciation Monsanto generally uses the straight line method of computing depreciation.

Income Taxes Investment tax credits are recorded under the "flow through" method of accounting as a reduction of income tax expense in the year in which they are used to offset the Federal income tax liability.

Income taxes have not been provided on the undistributed earnings of ex-U.S. subsidiaries since any taxes on dividends received from those subsidiaries would be substantially offset by foreign tax credits. Also, income taxes have not been provided on a substantial portion of the undistributed earnings of domestic subsidiaries, including domestic international sales corporations (DISC's), whose distribution would be subject to additional taxes, because Monsanto intends to indefinitely reinvest those earnings.

Inventory Valuation Inventories are stated at the lower of cost or market. Actual cost is used for raw materials and supplies, and standard cost, which approximates actual cost, is used for finished goods and goods in process. Standard cost includes elements for direct labor, raw material, and manufacturing overhead based on practical capacity. The cost of substantially all domestic inventories is determined by the last-in, first-out (LIFO) method. The cost of other inventories is generally determined by the first-in, first-out (FIFO) method.

Oil and Gas Activities Oil and gas exploration and production activities are accounted for using the successful efforts method.

Change in Presentation For the year ended December 31, 1981, the Company changed its presentation of the Statement of Changes in Consolidated Financial Position from an analysis of changes in working capital to an analysis of changes in cash, time deposits and certificates of deposits, and short-term securities. The Statements of Changes in Consolidated Financial Position for 1980 and 1979 have been restated to conform with the 1981 presentation.

Statement of Consolidated Income
(Dollars in millions, except per share)

Monsanto Company
and Subsidiaries

	1981	1980	1979
Net Sales	\$6,947.7	\$6,573.6	\$6,192.6
Cost of Goods Sold	5,300.8	5,476.0	4,932.0
Marketing and Administrative Expenses	659.9	617.9	551.6
Technological Expenses	284.6	269.5	222.1
	6,245.3	6,363.4	5,705.7
Operating Income	702.4	210.2	486.9
Other Expense and Income:			
Interest expense	100.9	111.8	123.3
Other income — net	91.5	107.3	117.5
	9.4	4.5	5.8
Income Before Income Taxes	693.0	205.7	481.1
Income Taxes	247.9	56.9	150.1
Net Income	\$ 445.1	\$ 148.8	\$ 331.0
Earnings per Share	\$ 11.50	\$ 4.10	\$ 9.11

The above statement should be read in conjunction with page 58 and pages 64 through 75 of this report.

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Statement of Consolidated Financial Position

(Dollars in millions, except per share)

Assets	At December 31	
	1981	1980
Current Assets:		
Cash	\$ 81.8	\$ 44.8
Time deposits and certificates of deposit	127.4	104.3
Short-term securities — at cost which approximates market	216.9	61.5
Trade receivables, net of allowances of \$39.0 in 1981 and \$43.4 in 1980	1,072.9	1,105.9
Miscellaneous receivables and prepaid expenses	177.3	228.2
Inventories	873.2	832.3
	2,549.5	2,377.0
Investments and Other Assets:		
Investments in affiliates	175.1	158.2
Other	160.7	152.1
	335.8	310.3
Property, Plant and Equipment, at Cost:		
Land	57.7	57.0
Buildings	665.4	670.3
Machinery and equipment	4,600.1	4,628.4
Mineral rights and oil and gas properties	475.4	352.0
Construction-in-progress	418.9	365.9
	6,217.5	6,073.6
Less accumulated depreciation and depletion	3,033.6	2,964.5
	3,183.9	3,109.1
Total Assets	\$6,069.2	\$5,796.4

The above statement should be read in conjunction with page 58 and pages 64 through 75 of this report.

Liabilities and Shareowners' Equity	At December 31	
	1981	1980
Current Liabilities:		
Accounts payable	\$ 492.3	\$ 425.8
Wages and commissions	106.7	105.4
Income and other taxes	99.4	60.2
Miscellaneous accruals	190.8	320.4
Short-term debt	174.7	238.8
	1,063.9	1,150.6
Long-Term Debt	1,110.3	1,370.5
Deferred Credits and Other Liabilities:		
Deferred income taxes	421.2	338.1
Other	30.1	28.3
	451.3	364.4
Minority interests in Subsidiaries	113.5	102.7
Shareowners' Equity:		
Preferred stock	authorized, 10,000,000 shares, no par value:	
	issued and outstanding, 99,151 shares in 1981 and 123,139 shares in 1980	
	0.2	0.3
Common stock	authorized, 100,000,000 shares, par value \$2 each:	
	issued, 39,978,084 shares in 1981 and 36,978,084 shares in 1980	
	79.9	73.9
Additional contributed capital	653.5	651.8
Reinvested earnings	2,422.7	2,122.7
	3,356.3	2,848.7
Less common stock in treasury, at cost (509,800 shares in 1981 and 808,435 shares in 1980)	26.1	40.5
	3,330.2	2,808.2
Total Liabilities and Shareowners' Equity	\$6,069.2	\$5,796.4

Statement of Changes in Consolidated Financial Position
(Dollars in millions)

Monsanto Company
and Subsidiaries

Sources (Uses) of Funds	1981	1980	1979
Operations:			
Net income	\$ 445.1	\$ 148.8	\$ 331.0
Charges not using (credits not providing) funds:			
Depreciation, depletion and obsolescence	387.4	546.9	412.7
Deferred income taxes	83.1	60.0	(17.1)
Net gain on sale of joint venture property	(67.7)		
Other — net	(41.8)	(88.2)	(59.9)
Funds provided from operations, before changes in working capital	806.1	667.5	666.7
Investment and Other Transactions:			
Working capital changes	(43.7)	35.6	(103.3)
Property, plant and equipment additions	(667.9)	(780.5)	(565.9)
Net proceeds from sale of joint venture property	218.6		
Property disposals	33.3	8.4	35.7
Other — net	50.6	(70.4)	49.6
	(409.1)	(806.9)	(583.9)
Financial Transactions:			
Issuance of common stock	205.5		
Outside financing	31.5	266.3	55.4
Dividends	(145.1)	(128.4)	(121.2)
Debt reduction	(273.4)	(59.2)	(93.3)
	(181.5)	78.7	(159.1)
Increase (Decrease) in Funds	\$ 215.5	\$ (60.7)	\$ (76.3)
Increase (Decrease) in Elements of Funds:			
Cash	\$ 37.0	\$ 1.1	\$ (21.7)
Time deposits and certificates of deposit	23.1	10.1	(53.1)
Short-term securities	155.4	(71.9)	(1.5)
	\$ 215.5	\$ (60.7)	\$ (76.3)
Increase (Decrease) in Funds from Changes in Working Capital Elements:			
Trade receivables, net	\$ 33.0	\$ (20.8)	\$ (179.9)
Miscellaneous receivables and prepaid expenses	50.9	(36.1)	14.7
Inventories	(40.9)	77.6	(189.1)
Accounts payable	66.5	(159.6)	188.7
Accrued liabilities	(89.1)	188.8	42.0
Short-term debt	(64.1)	5.7	20.3
	\$ (43.7)	\$ 35.6	\$ (103.3)

The above statement should be read in conjunction with page 58 and pages 64 through 75 of this report.

Statement of Consolidated Shareowners' Equity

(Dollars in millions, except per share)

Monsanto Company
and Subsidiaries

	1981	1980	1979
Preferred Stock			
Balance, January 1	\$ 0.3	\$ 0.3	\$ 0.4
Conversion to common stock	(0.1)		(0.1)
Balance, December 31	\$ 0.2	\$ 0.3	\$ 0.3
Common Stock			
Balance, January 1	\$ 73.9	\$ 73.9	\$ 73.9
Issuance of new shares	6.0		
Balance, December 31	\$ 79.9	\$ 73.9	\$ 73.9
Additional Contributed Capital			
Balance, January 1	\$ 651.8	\$ 652.9	\$ 651.5
Conversion of convertible securities and issuances under employee stock plans	1.3	(1.4)	(0.8)
Issuance of new shares	199.5		
Other	0.9	0.3	2.2
Balance, December 31	\$ 853.5	\$ 651.8	\$ 652.9
Reinvested Earnings			
Balance, January 1	\$ 2,122.7	\$2,102.3	\$1,892.5
Net income	445.1	148.8	331.0
Preferred dividends (\$2.75 per share)	(0.3)	(0.4)	(0.5)
Common dividends (\$3.75, \$3.55 and \$3.35 per share for 1981-1979, respectively)	(144.8)	(128.0)	(120.7)
Balance, December 31	\$2,422.7	\$2,122.7	\$2,102.3
Common Stock in Treasury			
Balance, January 1	\$ (40.5)	\$ (47.6)	\$ (38.9)
Shares purchased	(1.5)	(4.0)	(12.4)
Conversion of convertible securities and issuances under employee stock plans	15.9	11.1	7.9
Reclassification from miscellaneous investments			(4.4)
Other			0.2
Balance, December 31	\$ (26.1)	\$ (40.5)	\$ (47.6)

The above statement should be read in conjunction with page 58 and pages 64 through 75 of this report.

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Divestitures In August 1981, Conoco Inc. purchased the Company's interest in the Monsanto/Conoco joint venture facilities and certain related assets of the Company's olefins and aromatics business to satisfy the terms of a Justice Department consent decree which allowed the merger of E. I. duPont de Nemours, Inc. and Conoco. The Company's gain on the sale was recorded as a reduction of 1981 cost of goods sold of \$124.1, or \$67.7 (\$1.75 per share) net of related tax effects. The facilities were a part of the Chemical Intermediates operating unit in the United States and generated sales of approximately \$167.4 for Monsanto in the first eight months of 1981.

In January 1981, the Company's Textiles operating unit withdrew from the polyester filament business in the United States. Accordingly, 1980 cost of goods sold included a provision for losses of \$121.2, or \$69.0 (\$1.90 per share) net of related tax effects. In connection with the withdrawal from this business, the Company sold certain polyester manufacturing facilities and related technology and certain patent rights to a subsidiary of Celanese Corporation. The remaining related manufacturing facilities have been shut down and facilities that do not have alternative future uses within the Company will be disposed of as soon as practical. This business had sales of approximately \$134.0 in 1980.

In 1980, Monsanto decided to terminate all of its interest in Aiscondel, S. A., a majority-owned Spanish subsidiary whose results were included with the Plastics & Resins operating unit. Cost of goods sold for 1980 included a provision for losses of \$66.3, or \$38.7 (\$1.07 per share) net of related tax effects, as a result of this decision, and the Company subsequently sold its interest to the minority shareowners for a nominal amount in February 1981. As part of the sales agreement, the Company obtained a revision of certain intercompany obligations and guaranteed a new \$12.6 line of credit on behalf of Aiscondel. In addition, the Company paid certain debts of Aiscondel under previous guarantees. On a U. S. dollar basis, Aiscondel had sales of approximately \$126.0 for the 11 months its results were included in the consolidated financial statements in 1980.

In 1979, the Textiles operating unit withdrew from nylon operations in Europe. Accordingly, the related manufacturing facilities were shut down by the end of 1979 and are in the process of disposal. The Textiles operating unit recorded a charge to cost of goods sold relating to this withdrawal of \$77.4 or \$42.7 (\$1.18 per share) net of related tax effects. Also in 1979, Monsanto discontinued certain operations of a plastics subsidiary in the Canada-Latin America world area, whose remaining operations were sold to an affiliate in December 1981, and closed certain product lines of Aiscondel. Due to these actions, the Plastics & Resins operating unit's results included a charge to cost of goods sold in 1979 of \$27.7 or \$10.5 (\$0.29 per share) net of related tax effects.

As of December 31, 1981, the remaining accruals for the divestitures discussed above have been reduced to \$69.1, which amount is principally included in accounts payable and miscellaneous accruals (\$33.2) and as a reduction of receivables and other assets (\$26.4). The reduction in accruals resulted from actual expenditures for shutdown or withdrawal costs, disposal of certain facilities, and operating losses subsequent to the recording of the provisions. The remaining accruals are estimated to be sufficient to absorb any additional costs related to these actions.

Depreciation, Depletion, and Obsolescence and Rent Expense

	1981	1980	1979
Depreciation and depletion	\$381.1	\$327.0	\$294.9
Obsolescence	26.3	219.9	117.8
Total	\$387.4	\$546.9	\$412.7

Rent	\$ 73.9	\$ 71.0	\$ 62.2
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The above table includes depreciation, depletion and amortization expense related to oil and gas production and exploration activities (see "Oil and Gas Activities" note). Obsolescence expense for 1980 and 1979 included \$187.5 and \$93.1, respectively, related to "Divestitures" discussed above. The weighted average assigned life for buildings is approximately 23 years and for machinery and equipment is approximately 12 years.

Pension Plans Most Monsanto employees are covered by noncontributory pension plans. The expense related to these plans was \$126.8, \$97.7 and \$92.3 in 1981-1979, respectively. These amounts include charges applicable to current service and amortization of unfunded prior service costs over periods generally ranging from 10 to 30 years. It is Monsanto's policy to fund pension costs accrued.

As of January 1, 1981, certain amendments to Monsanto's major domestic pension plans became effective. These changes increased retirement benefits, decreased the number of years of combined age and service required for unreduced early retirement benefits, and reduced the eligibility requirements for surviving spouses' automatic retirement benefits. The net effect of these plan changes was to increase 1981 pension expense by approximately \$52.1.

Certain policy changes in the actuarial assumptions for Monsanto's major pension plans became effective on January 1, 1980. These changes were adopted to reflect more current assumptions with respect to projected future events and conditions. The investment return assumption was changed from 7.0 percent to 7.5 percent. The salary increase assumption was changed from a uniform 6.0 percent to a set of age-dependent assumptions which had an overall average of 6.5 percent. Also, Monsanto increased the contribution for one major pension plan to the maximum deductible amount for tax purposes. The net effect of these policy changes was to decrease 1980 pension expense by approximately \$1.0.

Estimated benefit and asset information for plans representing 99.6 and 95.1 percent of total pension expense for 1981 and 1980, respectively, is presented below on an aggregate basis as of December 31 of each year. Net assets were measured at market value at those dates and year-end accumulated benefits were estimated from actuarial valuations made earlier in the year. The 1981 amounts include the effect of the increased benefit levels discussed above.

	1981	1980
Actuarial present value of accumulated plan benefits:		
Vested	\$1,220.9	\$ 775.5
Nonvested	157.3	114.7
Total	\$1,378.2	\$ 890.2
Net assets available for benefits	\$1,357.7	\$1,260.3

Technological Expenses	1981	1980	1979
Research and development	\$220.6	\$204.4	\$161.3
Engineering, commercial development and patent	64.0	65.1	60.8
Total	\$284.6	\$269.5	\$222.1

Interest Costs and Income Effective January 1, 1980, Monsanto began capitalizing interest costs related to construction-in-progress expenditures in accordance with Financial Accounting Standards Board Statement No. 34. In prior years, all interest costs were expensed as incurred. Total interest costs incurred during 1981 and 1980, respectively, were \$144.4 and \$163.4, of which \$43.5 and \$51.6 were capitalized. The net effect of adopting Statement No. 34 was an increase in 1980 net income of \$27.5 (\$0.76 per share).

Interest income included in other income-net for 1981-1979 was \$68.3, \$36.4 and \$63.6, respectively.

Equity in Affiliates Monsanto's equity in the net income of affiliates, including foreign currency gains or losses on translation of financial statements, totalled \$37.5, \$17.3 and \$25.8 in 1981-1979, respectively, and is included in other income-net.

Foreign Exchange Net exchange gains (losses) resulting from foreign currency transactions and translation of foreign currency financial statements were \$(27.6), \$11.5 and \$(26.9) in 1981-1979, respectively, including a gain (loss) of \$16.2, \$(17.5) and \$2.3, respectively, related to the translation of equity affiliates' financial statements.

Income Taxes The U.S. and ex-U.S. components of income before income taxes were:

		1981	1980	1979
Income before income taxes:	U.S.	\$548.6	\$211.6	\$526.9
	Ex-U.S.	144.4	(5.9)	(45.8)
Total		\$693.0	\$205.7	\$481.1

The components of income tax expense were:

		1981	1980	1979
Current:	Federal	\$ 90.8	\$ (5.0)	\$126.1
	State	8.6	4.6	16.0
	Ex-U.S.	37.6	24.6	25.1
		137.0	24.2	167.2
Deferred:	Federal	103.1	19.0	44.2
	State	0.0	2.8	4.0
	Ex-U.S.	(1.2)	10.9	(65.3)
		110.9	32.7	(17.1)
Total		\$247.9	\$56.9	\$150.1

A change in tax laws, related to stock relief, in the United Kingdom (U.K.) during 1979 resulted in a reversal of deferred taxes of \$16.8 (\$0.46 per share), which amount was reflected in deferred ex-U.S. income tax expense for 1979. These deferred taxes were established in prior years for differences in book and tax bases of U.K. inventories.

Investment tax credits for 1981-1979 were \$21.6, \$48.5 and \$28.4, respectively.

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

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	1981	1980	1979
Additional depreciation and obsolescence for (book) tax purposes	\$ 68.0	\$ (7.6)	\$(22.1)
Reversal of deferred taxes related to U.K. stock relief			(15.8)
Net change in accrual for pension expense	5.7	(4.5)	14.8
Intangible drilling and development costs	23.1	14.6	11.0
Interest capitalization	14.5	23.4	
Other	1.8	6.8	(4.0)
Total	\$110.9	\$32.7	\$(17.1)

Factors causing Monsanto's effective income tax rate to differ from the federal statutory rate were:

	1981	1980	1979
Federal statutory rate	46.0%	46.0%	46.0%
Investment tax credit	(3.1)	(23.6)	(5.9)
Tax treatment afforded earnings of DISC's	(3.2)	(12.4)	(4.9)
Results of ex-U.S. subsidiaries for which there were no tax benefits or provisions	(2.8)	19.0	1.8
U.K. stock relief, including reversal of previously deferred taxes			(5.1)
Other	(1.1)	(1.3)	(0.7)
Effective income tax rate	35.8%	27.7%	31.2%

Undistributed earnings of subsidiaries for which additional taxes that may be required in the event of distribution have not been provided were:

	1981	1980	1979
Ex-U.S. subsidiaries	\$165.9	\$ 77.7	\$ 78.2
U.S. subsidiaries, including DISC's	349.5	290.5	218.1
Total	\$535.4	\$368.2	\$296.3

Ex-U.S. net operating loss carryforwards at December 31, 1981 for which no tax benefits have been recorded were approximately \$114.5, a substantial portion of which has an unlimited carryforward period.

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Earnings Per Share Earnings per share were computed using the weighted average number of common and common equivalent shares outstanding each year (38,703,604, 36,287,214 and 36,315,279 in 1981-1979, respectively). Common share equivalents included in the computation consist of common stock issuable upon exercise of outstanding stock options (200,801, 24,611 and 5,026 in 1981-1979, respectively), and conversion of loan stock of Monsanto p.l.c. (144,952, 202,204 and 242,638 in 1981-1979, respectively). Earnings per share assuming full dilution were not significantly different from the primary amounts.

Had the shares issued in the April 29, 1981 common stock offering (see "Capital Stock" note) been issued as of January 1, 1981, earnings per common and common equivalent share would have been \$11.36 for the year ended December 31, 1981. The pro forma earnings per share amount reflects the effect of decreased aftertax interest expense through the reduction of long-term debt, as well as the increased number of shares outstanding.

Inventories		1981	1980
Valued on a FIFO basis:			
	Finished goods	\$182.5	\$163.9
	Goods in process	65.0	68.8
	Raw materials	104.8	99.5
	Supplies	142.2	130.1
Valued on a LIFO basis		378.7	370.0
Total		\$873.2	\$832.3

The LIFO method used does not identify inventories by classification (i.e., finished goods, goods in process, raw materials and supplies).

Inventories at December 31, 1981 and 1980 would have been \$548.0 and \$509.3, respectively, higher than reported if the FIFO basis of inventory valuation (which approximates current cost) had been used for all inventories.

Commitments and Contingencies Monsanto was contingently liable as guarantor of bank loans and for discounted customers' receivables totaling approximately \$39.8 at December 31, 1981, including \$14.0 related to guarantees of loans of affiliates. Commitments in connection with uncompleted additions to property aggregated approximately \$152.9 at December 31, 1981.

Monsanto is a party to a number of lawsuits, which it is vigorously defending, arising in the normal course of business. Certain of these actions seek damages in very large amounts. While the results of litigation cannot be predicted with certainty, management believes, based upon the advice of Company counsel, that the final outcome of such litigation will not have a material adverse effect on Monsanto's consolidated financial position.

Long-Term Debt Long-term debt, exclusive of current maturities and repayable in U.S. dollars, except where indicated, was as follows:

	1991	1980
Monsanto Company:		
8% notes due 1985	\$ 100.0	\$ 100.0
7½% promissory notes due 1983/1989	7.9	9.9
4¼% promissory notes due 1993	53.3	58.0
8½% sinking fund debentures due 2000	174.5	174.4
9¼% sinking fund debentures due 1997	89.7	89.7
3¾% income debentures due 2002	88.7	91.0
4¼% income debentures due 2008	50.0	50.0
8¾% sinking fund debentures due 2008	189.0	198.9
4¼%-11¼% industrial development bond obligations due 1983/2021	210.8	184.4
Capitalized lease obligations	13.3	12.4
Commercial paper 14¼%-20¼% (a)		225.0
Monsanto International Finance Company:		
4½% sinking fund debentures due 1985 (b)	7.5	10.0
Monsanto p.l.c. (U.K. subsidiary)		
(British pound):		
5% loan stock due 1983/1986 (c)	5.1	9.7
Other	5.8	29.8
Monsanto (Suisse) S.A. (Swiss subsidiary)		
(Swiss franc):		
6½% sinking fund debentures due 1986	26.6	26.6
Monsanto Europe, S.A. (Belgian subsidiary)		
(Belgian franc):		
9¼%-14½% bank loans due 1983/1998 (d)	56.4	80.9
9¾% bonds due 1983/1991	9.8	12.6
Other	11.9	7.2
Total	\$1,110.3	\$1,370.5

Notes:

- (a) This amount of commercial paper outstanding at December 31, 1980, was included in Long-Term Debt because the Company intended to refinance these borrowings on a long-term basis, and long-term financing was available under then existing bank credit agreements. The proceeds from the 1981 common stock issue (see "Capital Stock" note) were used to reduce commercial paper outstanding.
- (b) These debentures are currently convertible into the Company's common stock at \$85 per share, subject to adjustment under certain conditions.
- (c) This loan stock is convertible into the Company's common stock at a rate equivalent to \$55 per share, subject to adjustment under certain conditions.
- (d) The interest rates on certain of these bank loans are reduced by a government subsidy ranging from 4.0 percent-2.8 percent, which is scheduled to expire over the next two years.

Maturities and sinking fund requirements on long-term debt are \$36.1, \$35.4, \$33.7, \$146.0 and \$41.2 for the five years ending December 31, 1982 through 1986, respectively.

Covenants of certain loan agreements restrict maximum borrowings and dividend payments. It is not anticipated that additional future borrowings will be affected by these restrictions, and none of the Company's reinvested earnings were restricted as to dividend payments at December 31, 1981.

Monsanto has various parallel loan agreements, scheduled to expire from 1982 through 1986, with U.K. companies and their subsidiaries. Monsanto's borrowings of \$84.5 and \$92.4 in British pounds sterling and U.S. dollar loans of \$82.2 and \$90.4 as of December 31, 1981 and 1980, respectively, are reflected net in the accompanying Statement of Consolidated Financial Position since both parties have the legal right of offset in case of default. Interest rates on the sterling loans are 2½ percent to 2¾ percent higher than the interest rates on the corresponding dollar loans.

Substantially all long-term debt of subsidiaries is guaranteed by the Company.

Short-Term Debt and Bank Credit Arrangements

	1981	1980
Notes payable to banks	\$138.6	\$187.2
Commercial paper		14.9
Current portion of long-term debt	36.1	36.7
Total	\$174.7	\$238.8

During 1981, the Company had available a \$400.0 domestic Revolving Credit/Term Loan Agreement with twenty-one banks. This Agreement provided for a five-year revolving credit period with any borrowings outstanding at the end of that period convertible into a three-year term loan. Effective January 1, 1982, the Company amended this Agreement to reduce the commitment to \$100.0 and to extend the revolving credit period through December 31, 1986, with any borrowings outstanding at the end of that period convertible into a three-year term loan. The interest rate on any borrowings until December 31, 1986, at Monsanto's option, will be at the prevailing Citibank, N.A. prime rate, or will be at a spread above either the prevailing rate on Certificates of Deposit or the Nassau Interbank offer rate. In conjunction with the foregoing changes, the Company secured \$100.0 of short-term lines of credit with the same group of banks. The interest rate on any borrowings under the short-term lines of credit will be at the prevailing prime rate of each bank.

During 1981, the Company also had available \$200.0 under Eurocurrency Revolving Credit Agreements. Effective January 1, 1982, the Company amended its Eurocurrency Revolving Credit Agreement to decrease the commitments to \$100.0. These commitments are subject to mandatory reduction after 4½ years and terminate at the end of seven years. Interest rates for the Eurocurrency Agreements are ½ percent to ¾ percent above the prevailing London or Luxembourg interbank offer rate.

No borrowings were made under either the Revolving Credit/Term Loan Agreement or the Eurocurrency Revolving Credit Agreements through February 26, 1982.

In addition, certain ex-U.S. subsidiaries have short-term loan facilities aggregating approximately \$416.2, under which loans totaling \$77.4 were outstanding at December 31, 1981. Interest on these loans is related to various ex-U.S. bank rates.

Capital Stock The outstanding preferred stock is stated at \$2.24 per share, has a cumulative dividend of \$2.75 per share and is convertible into 1.12 shares of the Company's common stock, subject to adjustment in certain events under antidilution provisions. Preferred stock may be redeemed solely at the Company's option at \$73 per share (the voluntary liquidation preference) and has an involuntary liquidation preference of \$35 per share, or an aggregate of \$3.5 at December 31, 1981.

The Company issued 26,860, 39,241 and 30,120 common shares principally out of treasury stock upon conversion of 23,988, 35,042 and 26,931 preferred shares in 1981-1979, respectively. The Company also issued 59,997, 40,775 and 41,136 shares out of treasury stock in 1981-1979, respectively, upon exercise of conversion rights by holders of convertible loan stock issued by Monsanto p.l.c., and 130,066, 14,824 and 15,355 in 1981-1979, respectively, upon exercise of stock options. In 1981, the Company issued 58 shares from treasury stock for conversion of convertible debentures issued by Monsanto International Finance Company. There were no conversions of these debentures in 1980 or 1979.

The Company held 34,800 and 58,106 shares of its common stock in treasury for specific purposes (principally for distribution to participants in the Employee Stock Purchase Plan) at December 31, 1981 and 1980, respectively.

In addition, at December 31, 1981, there were 340,628 common shares reserved for conversion of convertible securities and 2,213,439 for stock options.

On April 29, 1981, the Company sold 3,000,000 shares of common stock in a public offering. The net proceeds of \$205.5 from this issuance were used to reduce outstanding commercial paper reflected in long-term debt as of December 31, 1980.

Stock Option Plans The status of authorized common shares for stock option plans and the changes occurring during 1981 were:

1980 and 1974 Plans		
	Shares Under Options Outstanding	Shares Available For Grant
January 1, 1981	1,422,843	949,689
Grants	265,200	(265,200)
Exercises	(125,582)	
Cancellations	(87,087)	53,766
December 31, 1981	1,475,184	738,255

Options outstanding at December 31, 1981, were granted at prices ranging from \$47.25 to \$92.88, or a weighted average of \$63.23 per share. Options for 979,143 shares were exercisable at December 31, 1981. The options exercised during the year had been granted at prices ranging from \$44.50 to \$73.19 per share.

Stock appreciation rights (SAR's) are authorized to be granted at the same time the related non-qualified options under the 1974 Plan are granted. In addition, SAR's may be granted retroactively for any unexercised non-qualified options under either the 1974 or 1969 Plan. The exercise of an SAR cancels the related option; conversely, the exercise of an option cancels the related SAR. At December 31, 1981, SAR's related to options for 407,989 shares were outstanding; of these, 265,491 were exercisable. In 1981, SAR's related to options for 93,169 shares were granted; 33,331 were exercised; and 23,670 were cancelled.

Oil and Gas Activities Monsanto's net revenue (gross revenue less production costs) from oil and gas production for 1981 and 1980, respectively, was \$126.2 and \$88.3 (\$122.5 and \$84.1 United States and \$3.7 and \$4.2 ex-U.S.). These net revenue amounts exclude royalty interests and the operation of natural gas plants.

The aggregate amount of capitalized costs (including construction-in-progress) and the aggregate amount of the related accumulated

depreciation, depletion and amortization (DD&A), at December 31, 1981 and 1980, were:

		United States	Ex-U.S.	Total
Proved properties:				
Gross capital	1981	\$408.5	\$14.0	\$422.5
	1980	307.8	13.7	321.5
DD&A	1981	125.1	6.4	131.5
	1980	107.8	5.9	113.7
Unproved properties:				
Gross capital	1981	111.6	5.9	116.5
	1980	68.8	8.0	76.8
DD&A	1981	20.9	4.3	25.2
	1980	15.7	3.4	19.1

Costs incurred for the years ended December 31, 1981 and 1980, were:

		United States	Ex-U.S.	Total
Property acquisition	1981	\$61.1	\$	\$61.1
	1980	32.9	2.6	35.5
Exploration	1981	65.1	2.5	67.6
	1980	44.9	10.5	55.4
Development	1981	68.5	0.3	68.8
	1980	44.4	0.3	44.7
Production	1981	63.5	1.8	65.3
	1980	39.7	1.4	41.1
DD&A	1981	19.7	0.5	20.2
	1980	11.8	0.6	12.4
Amortization of undeveloped leases	1981	8.3	1.3	9.6
	1980	6.0	0.6	6.6

Segment Information Certain operating unit and world area segment data for 1981-1979 appear on pages 38 and 39 of this Annual Report and are integral parts of the accompanying financial statements.

Unusual or nonrecurring charges or credits were included in the operating units and world areas as discussed in the "Divestitures" note. In addition, the Canada-Latin America world area data for 1979 includes a charge of \$8.5 related to the devaluation of the Brazilian cruzeiro. This charge is reflected in various operating units, principally Industrial Chemicals.

The impact of adopting Financial Accounting Standards Board Statement No. 34 in 1980 (see "Interest Costs and Income" note) was not material to the results of any of the operating units or world areas.

Intercompany or inter-area receivables and profit derived from intercompany or inter-area sales are the principal items reflected in 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 units or world areas. Nonoperating assets principally include cash, time deposits and certificates of deposit, short-term securities and investments.

The principal product lines included in each operating unit are shown in the "Sales by Product Group" data on page 31. Total sales between operating units (made on a market basis) were \$238.5, \$249.8 and \$229.7 in 1981-1979, respectively. These sales were not significant for any operating units except Chemical Intermediates (\$174.1, \$165.3 and \$151.9 in 1981-1979, respectively) and Industrial Chemicals (\$30.6, \$45.3 and \$44.1 in 1981-1979, respectively).

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 United States net sales to outside customers were as follows:

	1981	1980	1979
Europe-Africa	\$ 41.4	\$ 68.5	\$ 55.7
Canada-Latin America	197.7	182.4	178.3
Asia-Pacific	249.0	241.0	172.4
Total	\$488.1	\$491.9	\$406.4

Following is a reconciliation of ex-U.S. operating income and total assets as shown on page 39 to the Company's equity in the net income (loss) and net assets of consolidated ex-U.S. subsidiaries:

	1981	1980	1979
Operating income (loss):			
Europe-Africa	\$ 38.4	\$ (43.8)	\$ (66.8)
Canada-Latin America	40.9	24.2	3.6
Asia-Pacific	24.9	12.9	20.4
	104.2	(6.7)	(42.8)
Income charges (credits)—net	(37.8)	48.2	56.7
Income taxes	30.0	10.9	(69.5)
Net income (loss) of consolidated ex-U.S. subsidiaries	\$ 111.8	\$ (65.8)	\$ (30.0)
Total assets:			
Europe-Africa	\$1,049.0	\$1,028.3	\$1,199.3
Canada-Latin America	280.2	291.3	300.5
Asia-Pacific	227.2	176.1	181.0
	1,556.4	1,495.7	1,679.8
Total liabilities	691.7	699.9	918.4
Net assets of consolidated ex-U.S. subsidiaries	\$ 864.7	\$ 795.8	\$ 761.4

Independent Auditors' Opinion on Financial Statements

To the Shareowners of Monsanto Company:

We have examined the statement of consolidated financial position of Monsanto Company and Subsidiaries as of December 31, 1981 and 1980 and the related statements of consolidated income, shareowners equity and changes in financial position for each of the three years in the period ended December 31, 1981. 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 consolidated financial statements present fairly the financial position of Monsanto Company and Subsidiaries at December 31, 1981 and 1980, and the results of their operations and changes in their financial position for each of the three years in the period ended December 31, 1981, in conformity with generally accepted accounting principles consistently applied during the period except for the change, with which we concur, in 1980 to the method of capitalizing certain interest costs as described in the "Interest Costs and Income" note to the financial statements.



Saint Louis, Missouri
February 26, 1982

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Financial Summary

(Dollars in millions, except per share)

		1981	1980
Operating Results	Net Sales	\$6,948	\$6,574
	Operating Income	702	210
	Interest Expense	101	112(1)
	Income Taxes	248	57
	Net Income	445	149(1)
	Percent of Net Sales	6.4%	2.3%
Earnings per Share	Percent of Average Shareowners' Equity	14.5%	5.3%
	Primary	\$11.50	\$ 4.10(1)
	Fully Diluted	11.43	4.06
Year-End Financial Position	Total Assets	\$6,069	\$5,796
	Working Capital	1,466	1,226
	Property, Plant & Equipment	Gross \$6,218	\$6,074
		Net 3,164	3,109
	Long-Term Debt	\$1,110	\$1,371
	Shareowners' Equity	3,330	2,808
Other Data	Per Common Share:	Dividends \$ 3.75	\$ 3.55
		Shareowners' Equity 84.37	77.63
	Property, Plant & Equipment Additions	\$ 668	\$ 781
	Depreciation, Depletion and Obsolescence	387	547
	Shareowners:	Common 79,029	82,441
		Preferred 775	871
	Common Shares Outstanding (in Millions)	39.5	36.2
	Employees	57,391	61,836

(1) Beginning January 1, 1980, the Company began capitalizing interest costs related to construction-in-progress expenditures in accordance with Financial Accounting Standards Board Statement No. 34, "Capitalization of Interest Cost." In years prior to 1980, all interest costs were expensed as incurred. The effect of the new accounting principle was to increase 1980 net income by \$27.5 or \$0.76 per primary share.

(2) 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.

1979	1978	1977	1976	1975	1974	1973	1972	1971
\$6,193	\$5,019	\$4,595	\$4,270	\$3,625	\$3,498	\$2,648	\$2,225	\$2,087
487	832	610	668	547	550	406	216	178
123	103	86	80	56	43	39	37	39
150	274	246	251	230	251	173	81	66
331	303	276	366	306	323(2)	238	122	94
5.3%	6.0%	6.0%	8.6%	8.4%	9.2%	9.0%	5.5%	4.5%
12.3%	12.2%	11.9%	17.3%	16.4%	20.0%	17.2%	9.7%	7.8%
\$ 9.11	\$ 8.29	\$ 7.46	\$10.05	\$ 8.63	\$ 9.25(2)	\$ 6.90	\$ 3.49	\$ 2.65
9.03	8.21	7.37	9.77	8.22	8.73	6.54	3.40	2.63
\$5,539	\$5,036	\$4,350	\$3,959	\$3,451	\$2,938	\$2,545	\$2,237	\$2,154
1,323	1,296	1,080	1,106	1,150	968	855	677	547
\$5,529	\$5,167	\$4,745	\$4,208	\$3,620	\$3,157	\$2,852	\$2,765	\$2,735
2,818	2,605	2,409	2,090	1,660	1,312	1,152	1,133	1,170
\$1,203	\$1,224	\$1,031	\$ 915	\$ 845	\$ 587	\$ 579	\$ 576	\$ 558
2,782	2,579	2,401	2,253	1,977	1,755	1,484	1,294	1,226
\$ 3.35	\$3,175	\$3,025	\$ 2.75	\$ 2.55	\$ 2.30	\$ 1.90	\$ 1.80	\$ 1.80
77.20	71.26	66.16	61.79	56.62	51.39	44.26	39.05	37.16
\$ 566	\$ 480	\$ 607	\$ 647	\$ 528	\$ 313	\$ 205	\$ 168	\$ 205
413	288	296	226	173	172	170	194	187
85,608	86,775	85,021	84,647	91,725	98,542	98,964	104,389	110,490
952	1,156	1,404	1,956	2,836	3,709	3,855	3,939	3,897
36.0	36.2	36.3	36.4	34.8	34.1	33.4	33.0	32.8
63,926	62,851	61,519	61,903	59,242	60,926	58,277	57,891	59,271

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Directors and Officers

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University of Pennsylvania

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Chief Operating Officer

Dr. Jean Mayer
Medford, Mass.
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Tufts University

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Daniel International Corporation
(a subsidiary of Fluor Corporation)

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Senior Vice President

Monte C. Throdahl
St. Louis
Senior Vice President

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Consultant and Lecturer

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St. Louis
Attorney
Wilson, Smith and McCullin

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Francis J. Fitzgerald
Earle H. Harblson, Jr.
Nicholas L. Reding
Dr. Howard A. Schneiderman
Francis A. Stroble

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C. Raymond Dahl
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Richard J. Mahoney
Edward L. Palmer

Nominating
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Howard M. Love
Buck Mickel

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Dr. Louis Fernandez
Richard I. Fricke
Dr. Jean Mayer

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Chief Executive Officer**
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Vice Chairman of the Board
Dr. Louis Fernandez

**President and
Chief Operating Officer**
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Executive Vice Presidents
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Earle H. Harbison, Jr.
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Dr. Howard A. Schneiderman
Monte C. Throdahl

Group Vice Presidents
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Harold J. Corbett

**Vice President and
Chief Financial Officer**
Francis A. Stroble

**Vice President, Secretary and
General Counsel**
Richard W. Duesenberg

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Dr. S. Allen Heindinger
Dr. Joseph T. Nolan
Sam Piekard
Robert G. Potter
Ernest S. Robson, Jr.

Treasurer
John A. Rolfe

Controller
Michael F. Mee

Annual Meeting

The next Annual Meeting of the shareholders of Monsanto Company will be held at 1:45 p.m., Friday, April 23, 1982, 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 shareholder.

10-K Report & Corporate Data Book

A copy of Monsanto Company's Form 10-K Report filed with the Securities and Exchange Commission for 1981, and a 1981 Corporate Data Book, which contain additional information relating to Monsanto, can be obtained by writing to: Shareowner Relations Department, Monsanto Company, 800 N. Lindbergh Blvd., St. Louis, MO 63167.

Transfer Agent and Registrar

The First National Bank of Boston

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Monsanto Company

800 North Lindbergh Boulevard
St. Louis, Missouri 63167

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