1988 Annual Report

Monsanto

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The strategy is working

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Monsanto's Commitments

Monsanto Company makes and markets high-value chemical and agricultural products, pharmaceuticals, low-calorie sweeteners, industrial process equipment, man-made fibers, plastics and other performance materials.

In doing so, we are committed to serving the interests of all our stake holders around the world by:

- Aiming for a consistent and superior return on equity for our shareowners,
- Meeting the needs of customers with the highest standards of value, quality and service,
- Providing employees with safe and rewarding work in an environment where each has an equal opportunity to succeed, and
- Striving for a lasting and rewarding partnership with neighbors.

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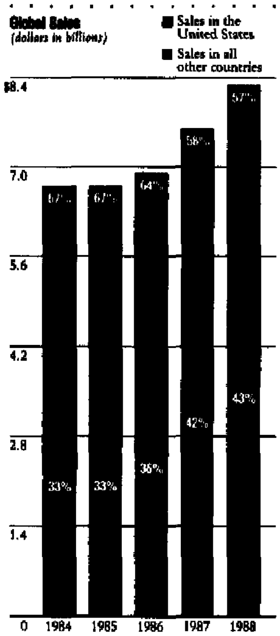
Turtle photo on p. 13 courtesy of Ill. Dept. of Conservation.

Operational Highlights

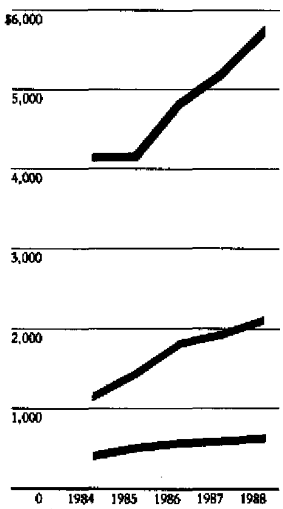
(Dollars in millions, except per share)

	1988	1987	1986
Net Sales	$ 8,293	$ 7,639	$ 6,879
Net Income	$ 591	$ 436	$ 433
Per Share:			
Net Income	$ 8.27	$ 5.63	$ 5.55
Dividends	2.95	2.75	2.575
Shareowners' Equity	55.21	52.65	48.69
Depreciation and Amortization	$ 703	$ 679	$ 780
Cash Provided by Operations	$ 1,304	$ 902	$ 960
Research and Development Expenses	$ 575	$ 557	$ 523
Return on Shareowners' Equity	15%	11%	12%
Percent of Total Debt to Total Capitalization	34%	35%	35%
Shareowners (year-end)	66,066	68,032	70,367
Shares Outstanding (year-end, in millions)	69	74	78
Employees (year-end)	45,635	49,734	51,703

Global Sales
(dollars in billions)

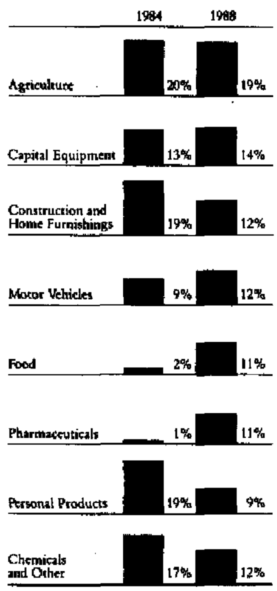


Value Added
(dollars in millions)



Value Added (sales less energy and raw materials)
MAT (marketing, administration and technology)
Technology

Market Mix
(percent of total sales)



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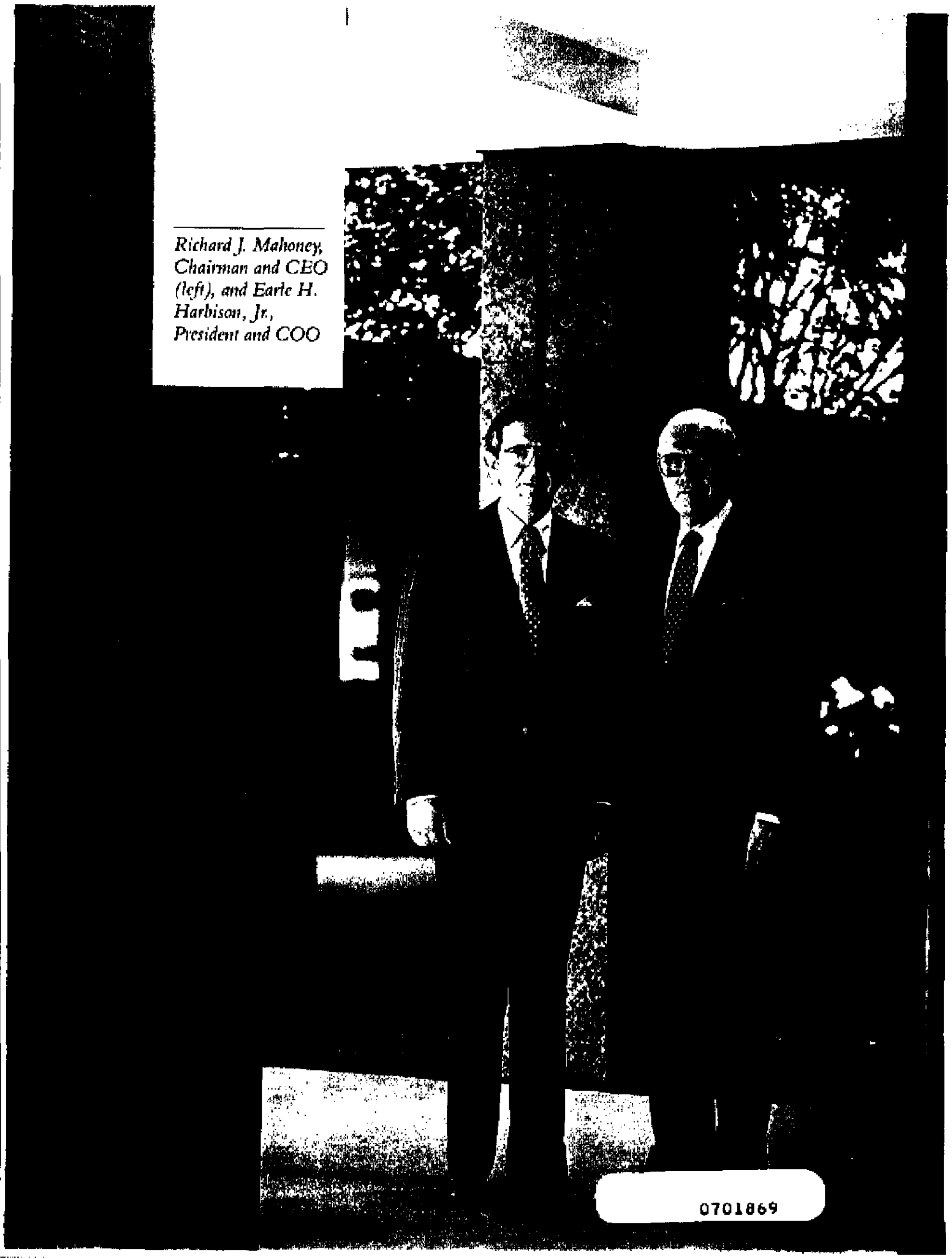

Richard J. Mahoney, Chairman and CEO (left), and Earle H. Harbison, Jr., President and COO

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In 1988 Monsanto turned in its best financial performance ever. Net income reached $591 million, one-third more than in any other year in our history.

Those results moved the Company significantly forward toward the goal we announced "to become one of the great industrial enterprises of the world." Financial performance, which enables us to reward all the stake holders in Monsanto, moved toward our target of 20 percent return on shareowners' equity (ROE) in the early 1990s.

When we first announced that financial goal a few years ago, many observers of our industry were skeptical. However, we are meeting, even exceeding, the intermediate targets on the way to our ROE goal. The strategy carefully constructed and put into place during the past decade is working, thanks to 46,000 Monsanto people worldwide.

- ROE improved in 1988 to more than 15 percent from 1987's 11 percent, putting us a full year ahead of our plans.
- Value added — the difference between selling price and the cost of raw materials and energy — increased to 70 percent of sales in 1988. We expect continued increases in this measure in the years ahead.
- Customers rewarded our renewed commitment to quality, innovation and service by buying a record $8.3 billion of our products, 43 percent of which were sold outside the United States.

Strong financial results, however, are only one measure of greatness. We must also behave in the manner of the very best. Last year, in a book for employees, *A Commitment to Greatness*, I explained how Monsanto as a great company must behave.

I wrote that greatness rests on commitment to the highest of standards and principles. Those include safety in the workplace and protection of the environment. All employees must have an equal opportunity to succeed, and then be *empowered* by their management to get the job done. The people in a great company have a drive for results and complete dedication to serving customers, wherever they are around the world. Above all, we must do the right thing in all circumstances.

Our commitment to these principles must endure through bad times as well as good. Certainly, economic conditions in 1988 generally were favorable around the world; indeed, most chemistry-based companies performed well. However, the measure of financial strength isn't one good year, but consistently good years. We're not recession-proof, but we are now far more recession-resistant.

To achieve that, we have focused on less cyclical markets and on products linked directly to our customers' view of value. In 1988, one-third of our sales were to end-use markets closely linked to industrial business cycles. In 1980, it was two-thirds.

This course delivered outstanding results in 1988, and we see continuing market gains in 1989 across the corporation.

In the agricultural business, sales volumes of products based on glyphosate (the active ingredient in *Roundup* herbicide) increased by 29 percent over 1987 volumes. These products are tailored to the cost and performance needs of specific groups of customers. Growing residential and turf markets increase the prospects for these products.

The chemicals unit, one of the top-performing chemical companies in the world, met its financial targets, as it has now done three years running. The chemicals, fibers and plastics businesses received quality-supplier awards from Goodyear, Chrysler, Pillsbury, Sony, Smith-Corona, 3M and General Electric, among others. I see more dedication to customers' needs, service and quality at Monsanto today than ever before. That close attention to the people who pay the bills is an absolute requirement of a value-added business.

The Chemical Company in 1988 developed a new modified version of *Saflex* plastic interlayer, called *Solarflex*, to reduce heat buildup in automotive interiors. The chemicals unit also introduced new high-performance thermoplastic alloys and new premium fibers.

For G.D. Searle & Co., *Calan* anti-hypertensive drug had sales of more than $240 million in 1988, and it continues to grow. *Cytotec* anti-ulcer drug received approval in the United States, which joined a

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number of other nations that have approved its use. *Cytotec* is the only drug available to prevent or treat ulcers caused by anti-pain or anti-inflammatory drugs used by millions of people suffering from arthritis and other illnesses.

Sales of diet soft drinks containing 100 percent *NutraSweet* brand sweetener continued to increase dramatically. Also in 1988, *NutraSweet* received approvals in France, Brazil and the Soviet Union. Prospects for growth remain strong.

Fisher's strategy of marketing integrated manufacturing solutions began yielding results in 1988. Record levels of total incoming orders were received, and *PROVOX* instrumentation turned profitable after several years of market development. Fisher entered 1989 with its highest backlog ever.

In 1988, we continued to prune under-performing assets and announced the sale of our silicon wafer business to Huels AG. The employees of that business delivered the quality and service that normally produce satisfactory business results, and the business earned money in 1988. But some *corporate* decisions during the past decade weren't as successful, and the business never performed consistently well. Huels has the necessary commitment to the business to succeed.

Financial markets gave the Company good marks for the year, with one troublesome exception. In the third quarter, news from a Minnesota court case involving G.D. Searle & Co. caused Monsanto's stock to drop sharply. Fear of a surge of similar suits led many investors to overreact. The surge did not occur, and our stock has recovered most of the lost value. We repeat here for our shareowners that any product claims arising from these Searle suits will have no material financial impact on the Company.

This situation was yet another unfortunate result of the unique U.S. liability system, which often discourages new-product development and limits the competitiveness of U.S.-based companies in worldwide markets. There are signs of change, but this issue continues to hold my personal interest and to prompt my public efforts because of its implications for a science and technology company.

Also of great personal interest is Monsanto's top priority for the future — new products. We must develop more of them and bring them to market more quickly than ever. We're making good progress. Some examples:

The launch of *Cytotec* anti-ulcer drug in the United States will be followed shortly by an impressive list of new pharmaceuticals.

Dimension herbicide, a crabgrass killer that really works, will be commercialized within 12 months. It's the first product from a promising new family of chemistry. Bovine somatotropin (BST), which improves efficiency in milk production, is awaiting approval by the U.S. Food and Drug Administration (FDA). It will be our first biotechnology product, and it has major worldwide potential.

The NutraSweet Company is expected in 1989 to introduce a major product, *Simplesse* all-natural fat substitute. A good-tasting substitute for fat in ice cream, salad oil and other products, *Simplesse* is cleared for sale in the United Kingdom and West Germany, and is under review by the U.S. FDA.

These products, and many more after them, constitute a central component in the corporate strategy. Our new-product pipeline is as robust as it ever has been. We're spending a great deal of money on R&D to fill that pipeline. We recognize the cost, but we also recognize the leverage it has on our future. We *will* produce results from this investment.

The redirection of the Company is clear. A feeling of excitement and accomplishment is building across the Company, and it's well earned. Now we must have the discipline to keep the momentum going. We must deliver the results that provide rewards to all our stake holders — shareowners, employees, customers and neighbors. And we must have the vision to look beyond today and seize the opportunities that are emerging around the world.

The strategy is working.

Richard J. Mahoney
Chairman and Chief Executive Officer
March 6, 1989

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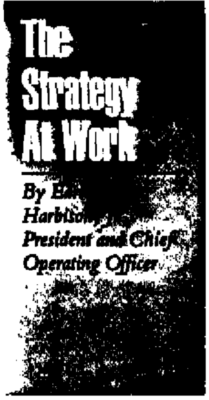

The Strategy At Work

By E... Harbiso... President and Chief Operating Officer

Monsanto's corporate strategy is working. The steady financial progress of recent years, particularly the best-ever results of 1988, shows we are on course toward our financial goals.

But the numbers show only the results, not the strategy itself in action. They do not show 46,000 Monsanto employees finding better ways of doing business every day — all to move this Company toward the greatness it can achieve.

In this report, we spotlight Monsanto's strategy at work. This includes optimizing income from current assets through impressive productivity gains. Don Bell, a prime architect of a strategy that has revolutionized manufacturing, tells the story.

The strategy includes creating unique value for our customers through internal R&D. Will Carpenter and Lee Miller show how rejuvenated chemical herbicide research and pioneering biotechnology are leading to new agricultural products.

Licensing, acquisitions and joint ventures all complement research as routes to new products. Ronald Goode and Hendrik Verfaillie tell how G.D. Searle & Co. and Monsanto Agricultural Company follow those routes.

In today's global economy, we must respond to the specific needs of distinct geographical markets. Kim Dong Sung and James Nisbet highlight our activities in Korea and Brazil.

Earning the right to operate is basic to our corporate strategy. Hal Corbett points to Monsanto's achievements in environmental stewardship.

These cases show our strategy at work, but they are not unique. Rather, they represent numerous instances of thousands of Monsanto employees accepting the challenge of greatness. Nor do these case studies tell the whole Monsanto story. The overview of operating company performance is presented in the financial review and statements, on pages 19-43.

These cases do show the strategy being put into practice by Monsanto people around the world — excited and determined people who will place Monsanto among the handful of the world's great industrial enterprises.

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Great productivity improvements come from employee involvement, a focus on quality, and advanced technology, as in production of Saflex *interlayer in Springfield, Massachusetts.*

*by Don Bell, Director, Fiber Manufacturing, Monsanto Chemical Company**

To succeed in global competition, we need to use manufacturing as a competitive weapon in ways we haven't done before.

One of the critical needs is earning recognition in the industries we serve as a quality producer — to build partnerships with our customers that benefit both them and ourselves.

These improvements have been taking place in plants throughout Monsanto with some dramatic results. I know firsthand the changes in our fibers manufacturing, which makes a good case study.

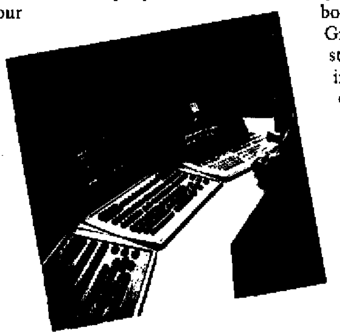
To be a successful manufacturer of nylon and acrylic fiber for *Wear-Dated* carpet and apparel, we identified two challenges: improve productivity by 50 percent in three years, and improve quality dramatically while making it a line responsibility.

These simple objectives represent multimillion-dollar challenges of a magnitude we've never faced before. The response has been threefold: enlightened personnel management, a systematic approach to quality improvement, and advanced computer-integrated manufacturing.

Each of these changes would be beneficial by itself, but the "Plant of the '90s" combines all three. That's what we installed in the plants at Pensacola, Florida; Decatur, Alabama; Greenwood, South Carolina; and Chocolate Bayou in Alvin, Texas.

Workers Given More Freedom, Responsibility

We gave our employees more freedom and bolstered their commitment by creating self-directed work groups that eliminated one layer of supervision. We asked our people to use their minds as well as their hands. We invited them to meet with the people who use our products, so our employees could define doing a good job in the same terms as the customer.



We improved the quality and quantity of business information available to line employees so that they could see the priorities for themselves and work on real-life solutions. In some instances, our operators can now look at a control screen and determine — immediately — whether or not the process is making money.

Quality Emphasized

We provided training in the Total Quality approach to continuous improvement, which emphasizes improving systems and processes to deliver consistent results. Joint teams of Monsanto people and their customers were formed to improve quality and yields all the way through to the ultimate consumer. The cost of fixing, recycling or throwing away imperfect products was reduced 65 percent.

Fisher Technology Integral to Improvements

We provided tools, including *PROVOX* process controls from Monsanto's Fisher Controls International subsidiary. Fisher is a strategic partner in the Plant of the '90s, and worked with major computer vendors — including Digital Equipment, Hewlett-Packard and IBM — to develop a coordinated manufacturing strategy. Along with process controls, this strategy combines information systems and electronic communications in a fully integrated network.

The results speak for themselves: Decatur doubled cost savings; productivity at Chocolate Bayou is up over 50 percent; and both Pensacola and Greenwood have demonstrated significant improvement in the consistency of our nylon carpet fibers.

Other Plants of the '90s

The same synergy among people, technology and Total Quality is dramatically improving productivity and customer service at Monsanto plants from Soda Springs, Idaho, to Antwerp, Belgium. Some examples:

- *New technology at the Muscatine, Iowa, plant is designed to reduce emissions of hazardous chemicals by 95 percent and repay the investment by salvaging material.*
- *A new utility contract,* PROVOX *instrumentation and software, and employee quality improvement teams combined to allow the Soda Springs, Idaho, phosphorus plant to operate above its rated capacity.*
- *With statistical process controls, the Antwerp, Belgium, plant produced* Santoflex *rubber processing chemicals at 135 percent of previous capacity.*
- *The commitment of the people at the Nitro, West Virginia, plant has increased output per employee by 40 percent since 1985.*

◄ PROVOX *controls are central to the fully integrated manufacturing process.*

**Effective January 1, 1989, Bell became group vice president, Measurement and Process Instrumentation, at Fisher Controls International Inc., a Monsanto subsidiary.*

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Inventing
Products For
Agriculture
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by Will D. Carpenter, Vice President, Technology Division, Monsanto Agricultural Company, and Lee A. Miller, Vice President, Animal Sciences Division, Monsanto Agricultural Company

An ever-increasing stream of internally generated new products is an essential component of Monsanto's strategy. At Monsanto Agricultural Company (MAC), we've renewed our research and development program through reinvigorated chemical research and pioneering work in the new science of biotechnology.

We have 1,000 professionals working with a budget of more than $140 million a year. Thanks to their efforts, MAC's new-product pipeline has more candidates now than at any time in the past 15 years. Most have come from our own labs, bolstered by some technologies we've licensed or acquired.

Thirteen products are on an accelerated commercialization track, and the first of these will come to market during 1989. Another 14 will be evaluated in 1989 for the fast track, and 20 more will be taken to field tests, the last step prior to the decision to take them to market.

New Chemistry Yields Crabgrass Killer

In chemistry, five herbicide candidates are rapidly moving to commercialization. The first will be *Dimension* crabgrass killer, which we anticipate will be tested in the United States in 1989. Superior to existing products, *Dimension* is harmless to desirable grasses and effective season-long. This product comes from a whole new class of herbicide chemistry that has also yielded commercialization-track products for rice, cotton, soybeans, peanuts, trees, nuts and vines.

The market demand to control plant diseases is big and growing, and we have several fungicide candidates under development. One that protects rice is already on the commercialization track. We also have discovered a chemical hybridizing agent that increases yields in wheat strains grown in Europe; it too is on a commercialization track.

Biotechnology Promises Unprecedented Products

Our other approach to discovering new products is based on the science of biotechnology, which is delivering unprecedented potential products for the animal and plant sciences.

The first product from this program is bovine somatotropin, or BST, a naturally occurring protein that increases the efficiency of milk production in dairy cows, lowering costs for dairy farmers. BST is awaiting approval by the U.S. Food and Drug Administration.

Porcine somatotropin, or PST, enhances feed efficiency in hogs and delivers to health-conscious consumers leaner pork with less fat. Regulatory approval is expected in the early 1990s.

We are also developing genetically engineered varieties of crops that resist certain viruses or insects. Virus- and insect-resistant plants should be introduced toward the mid-1990s. In laboratories, we recently engineered cotton for resistance to certain caterpillars.

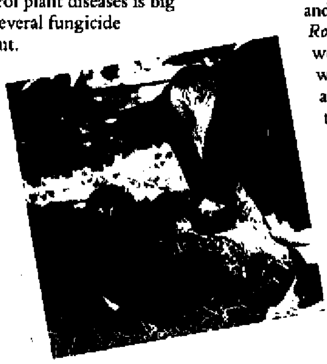
One of the most promising plant areas is the engineering of crops that tolerate *Roundup* herbicide. This would benefit farmers by allowing them substantially increased flexibility in their weed control programs.

By the mid-1990s, we plan to introduce varieties of soybeans, cotton and canola tolerant to *Roundup*. We're also working on even larger worldwide crops, wheat and corn, to make them tolerant to *Roundup*.

Tracking Microbes

If genetically engineered microbes are to be used to protect plants from insects and disease, scientists must first know how those microbes behave in soil. Do they stay in place, or do they migrate? How long do they survive? Such questions are central to both the testing and marketability of genetically engineered microbes.

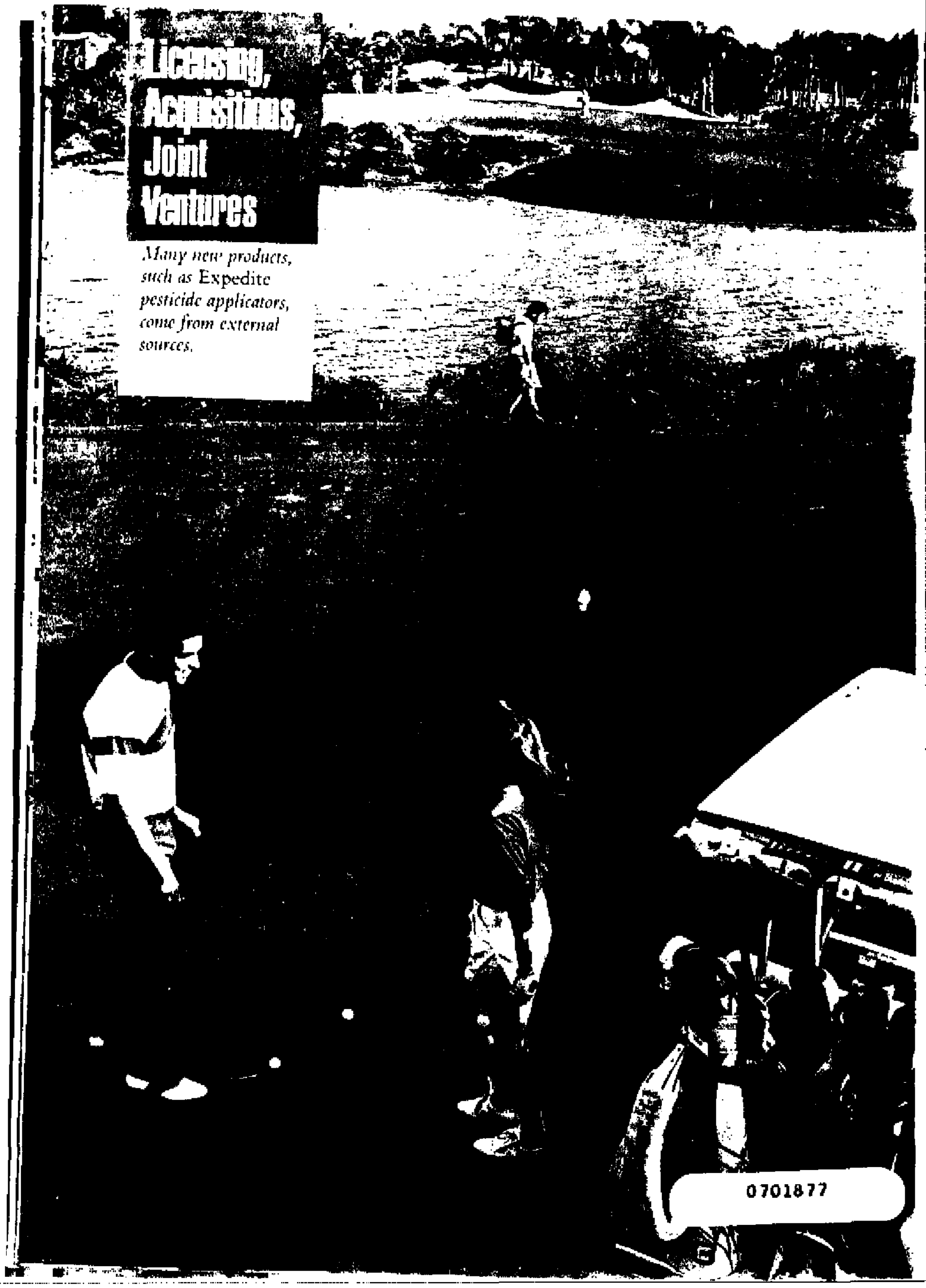
Monsanto is the research leader in answering these questions. Our scientists have engineered a marking system onto a common strain of soil bacteria, allowing their fates to be observed. This technique has been tested successfully in the field and in scores of university research laboratories to which we have made our work freely available. These tests are proving the efficacy and value of our microbial marking method as a research tool.



◀ *A protein that increases efficiency of milk production in dairy cows will be Monsanto's first biotechnology product.*

Licensing, Acquisitions, Joint Ventures

Many new products, such as Expedite *pesticide applicators, come from external sources.*



by Ronald L. Goode, Ph.D., Senior Vice President, Corporate Commercial Development, G.D. Searle & Co., and Hendrik A. Verfaillie, Vice President, Commercial Development, Monsanto Agricultural Company

Monsanto intends to increase shareowner value with new and better products. Some come from our own research, but some equally important products come from licensing, acquisitions and joint ventures.

At G.D. Searle & Co., our goal is for such externally derived products to provide $2 billion in sales by the mid-1990s. Sales of such products came to $416 million in 1988. In Monsanto Agricultural Company, acquired and licensed products will provide 25 to 30 percent of MAC's sales by the mid-1990s, compared with less than 5 percent in 1988.

Licensing Fills Short- and Long-Term Needs

Some licensing efforts at MAC fill short-term product needs. That was the case when we recently bought the distribution, patent and technology rights for *Expedite* pesticide applicator outside the United Kingdom. That was also the reason we obtained U.S. distribution rights for *Clipper* tree growth regulator and access to a cereal fungicide in Europe.

Looking to the longer term, we now have several licensed herbicides and fungicides under commercial development, and we regularly evaluate new candidates.

Licensing at Searle has already produced one big winner. The family of *Calan* cardiovascular drugs has become Searle's biggest seller, accounting for more than $240 million in 1988 sales. Another licensed product, lomefloxacin, looks especially promising. This anti-infective belongs to the third-largest and fastest-growing segment of the market, quinolones.

During the past year alone, Searle licensed 10 compounds that will be developed as ethical drugs.

Unlike any other major pharmaceutical company, we have established a worldwide group whose sole mission is the development of licensed compounds. Its structure and mission discourage the "not invented here" syndrome, in which licensed compounds get treatment inferior to that of in-house discoveries. About every 10 days, Searle looks at another new compound from external sources.

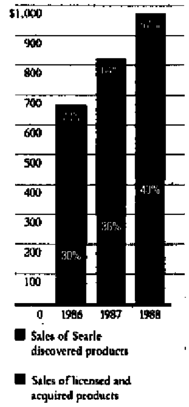
Acquisitions, Mergers Add Products, Market Position

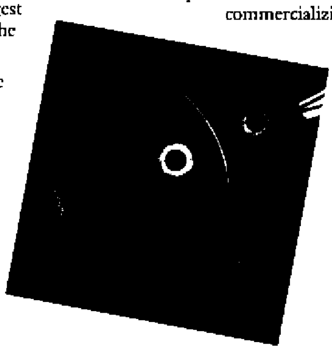
Acquisitions and mergers are ways to obtain new products and to establish a new market position. To complement *Roundup* lawn and garden herbicide, MAC in 1988 bought the lawn- and garden-care product line sold under the *Greensweep* brand. We also bought the Western Hemisphere rights to Rohm and Haas chemical hybridizing agents, which improve the hybridization process. One such agent promises to deliver higher yields in North American wheat strains.

Also in 1988, Searle merged its Italian affiliate, Searle Italia, with the ethical pharmaceutical division of Schiapparelli Farmaceutici S.p.A. to get a larger presence in the Italian pharmaceutical market, the world's fifth-biggest. One of Searle's priorities is an acquisition in West Germany, the world's third-biggest pharmaceuticals market, where we are now under-represented.

Joint ventures, another useful strategy, spread risks of new product development. Lorex, Searle's joint venture with a French pharmaceutical firm, has been developing new products since 1982. We are close to commercializing the first of these, *Kerlone* (betaxolol) hypertensive drug. Searle now has 13 joint ventures.

Growing Contribution of Licensed/Acquired Searle Products
(dollars in millions)





◀ *In-vitro tests demonstrate the superior anti-infective efficacy of lomefloxacin, which was recently licensed by Searle.*

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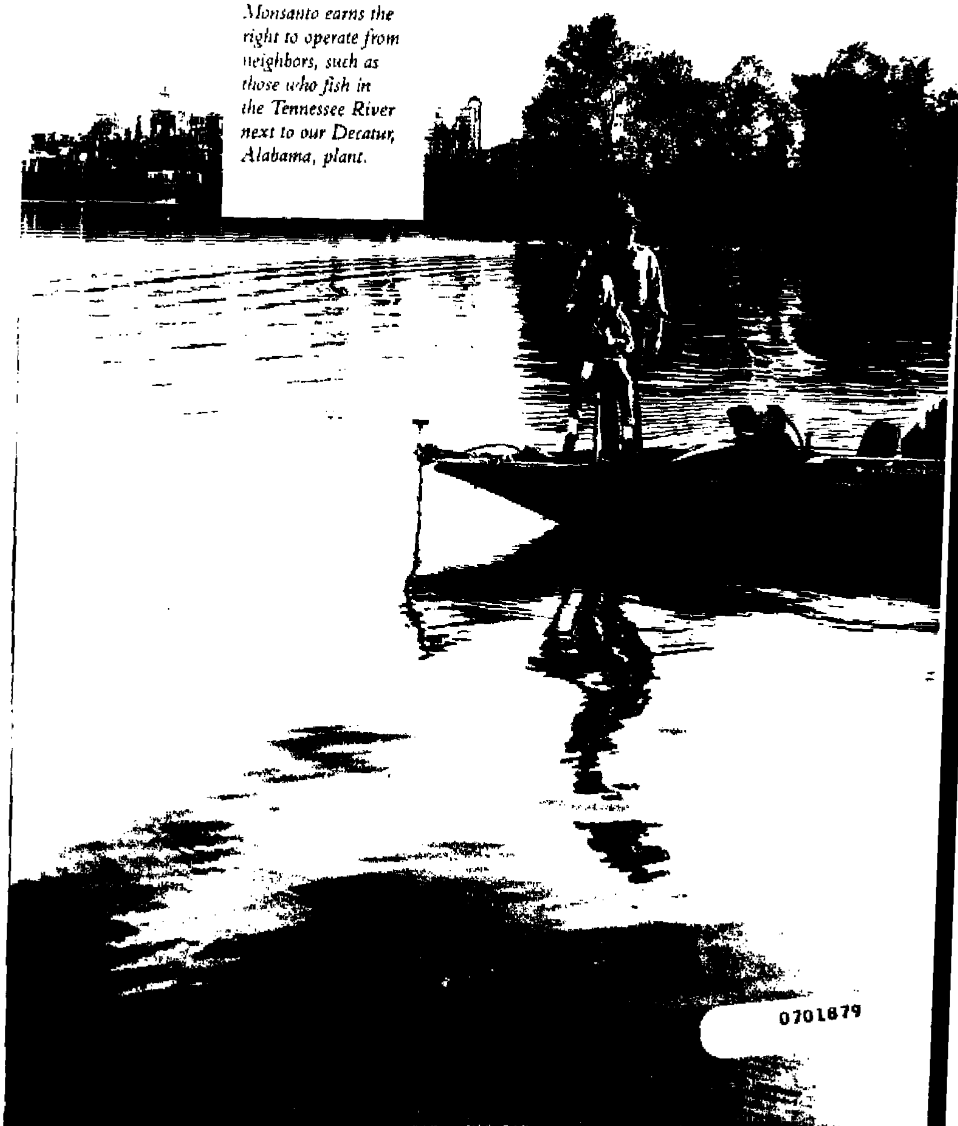
[illegible] The Environment

Monsanto earns the right to operate from neighbors, such as those who fish in the Tennessee River next to our Decatur, Alabama, plant.



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by Harold J. Corbett, Senior Vice President, Environment, Safety and Health, Monsanto Company

Monsanto's environmental vision is simply stated: Monsanto will do the right thing and be known for doing the right thing.

We will do the right thing first and foremost because that's the kind of company we are, and we expect it of ourselves. Furthermore, it is what the public expects, and it is the public from whom we earn the right to operate.

That vision was expressed in our 1988 goal to reduce toxic air emissions worldwide by 90 percent by the end of 1992. That aggressive initiative follows a series of programs during the last five years that demonstrate our determination to protect human health and the environment.

In 1984, Monsanto approved $100 million for cleanup of waste sites in which the Company was involved. That same year, following the tragedy at Bhopal, we became the first company to offer to the public our Material Safety Data Sheets on all products and raw materials. We also established the High Hazard Materials Task Force to analyze and reduce potential risks at all manufacturing facilities worldwide. That task force continues to make recommendations to the operating divisions, which have the responsibility for implementation. And in 1988, going far beyond the requirements of the Emergency Planning and Community Right-to-know Act, we actively communicated our data on emissions to air, water and land to a broad range of national and local publics.

Air Emissions Reduced Across Monsanto

All of Monsanto's operating divisions and subsidiaries are involved in the 90 percent reduction program. Teams of manufacturing experts, environmental experts, engineers and others have been formed to make recommendations for specific projects.

Generally, these projects fall into three categories: product substitution, in which less volatile materials can be substituted to reduce air emissions; process change and modification; and installation of new pollution control technology. These projects will be implemented during the next four years.

Goal Is Reduction of All Wastes

Because reducing emissions to the air can increase emissions to water, land or other media, and because our goal is a net reduction of all wastes, we are also formalizing a general waste elimination program, with specific goals and checkpoints. Each operating division is developing specific plans and recommendations. These include process revisions and material substitutions to eliminate hazardous waste; recycling and reuse within the processor plant; and waste treatment through such technologies as incineration and biotreatment. Outright elimination and recycling take much longer to achieve, but are more environmentally desirable. Therefore, we are encouraging process research focused on these methods, rather than exclusively on the easier "end-of-pipe" treatment.

Old Waste Sites Cleaned Up

Significant progress has been made on cleanup of a number of major Superfund waste sites. Cleanup is scheduled to begin this year at the Motco site in Texas and the Seymour, Indiana, site. We expect a consent decree to be concluded shortly for the Brio/Dixie Processors site in Texas. A consent decree for cleanup at the Woburn Industriplex site in Massachusetts has been lodged in federal court. Monsanto is the project manager for cleanup at all four sites.

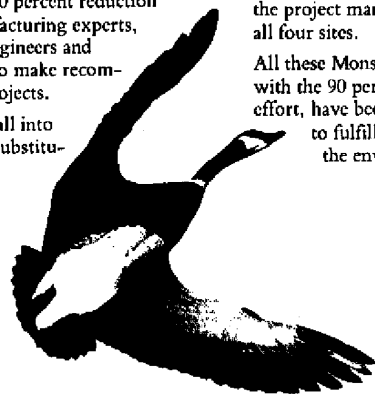
All these Monsanto programs, along with the 90 percent air reduction effort, have been undertaken to fulfill our vision for the environment.

A Neighbor Speaks

Having Monsanto as a neighbor has been the good fortune of Decatur, Alabama, says the city's mayor, Bill Dukes. "They've set a good example since their first days here and have never deviated," Dukes says.

Part of that record is environmental: According to the mayor, some of the Company's standards exceed those of the Environmental Protection Agency. Part is philanthropic: A Monsanto Fund gift helped build a cancer center for the Decatur General Hospital.

The record also includes community service by Monsanto employees in activities ranging from the Chamber of Commerce to kids' softball teams. "Monsanto," Mayor Dukes says, "is unusually community-minded."



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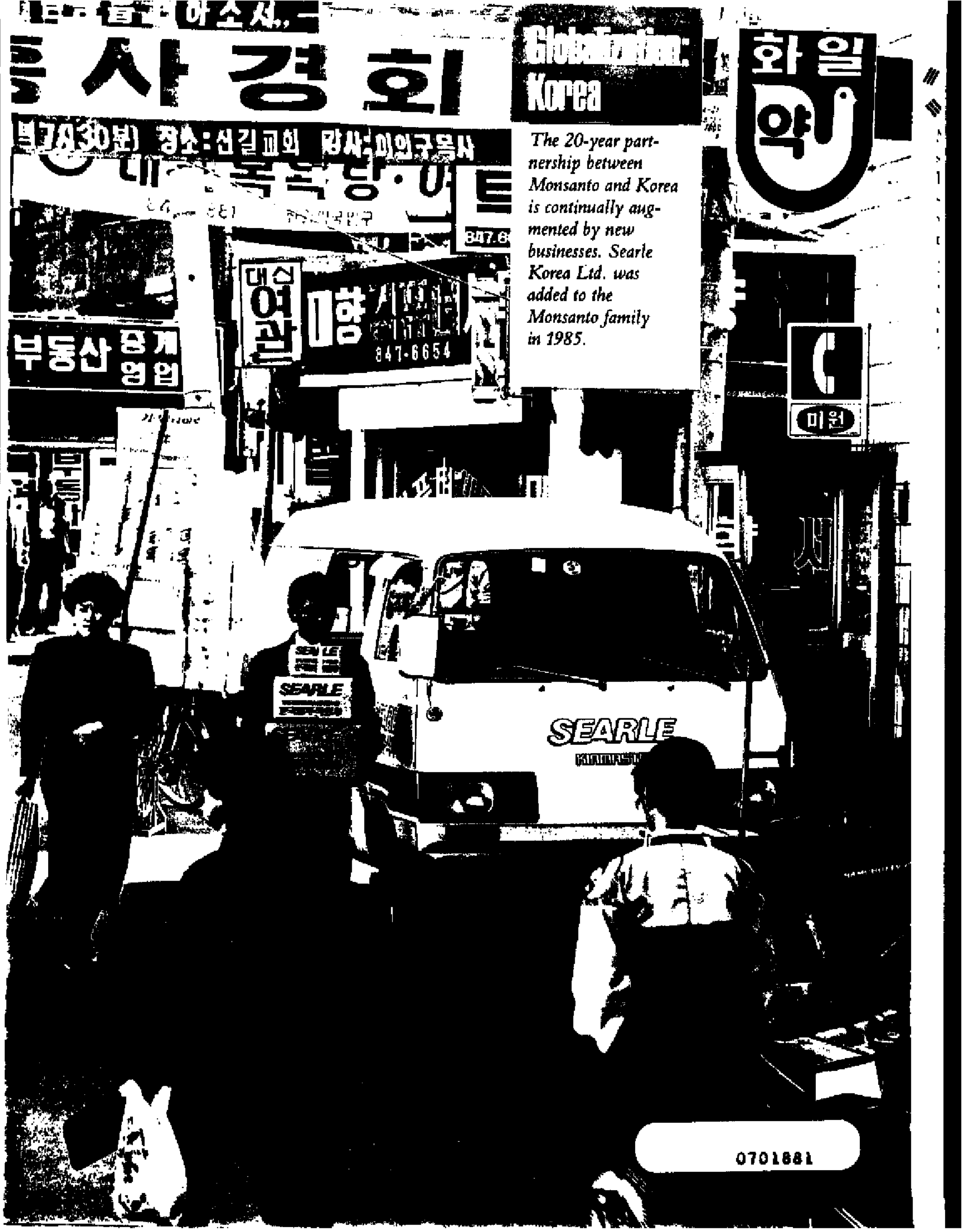


Globalization: Korea

The 20-year partnership between Monsanto and Korea is continually augmented by new businesses. Searle Korea Ltd. was added to the Monsanto family in 1985.

by Kim Dong Sung, Country Director, Monsanto Korea Inc.

Monsanto's 20 years in Korea have been a partnership with the history of modern Korea itself. As Korea has grown and modernized, the Company has supplied many of the nation's basic needs and grown with it. Today, Korea has become an economic force that no global company can ignore.

Monsanto came to Korea in 1968. At that time, we were a nation still recovering from nearly four decades of occupation by a foreign power and two destructive wars. The second was for us the more tragic, since in it Koreans killed Koreans. When the killing stopped in 1953, my country had little left but its mountains and rivers . . . and the people who remained. The people barely survived from one day to the next.

Through the 1960s, we depended heavily on international aid. And we suffered from several chronic economic diseases — trade deficit, government debt, currency devaluation and double-digit inflation.

Today those chronic problems are virtually gone. Our economy is growing more than 8 percent each year, and our products are now known for quality and value throughout the world. Many see Korea as an economic miracle.

Before 1968, Monsanto sold a few products through agents. There were no Monsanto employees in Korea, and no Monsanto products were made here. Today, Monsanto has grown to more than 380 employees in Korea. If we count their spouses and children, Monsanto paychecks support an extended family of more than 1,650 people.

Last year, sales of Monsanto products amounted to nearly $115 million, including $50 million from sales of products marketed by our joint ventures.

Monsanto Products Met Special Needs

From the beginning, Monsanto's products provided special value to the Korean nation at each stage of growth. When I was hired in August 1968, Monsanto wanted someone to introduce two miraculous new herbicides, *Lasso* herbicide for upland crops and *Machete* herbicide for rice and barley.

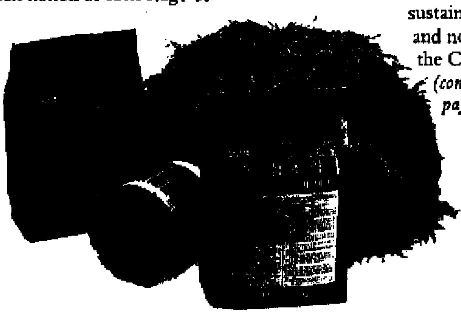
At the time there was serious overpopulation in rural areas, creating a high jobless rate in the off season. And here was Monsanto wanting to replace 5,000-year-old labor-intensive hand weeding with labor-saving products! But this almost magical chemical weed control helped increase food production for a population moving to the industrializing cities where there were good jobs.

Korea was the first country to use *Machete* on barley and rice, and it was quickly adopted by our farmers. The first sales of liquid *Machete* in 1970 brought in $35,000. When we introduced the granular form a year later, the demand was so great that we placed an order 100 times the volume of the previous year.

First Investment an Agricultural Joint Venture

This progress led Monsanto to invest in Korea. The result was KORAG, a 50-50 joint venture with Han-Nong Corporation, Korea's largest agricultural chemicals distributor. KORAG was an immediate success. During the first full year of production, it earned more than twice the initial investment.

As Monsanto grew and gained experience in Korea, the growing Korean economy needed other new products. When Korea began manufacturing electronic goods, Monsanto supplied silicon wafers to that budding industry through another joint venture. Although there is a healthy market for electronic materials in Korea, Monsanto's electronic materials business overall has not been able to sustain profitability and no longer fits the Company's *(continued on page 18)*



Searle Soaring in Korea

G.D. Searle's business in Korea is soaring. Sales grew 113 percent from 1986 to 1987, and 59 percent from 1987 to 1988. They are expected to grow another 50 percent in 1989.

Beginning with the establishment of Searle Korea Ltd. in 1982, the rapid growth was fueled by local manufacturing, which began in 1985 in an award-winning plant.

Of its two dozen products, the best-selling prescription drugs are Aldactone *diuretic and* Cytotec *ulcer medication.*

Searle Korea is the only pharmaceutical joint venture in Korea with an extensive licensing program. Seven licensed products are sold there under the Searle name, including its two overall best sellers, both non-prescription products.

Searle Korea's prospects are bright in a market that is growing at almost 20 percent a year.

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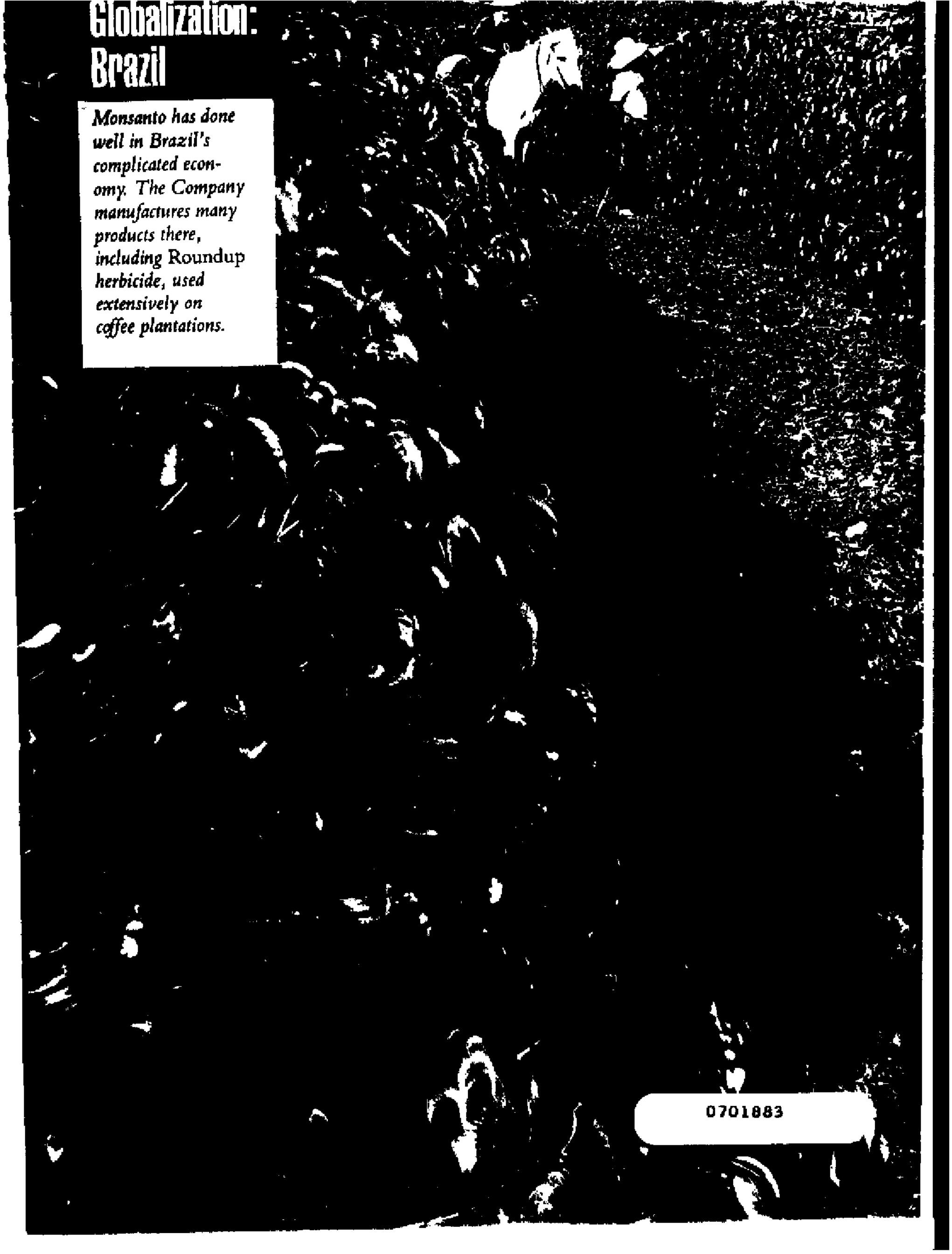
Globalization: Brazil



Monsanto has done well in Brazil's complicated economy. The Company manufactures many products there, including Roundup *herbicide, used extensively on coffee plantations.*

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by James H. Nisbet, President, Monsanto Brazil

Brazil has become a major world area for Monsanto, and it will grow in importance as our Company becomes more global. We have done well during the 25 years we have been in this huge and complicated land.

It's risky to generalize about Brazil. Highly industrialized and wealthy in the South, where the economy has long revolved around the sophisticated cities of Rio de Janeiro and São Paulo, Brazil is also a young, emerging frontier nation in the western interior.

Often viewed as a potential power, Brazil is in many respects already an economic giant. It produces almost half of South America's goods, nearly three times as much as the next-largest economy on that continent.

A market economy prevails, yet the government is a major economic force. The government controls imports and exports, and it has created special "market reserves" to encourage the growth of certain Brazilian industries.

The government's presence is felt in another way. That's in the form of hyperinflation — nearly 1,000 percent in 1988. Government borrowing contributes to the inflation, but it has attempted to attack the problem — with wage and price-control "shock treatments," for example, and indexation of prices and wages. The problem remains to be solved, but unlike most countries, Brazil has kept growing in spite of it.

Monsanto has also grown by learning how to do business in this variable and unpredictable economy, which sometimes frustrates managers schooled in the business practices of Europe and North America. To succeed, we've learned the value of being flexible, informal, tolerant, adaptable and agile. Above all, we must be patient and look to the long term, for it is only over time that the complexities can be managed and the results measured with accuracy.

First Significant Investment in 1973

Monsanto entered the Brazilian market in 1963 with the opening of a sales office in São Paulo. We increased our presence in 1973, when we made our first significant investment there in the form of a minority interest in a local company. Within a year, we also invested in a manufacturing facility at São José dos Campos.

Since then, a steady pace of investment — running today at \$20-\$25 million a year — has created perhaps the most comprehensive range of Monsanto operations in any country outside the United States.

From our initial investments in rubber chemical and phosphate production and later investments in polystyrene and herbicide production, the São José dos Campos facility has grown into a complex network of process units making many Monsanto products.

Agricultural, Automotive Markets Largest

Monsanto do Brasil sales, excluding our joint ventures, have climbed from \$5 million in 1974 to \$188 million in 1988, with industrial chemicals and agricultural products leading the way. Brazil is the world's No. 1 coffee producer, and coffee growing constitutes the largest Brazilian market for *Roundup* herbicide. Brazil, in fact, is the third-largest country for *Roundup* in the world.

Destined to become an even larger market for Monsanto products is the automobile industry. Brazil today ranks eighth in the world as an automobile manufacturer. By the mid-1990s, it is expected to rank fourth. Already Monsanto is the leading producer of rubber chemicals in Brazil, and the expected growth in the auto market will fuel sales of rubber chemicals.

(continued on page 18)

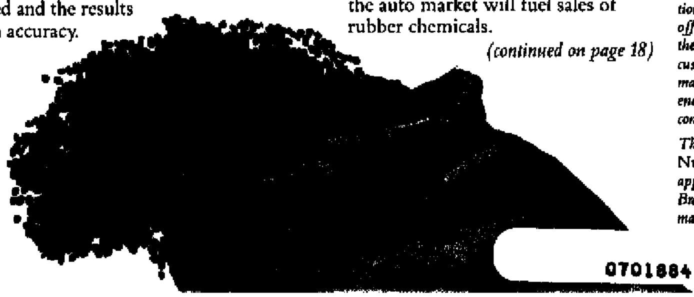
NutraSweet In a Land of Sugar

Brazil is a land of sugar. The average Brazilian consumes 25 kgs (55 lbs) of sugar each year, compared with 7 kgs (15 lbs) for each person in the United States.

Until early 1988, use of non-sugar sweeteners in Brazil was restricted to a small number of products. The NutraSweet Company sought to change that through an informational campaign.

First, The NutraSweet Company became a regular source of scientific information for government officials. Second, it enlisted the support of potential customers in the effort to make NutraSweet *sweetener available to Brazilian consumers.*

The strategy succeeded. NutraSweet *is now approved for sale in Brazil. It will soon be manufactured there.*



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Globalization: Korea (continued)

Automobile production is becoming Monsanto's largest Korean market.

strategies and objectives. It is being sold.

Joint Venture for Automotive Market Formed

Korea also has emerged as one of the world's major automotive markets. In 1985, we began talks with Korea's largest tire maker, Kumho, who was attracted to our superior rubber chemicals and other first-rate products for the automotive market, like *Saflex* interlayer in safety glass and *Santoprene* thermoplastic rubber. The upshot was Monsanto's latest Korean joint venture, Kumho Monsanto Company, founded in 1987.

The Monsanto family in Korea gained another member in 1985, when the Company acquired G.D. Searle & Co. (see sidebar on page 15). This new business is also in step with the increasing modernization of the Korean economy and society.

Thus, Monsanto has evolved and prospered in harmony with Korea, assisting in each stage of Korean development while doing a profitable business. Monsanto continues to develop new products that will help boost Korean agricultural production. Feasibility studies are also under way to determine appropriate investments to supply the automotive market.

Monsanto and Korea are good for each other. We Koreans have a can-do attitude. Our spiritual heritage encourages us not to dwell on problems but instead to seek opportunities. Monsanto will always find new opportunities for profitable business as Korea grows and prospers.

Globalization: Brazil (continued)

Emerging as Brazil's largest customer for Monsanto products is the auto industry.

The same market will become a major consumer of *Saflex* plastic interlayer for laminated safety glass. Beginning in 1991, Brazilian law will require laminated safety glass in all new autos. That's why we are building a plant to manufacture *Saflex*.

Automobiles will also be the leading market for *Santoprene* thermoplastic rubber, which we will soon be supplying from a new production unit at São José dos Campos.

NutraSweet brand sweetener is another product with large market potential. Until recently, non-sugar sweeteners were highly restricted by the Brazilian government. But a new legal status for these sweeteners changed that in early 1988 (see sidebar on page 17). Now *NutraSweet* is being sold and a plant is being built at São José dos Campos to satisfy the extraordinary sweet tooth and fit-and-trim attitudes of the Brazilian people.

Quality Gives Competitive Edge

To take full advantage of these and other opportunities in Brazil, we have initiated a Total Quality program. Not only do we expect quality-improvement programs to result in cost savings, but we are convinced that improved quality throughout our operations will also give us a significant competitive advantage. For as Brazil develops further, increased domestic consumption and exports to other countries will lead to demands for higher-quality products. We intend to be the preferred supplier in our targeted markets of the highest-quality products to those customers.

We expect Monsanto's record of success in Brazil to continue. The population is young — 50 percent are below the age of 18. This will provide a growing consumer base and an eager work force. Furthermore, many of the major growth markets in Brazil are ones that Monsanto is well equipped to supply. The future looks promising.

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Financial Section Contents

Unless otherwise indicated by the context, "Monsanto" means Monsanto Company and consolidated subsidiaries, and "the Company" means Monsanto Company only. All dollars are in millions, except per share data.

Management Report

Monsanto Company management is responsible for the fair presentation and consistency of all financial data included in this Annual Report in accordance with generally accepted accounting principles. Where necessary, the data reflect management's best estimates and judgments.

Management also is responsible for maintaining a system of internal accounting controls with the objectives of providing reasonable assurance that Monsanto's assets are safeguarded against material loss from unauthorized use or disposition and that authorized transactions are properly recorded to permit the preparation of accurate financial data. Cost-benefit judgments are an important consideration in this regard. The effectiveness of internal controls is maintained by: (1) personnel selection and training; (2) division of responsibilities; (3) establishment and communication of policies; and (4) ongoing internal review programs and audits. Management believes that Monsanto's system of internal controls as of December 31, 1988 is effective and adequate to accomplish the above described objectives.

Richard J. Mahoney
Chairman and
Chief Executive Officer

Francis A. Stroble
Senior Vice President and
Chief Financial Officer

February 24, 1989

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Audit Committee Report

The Audit Committee is composed of five non-employee members of the Board of Directors and met three times in 1988. It reviews and monitors Monsanto's internal controls, financial reports, accounting practices and the scope and effectiveness of the audits performed by the independent auditors and internal auditors. The Committee also recommends to the full Board of Directors the appointment of Monsanto's principal independent auditors and approves in advance all significant audit and non-audit services provided by such auditors. As ratified by shareowner vote at the 1988 Annual Meeting, Deloitte Haskins & Sells was appointed as independent auditors to examine, and express an opinion as to the fair presentation of, the consolidated financial statements. This opinion appears below.

The Audit Committee discusses audit and financial reporting matters with representatives of the Company's financial management, its internal auditors and Deloitte Haskins & Sells. The internal auditors and Deloitte Haskins & Sells meet with the Committee, with or without management representatives present, to discuss the results of their examinations, the adequacy of Monsanto's internal accounting controls and the quality of financial reporting. The Committee encourages the internal auditors and Deloitte Haskins & Sells to communicate directly with the Committee.

The Audit Committee has reviewed and approved the financial section of this Annual Report. Pursuant to the recommendation of the Audit Committee, the Board of Directors also has approved the financial section.

Buck Mickel
Chairman, Audit Committee

February 24, 1989

Independent Auditors' Opinion

To the Shareowners of Monsanto Company:

We have audited the accompanying statement of consolidated financial position of Monsanto Company and Subsidiaries as of December 31, 1988 and 1987, and the related statements of consolidated income, shareowners' equity and cash flow for each of the three years in the period ended December 31, 1988. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, such consolidated financial statements present fairly in all material respects the financial position of Monsanto Company and Subsidiaries at December 31, 1988 and 1987, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 1988, in conformity with generally accepted accounting principles.

Deloitte Haskins & Sells

Deloitte Haskins & Sells
Saint Louis, Missouri

February 24, 1989

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Statement of Consolidated Income

(Dollars in millions, except per share)	1988	1987	1986
Net Sales	$8,293	$7,639	$6,879
Cost of goods sold	4,972	4,755	4,344
Gross Profit	3,321	2,884	2,535
Marketing expenses	1,013	918	816
Administrative expenses	474	424	428
Technological expenses	648	615	596
Amortization of intangible assets	231	225	218
Restructuring expense (income) — net		(32)	(158)
Operating Income	955	734	635
Interest expense	(174)	(172)	(201)
Interest income	46	42	41
Other income — net	66	69	161
Income Before Income Taxes	893	673	636
Income taxes	302	237	203
Net Income	$ 591	$ 436	$ 433
Earnings per Share	$ 8.27	$ 5.63	$ 5.55

The above statement should be read in conjunction with pages 37 through 42 of this report.

Key Financial Statistics	1988	1987	1986
Percent Change from Prior Year:			
Net Sales	9%	11%	2%
Operating Income	30	16	—
Net Income	36	1	—
Earnings per Share	47	1	—
As a Percent of Net Sales:			
Gross Profit	40	38	37
Marketing, Administrative and Technological Expenses	26	26	27
Research and Development Expenses	7	7	8
Operating Income	12	10	9
Net Income	7	6	6
Effective Income Tax Rate	34	35	32
Return on Shareowners' Equity	15	11	12

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1988 Was Record Year

The strategies established in prior years and the continued economic growth in Monsanto's key markets throughout the world produced strong sales demand, which resulted in record earnings in 1988. Net income for 1988 was $591 million compared with $436 million in 1987, a 36 percent increase. Earnings per share for 1988 were $8.27 versus $5.63 in 1987, a 47 percent increase. In addition to the strong income performance, earnings per share benefited from the reduction in the number of common shares outstanding as a result of the treasury stock purchase program.

Sales Demand Strong Across All Segments

Net sales increased 9 percent in 1988. Sales volume was 6 percent higher than 1987. The volume improvement was experienced across all operating units. The improvement in sales volume and mix contributed an additional $2.47 per share to 1988 earnings per share. Demand was strong for both U.S. export and ex-U.S. produced goods as these sales increased 12 percent and comprised 43 percent of Monsanto's total net sales in 1988. New applications and market expansion contributed to robust demand for established agricultural products such as *Roundup* and *Lasso* herbicides. *Alimet* animal feed supplement had a record sales year with a substantial increase in volume. Products such as *Saflex* plastic interlayer and *Lustran* ABS thermoplastics experienced vigorous demand from the automotive and housing industries. Sales demand for *Wear-Dated* stain-resistant carpet fibers continued to grow. The volume growth of *NutraSweet* brand low-calorie sweetener reflected the continued strength of the U.S. diet carbonated soft drink market and further penetration of international markets. Sales of the *Calan* family of pharmaceutical products increased 79 percent.

The overall impact of selling price increases was favorable in 1988. Strong demand supported selling price increases for a number of products. However, the *Roundup* herbicide global marketing strategy, which included reducing selling prices, contributed to increased market penetration and development of new markets, which resulted in substantial volume increases. Internationally, the continued weakness of the U.S. dollar gave U.S.-produced goods a competitive advantage in certain world area markets. The currency translation of ex-U.S. denominated sales into U.S. dollars also produced a favorable effect.

Gross Margin Improved

Gross profit was 40 percent of sales in 1988, a good improvement compared with 38 percent for the prior year. Monsanto's strategy to exit from cyclical commodity chemicals businesses in favor of higher value-added products has improved the quality of the product portfolio. This shift to higher margin products contributed significantly to the gross profit improvement in 1988. In addition, benefits were realized from continuing manufacturing cost reduction projects. The effect of higher selling prices ($240 million) exceeded the effect of raw material cost increases ($140 million).

Marketing and Administrative Expenses Affected by Higher Sales and Profitability

Marketing expenses increased 10 percent in 1988. Of this increase, about one-fourth was from higher agents' sales commissions resulting from the higher sales level. Another one-fourth of the increase was the effect of ex-U.S. currency translation, and the remaining increase generally was due to inflation. Marketing expenses as a percent of net sales were 12 percent in 1988, unchanged year-to-year. Marketing expenses as a percent of net sales differ substantially between operating units, the highest being in Pharmaceuticals and the lowest being in Chemicals.

Administrative expenses increased 12 percent in 1988. About one-half was from higher employee incentive compensation resulting from the record profitability. The remainder of the increase was due to inflation and the effect of ex-U.S. currency translation.

Research Commitment Continues

Monsanto continues to commit significant resources to research with technological expenses of $648 million in 1988, 5 percent higher than 1987. Significant expenditures were in the areas of life sciences — pharmaceuticals and agriculture. A strategy of in-house research complemented by university collaboration and aggressive licensing programs sustains the momentum established in recent years. As a result, Crop Chemicals has more potential new products in the pipeline than at any time in the past 15 years. Pharmaceuticals has numerous products in various stages of research and development, some of which are now awaiting regulatory approval for commercialization. *Cytotec* anti-ulcer drug was approved in the United States in late 1988 and will be commercially launched in 1989. Animal Sciences' bovine somatotropin and The NutraSweet Company's *Simplesse* all-natural fat substitute are anticipated to be introduced in 1989. Monsanto also has devoted significant research effort to existing product lines, focusing primarily on improving the technology and expanding product applications, such as a *Saflex* plastic interlayer that can screen out heat-causing solar radiation.

Review of Consolidated Results of Operations (continued)

Operating Income Up 30 Percent

Operating income was $955 million in 1988, up 30 percent from $734 million in 1987. The operating profit margin improved to 12 percent of net sales in 1988 as compared to 10 percent in the prior year. Sales volume and selling price improvements favorably affected operating income; but rising raw material and marketing costs had an unfavorable impact.

ROE Improved to 15 Percent

The 15 percent return on shareowners' equity (ROE) in 1988 represents considerable improvement over the 11 percent attained in 1987 and demonstrates continuing progress toward management's target of a 20 percent return on equity by the early 1990s. The 1988 improvement was primarily due to the higher profit performance, supplemented by the treasury stock purchase program.

1987 Showed Improvement

Net sales increased to $7,639 million in 1987, an 11 percent increase over 1986. Sales volume increased 8 percent in 1987. Worldwide selling prices increased 3 percent.

The gross profit margin in 1987 was 38 percent versus 37 percent in 1986 due to increased sales of products with higher margins (Pharmaceuticals and Crop Chemicals). Chemicals margins were lower because of a selling price/raw material cost squeeze. Monsanto's total raw material costs increased approximately 13 percent. The gross profit margin was adversely affected in 1986 by the $90 million obsolescence charge for the Electronic Materials property write-down.

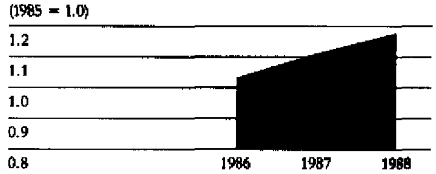
Net income of $436 million in 1987 was up marginally from $433 million in 1986. Included in 1986 net income, however, was $85 million of net gains associated with unusual items resulting from the sale, closure or impairment of facilities and businesses as well as other unusual income and expenses. Only $18 million was included in 1987 for gains from similar items.

The countries in which Monsanto operates have experienced varying degrees of inflation; therefore, the historical cost of certain assets is generally lower than current cost. Generally accepted accounting principles require financial statements to be prepared at historical cost. Consequently, the depreciation expense reported in the Statement of Consolidated Income is less than that which would be reported using current cost.

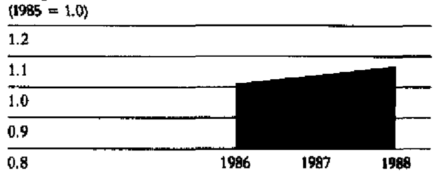
Analysis of Change in Earnings per Share — Better (Worse)

	1988 vs. 1987	1987 vs. 1986
Sales Related Factors:		
Selling prices	$ 1.78	$ 1.21
Sales volume and mix	2.47	2.12
Total Sales Related Factors	4.25	3.33
Cost Related Factors:		
Raw material costs	(1.02)	(1.70)
Other manufacturing costs	0.19	(0.07)
Marketing, administrative and technological expenses	(1.30)	(0.93)
Nonrecurring 1986 costs		0.98
Total Cost Related Factors	(2.13)	(1.72)
Other Factors:		
Restructuring — net	(0.24)	(1.01)
Divestitures	(0.26)	(0.13)
Total Other Factors	(0.50)	(1.14)
Operating Income	1.62	0.47
Interest expense	(0.01)	0.19
Interest income	0.03	0.01
Other income — net	(0.02)	(0.87)
Change in income taxes	0.38	0.25
Change in shares outstanding	0.64	0.03
Change in Earnings per Share	$ 2.64	$ 0.08

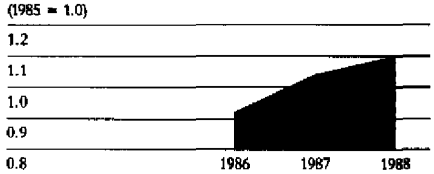
Sales Volume Index
(1985 = 1.0)



Selling Price Index
(1985 = 1.0)



Raw Material Cost Index
(1985 = 1.0)



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Operating Unit Segment Data

	Net Sales			Operating Income (Loss)			Research and Development		
	1988	1987	1986	1988	1987	1986	1988	1987	1986
Agricultural Products:									
Crop Chemicals	$1,377	$1,178	$1,067	$434	$359	$318	$110	$ 94	$ 94
Animal Sciences	169	127	86	(10)	(43)	(35)	43	47	41
Chemicals	3,989	3,858	3,548	486	450	613	108	108	105
Electronic Materials	209	185	154	11	(5)	(139)	6	8	15
Fisher Controls	840	749	645	29	26	(66)	19	18	21
NutraSweet	736	722	711	154	145	142	35	31	25
Pharmaceuticals	973	820	665	(62)	(119)	(119)	198	199	177
Biotechnology Product Discovery				(47)	(43)	(41)	47	43	39
Corporate			3	(40)	(36)	(38)	9	9	6
Total consolidated	$8,293	$7,639	$6,879	$955	$734	$635	$575	$557	$523

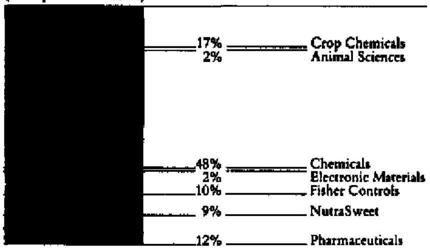
	Total Assets			Capital Expenditures			Depreciation and Amortization		
	1988	1987	1986	1988	1987	1986	1988	1987	1986
Agricultural Products:									
Crop Chemicals	$1,001	$ 918	$ 939	$101	$ 71	$ 55	$ 85	$ 82	$ 84
Animal Sciences	260	221	217	22	21	33	25	22	21
Chemicals	2,883	2,856	2,704	329	287	244	235	231	236
Electronic Materials	217	234	228	10	11	51	20	17	122
Fisher Controls	682	654	612	25	22	38	37	34	36
NutraSweet	1,484	1,724	1,883	36	31	39	209	206	205
Pharmaceuticals	1,604	1,484	1,394	56	50	53	79	75	67
Biotechnology Product Discovery	67	78	50	7	6	6	11	8	7
Corporate	263	286	242	4	6	1	2	4	2
Total consolidated	$8,461	$8,455	$8,269	$590	$505	$520	$703	$679	$780

The above data should be read in conjunction with the Segment Information note to the financial statements on pages 41 and 42.

Chemicals operating income was favorably affected by unusual items of $149 million in 1986 and $30 million in 1987 from the actions instituted under the 1985 restructuring program. The Electronic Materials operating loss in 1986 included asset impairment costs of $90 million.

The following describes the principal factors for the operating units' strong overall performance in 1988 and 1987, along with the factors that are expected to affect operating results in 1989.

Net Sales
(1988 percent of total)



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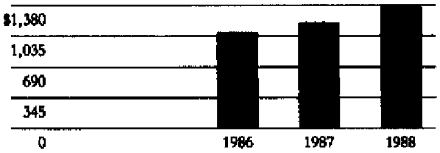
Operating Unit Segment Data (continued)

Crop Chemicals

	1988	1987	1986
Net Sales	$1,377	$1,178	$1,067
Operating Income	434	359	318

The Crop Chemicals operating unit is a leading worldwide producer and marketer of agricultural herbicides, including *Roundup, Lasso, Avadex* and *Machete* herbicides. More than half of Crop Chemicals net sales are in markets outside the United States.

Crop Chemicals Net Sales
(dollars in millions)



■ U.S. ■ ex-U.S.

Crop Chemicals achieved significant increases in 1988 net sales, up 17 percent, and operating income, up 21 percent. *Roundup* herbicide set a record for sales volume in 1988. Crop Chemicals had significant sales volume gains outside the United States. Operating results also were favorably affected by the translation of ex-U.S. currencies into the U.S. dollar. Price reductions for *Roundup* herbicide, part of a continuing global marketing strategy begun in 1985, facilitated further market expansion. The resulting volume-related gains more than compensated for the lower selling prices. Net sales of *Lasso* herbicide for control of grassy weeds in corn and soybean crops improved in 1988 due to increased planted acreage in the United States coupled with an aggressive marketing program.

Besides herbicides, Crop Chemicals research programs are focused on the discovery and development of fungicides and insecticides, as well as plants genetically engineered to have a resistance to insects and viruses, or tolerance to *Roundup* herbicide. In various stages of research and development are several new herbicides and soybean and cotton plants, which have a resistance to *Roundup* herbicide.

In 1987, Crop Chemicals net sales increased 10 percent and operating income improved 13 percent. The increase was accomplished through innovative marketing programs which increased the sales volume of *Roundup* herbicide. Both *Roundup* and *Avadex* herbicides had strong demand outside the United States. Lower U.S. planted corn acreage and increased competition contributed to lower *Lasso* herbicide sales and operating income in 1987.

Outlook – Crop Chemicals

The devastating 1988 drought in the United States significantly lowered yields of corn, wheat and soybeans and depleted surplus grain stocks. Plantings of these crops in the United States are expected to increase substantially in 1989 as a result of lower government requirements for idled acres and stronger commodity prices. New applications and expansion of ex-U.S. markets are also expected to grow sales volume in 1989. The acquisition of the *Greensweep* lawn and garden care business in 1988 also is expected to facilitate additional growth in U.S. residential sales. Continuing the *Roundup* herbicide global marketing strategy, price reductions effective in 1989 have been announced in several ex-U.S. markets.

Animal Sciences

	1988	1987	1986
Net Sales	$169	$127	$86
Operating Income (Loss)	(10)	(43)	(35)

The Animal Sciences business focuses on animal nutrition and growth products. The major commercial products are *Alimet* animal feed supplement and *Santoquin* antioxidant.

Animal Sciences had record sales in 1988. Net sales increased 33 percent due to an increase in sales volume of *Alimet* animal feed supplement. The ease of handling *Alimet* versus competitive products and innovative marketing programs were the principal reasons for the record level of sales.

Significant research expenditures continue for bovine somatotropin (BST), a naturally occurring protein produced through biotechnology that enhances the efficiency of milk production in dairy cows, which is awaiting regulatory approval in the United States and market introduction. Monsanto also is developing a porcine somatotropin (PST) which research demonstrates improves the feed efficiency and growth rate of hogs and results in leaner pork.

The increased earnings from the record 1988 sales level and lower manufacturing start-up costs reduced the operating loss significantly. However, the continuing high BST/PST funding resulted in an operating loss.

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Net sales for 1987 increased 48 percent over 1986 as sales volume of *Alimet* animal feed supplement increased significantly. The increase in 1987 research and development expenses and BST manufacturing start-up costs was greater than the effect of the higher profits resulting from the increased sales of *Alimet*.

Outlook – Animal Sciences

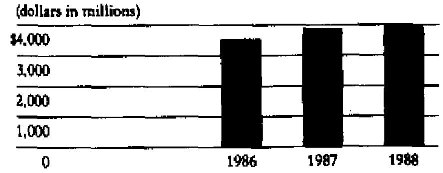
BST is awaiting approval by the U.S. Food and Drug Administration. This product is expected to bring significant value to the dairy industry through the reduction of milk production costs. The poultry market that *Alimet* serves is expected to grow as diet trends continue to move toward consumption of white meat. Pricing actions by ex-U.S. competitors may result in *Alimet* selling prices being lower in 1989 to maintain a competitive position.

Chemicals

	1988	1987	1986
Net Sales:			
Detergents and phosphates	$ 513	$ 494	$ 536
Engineered products	109	200	205
Man-made fibers	962	950	856
Plastics	887	804	639
Resin products	677	645	584
Rubber chemicals and instruments	417	366	319
Specialty chemicals	424	399	409
Total	$3,989	$3,858	$3,548
Operating Income	486	450	613

The Chemicals unit produces a wide range of chemicals, plastics, fibers and other products listed in the table above. The unit's principal strengths are nylon carpet fiber, high-performance plastics, *Saflex* plastic interlayer, detergents and phosphates, rubber chemicals and maleic anhydride.

Chemicals Net Sales
(dollars in millions)



Net sales increased 3 percent in 1988. However, excluding businesses subsequently divested, 1988 net sales increased 9 percent principally from strong demand across the continuing product lines. Particularly robust were the ex-U.S. markets for most business lines. For continuing product lines, U.S. export sales increased 22 percent and ex-U.S. manufactured sales increased 16 percent. The translation of ex-U.S. financial results into U.S. dollars also had a positive effect. Higher 1988 sales volume and selling prices generated solid income gains. The selling price increases were in response to higher raw material costs. Plant capacity utilization was 83 percent in 1988 versus 80 percent in 1987. This higher plant utilization also contributed to improved 1988 operating income. Overall, operating income in 1988 was up 8 percent.

Because of strong worldwide demand, net sales of plastics were vigorous and increased 10 percent over 1987 in spite of the Australian business divestiture in 1988. *Lustran* ABS thermoplastics and high performance alloys and blends benefited from an increase in worldwide motor vehicle production. The high demand permitted some increases in selling prices, which were necessary to recover escalating raw material costs.

Resin products net sales increased 5 percent in 1988. *Saflex* plastic interlayer, used primarily in automobile windshields, benefited from the high level of worldwide automobile production and expanded use in architectural markets. Net sales of specialty resins, plasticizers and resins for adhesives and paint additives were also strong.

Fibers net sales increased only 1 percent over 1987. However, *Wear-Dated* stain-resistant carpet fibers continued to generate strong consumer acceptance and demand. Advertising and promotional expenses were higher to maximize consumer response to these stain-resistant carpet fiber products introduced in 1987.

In the other Chemicals businesses, specialty chemicals net sales increased 6 percent driven largely by maleic anhydride performance. Led by surfactants and phosphorus derivatives demand, detergents and phosphates net sales increased 4 percent in 1988. Rubber chemicals and instruments 1988 net sales were 14 percent ahead of 1987. Engineered products net sales declined primarily due to the 1987 divestiture of the polyethylene bottle business (net sales of approximately $60 million in 1987).

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Chemicals research continues to focus primarily on improving the technology and broadening the applications for existing products to meet customers' changing needs. The success of these programs is seen in the commercial strength of Monsanto's improved carpet fibers, maleic anhydride, *Saflex* plastic interlayer, plastic alloys and specialty resins.

Net sales of the Chemicals unit in 1987 increased 9 percent driven by a 33 percent increase in U.S. exported products. Ex-U.S. selling prices were favorably affected by currency translation, while U.S. selling prices decreased. Operating income of $450 million was down versus $613 million in 1986. However, operating income in 1986 included $149 million of restructuring income versus $30 million in 1987.

Outlook – Chemicals

The Chemicals unit has a solid portfolio of products that provide value to customers. Rationalization of capacity and cost reduction actions have lowered the capacity utilization break-even point. The carpet fiber technology (with "locked-in" stain blockers) is a generation ahead of the competition by applying protection as the fiber is produced. *Saflex* plastic interlayer was 50 years old in 1988 and continues to be an exceptional product. New applications for automotive use are in advanced stages of development and architectural applications continue to expand. Additional ex-U.S. manufacturing capacity for *Saflex* plastic interlayer is under construction to supply the demand from worldwide motor vehicle markets. Other new manufacturing facilities completed in 1988 include a *Santoprene* thermoplastic rubber facility in Brazil. Also, a cooperative agreement to produce and market maleic anhydride in Taiwan has been signed.

Electronic Materials

	1988*	1987	1986
Net Sales	$209	$185	$154
Operating Income (Loss)	11	(5)	(139)

**For the ten-month period January-October.*

Monsanto has signed an agreement to sell this business to Huels AG, subject to governmental approvals in the various countries where facilities are located. This approval and the recording of the sale are expected to occur in the first part of 1989. Monsanto has not reported this business as a discontinued operation in the Statement of Consolidated Income as the effect is immaterial.

The 1988 operating income was a record for Electronic Materials. This strong performance resulted from the growth in worldwide semiconductor demand and greater penetration in ex-U.S. markets. Sales in 1987 increased 20 percent and operating performance improved substantially, moving from an operating loss of $139 million in 1986 to nearly break-even in 1987. The 1986 results included a $90 million asset impairment write-down.

Fisher Controls

	1988	1987	1986
Net Sales	$840	$749	$645
Operating Income (Loss)	29	26	(66)

Fisher Controls is a leading worldwide producer of industrial valves and regulators, as well as *PROVOX* electronic process instrumentation and gas separation systems.

Net sales increased 12 percent in 1988 on the strength of customer demand and improved selling prices. Fisher Controls markets began to revive late in 1987 and continued to improve through 1988. In addition, this unit benefited from the favorable currency effect of a weaker U.S. dollar. Operating income increased 12 percent in 1988 despite raw material cost increases for specialty metal castings and electronic components and adverse inventory adjustments in part of the ex-U.S. operations.

Net sales increased 16 percent in 1987 due to sales volume and selling price improvements. Operating income was $26 million in 1987 versus a $66 million operating loss in 1986. The 1986 loss resulted principally from depressed sales to the chemical and oil and gas industries and from actions taken late in 1986 to lower future operating costs.

Outlook – Fisher Controls

Fisher Controls business is dependent primarily upon capital expenditures in the chemical, oil and pulp and paper industries. Sophisticated control valves and systems may take months to produce. As a result, booked orders for production is a key indicator for future business performance. Booked orders in the process control business at the end of

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1988 were up 8 percent from the end of 1987. In addition, selling price increases for valve and instrumentation products have been announced to be effective at the beginning of 1989, reflecting higher raw material costs experienced in 1988.

NutraSweet

	1988	1987	1986
Net Sales	$736	$722	$711
Operating Income	154	145	142

The NutraSweet Company manufactures and markets *NutraSweet* brand low-calorie sweetener which is sold worldwide. The company also markets *Equal* low-calorie tabletop sweetener throughout the United States. A new product, *Simplesse* all-natural fat substitute, has been announced and is awaiting affirmation of its Generally Recognized As Safe (GRAS) status by the U.S. Food and Drug Administration (FDA) and regulatory authorities in other countries.

Operating income in 1988 increased 6 percent compared to 1987 principally due to production cost reductions and 10 percent higher *NutraSweet* sales volume attributable to the growth of the diet carbonated soft drink market worldwide. While sales volume was higher, net sales increased only 2 percent because of lower worldwide average selling prices. Operating expenses increased as a result of higher marketing costs and expanded technological expenses associated with *Simplesse*.

This unit's 1987 net sales and operating income were up slightly from the prior year. Sales volume of *NutraSweet* brand low-calorie sweetener increased 9 percent. Continued strong growth in the United States of diet carbonated soft drinks and further manufacturing cost reductions were countered by the effects of lower worldwide average selling prices, some customer inventory reductions and higher administrative and technological expenses.

Outlook – NutraSweet

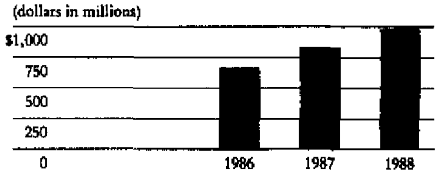
The U.S. diet carbonated soft drink market will continue to be the principal market for *NutraSweet* in 1989 and is expected to grow. Internationally, the company expects strong unit sales growth. However, worldwide average selling prices are expected to continue to decline in response to competition. It also is anticipated that regulatory authorities will allow *Simplesse* to be sold in several markets in 1989.

Pharmaceuticals

	1988	1987	1986
Net Sales	$973	$820	$665
Operating Income (Loss)	(62)	(119)	(119)

G.D. Searle & Co. is a research-based, worldwide pharmaceuticals business concentrating on drugs for the treatment of cardiovascular, gastrointestinal, infective and central nervous system diseases. In 1988, cardiovascular products accounted for 56 percent of worldwide net sales. Over half of Searle's net sales were outside the United States.

Pharmaceuticals Net Sales
(dollars in millions)



Pharmaceuticals sales growth of 19 percent in 1988 was driven by increasing demand for the *Calan* family of calcium channel blocker products for hypertension (a 79 percent increase) in the United States and Canada. A wide range of products contributed to the 13 percent ex-U.S. sales growth. Several strategically important mergers, joint ventures and restructurings were completed in 1988 to strengthen Searle's presence in the key world markets in Germany, Italy, the United Kingdom and Brazil. As a result of the above factors, the operating loss in 1988 was reduced dramatically (48 percent) from 1987.

Research and development expenses were $198 million in 1988, level with 1987. This research effort is concentrated on molecular and cell biology and traditional chemical discovery methods. As part of its R&D strategy, Searle has also acted to accelerate the process of bringing new products to the market by actively pursuing various licensing opportunities to complement its in-house product portfolio. Among the many licensing agreements signed by Searle during the past two years, the two having greatest potential for near-term impact are lomefloxacin, a quinolone class anti-infective, and oxaprozin, a new once-a-day non-steroidal anti-inflammatory drug for the treatment of rheumatoid

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Operating Unit Segment Data (continued)

arthritis and osteoarthritis. Also, the ongoing collaborative research program with Oxford University in the United Kingdom is focused on developing glycobiological compounds for the treatment of AIDS, arthritis and other diseases. Glycobiology is a newly emerging area of scientific inquiry involving the role of various sugars in a variety of biological processes.

In 1987, Pharmaceuticals sales increased 23 percent, primarily due to strong growth for *Calan* SR. The operating loss in 1987 was the same as 1986 as increased income from higher sales was invested in higher research and development and increased marketing expenses for new product launches.

Outlook – Pharmaceuticals

In 1989, Searle expects further growth for the *Calan* family of products. In December 1988, the FDA approved the marketing of *Cytotec*, an anti-ulcer drug for the prevention and treatment of ulcers that are often associated with the use of many arthritis medicines. *Cytotec* is already marketed in many ex-U.S. countries and will be introduced in the United States in 1989. *Kerlone*, a new beta blocker for the treatment of high blood pressure, is anticipated to receive U.S. regulatory approval in 1989.

Biotechnology Product Discovery

The Company conducts basic and applied biotechnological research in the life sciences businesses for discovery of new biotechnology-based product opportunities. This research is coordinated with the strategic direction of the life sciences businesses: Crop Chemicals, Animal Sciences and Pharmaceuticals. Discoveries are further developed and commercialized by those businesses. The cost of biotechnology product development effort directly related to Crop Chemicals, Animal Sciences and Pharmaceuticals is included as an expense in those segments.

Geographic Data

	Net Sales to Unaffiliated Customers			Operating Income (Loss)			Total Assets		
	1988	1987	1986	1988	1987	1986	1988	1987	1986
United States	$5,219	$4,883	$4,638	$638	$501	$506	$6,240	$6,431	$6,608
Europe-Africa	1,801	1,537	1,231	245	181	117	1,447	1,256	1,013
Canada	377	329	290	37	31	26	149	116	116
Latin America	304	293	283	27	2	6	242	235	243
Asia-Pacific	592	597	437	74	49	16	478	513	385
Inter-area Eliminations				(26)	6	2	(358)	(382)	(338)
Corporate				(40)	(36)	(38)	263	286	242
Total consolidated	$8,293	$7,639	$6,879	$955	$734	$635	$8,461	$8,455	$8,269

The data above are prepared on an "entity basis," which means that net sales, operating income and assets of a legal entity are assigned to the geographic area where the legal entity is located (e.g., a sale from the United States to Latin America is reported as a United States sale). Inter-area sales between Monsanto entities have been excluded from the above table, but are shown in the Segment Information note to the financial statements on pages 41 and 42. The reported operating income for the ex-U.S. geographic areas does not include the full profitability generated by sales of Monsanto products imported from other locations, principally from the United States.

United States Domestic and Export Sales Increased

Net sales by entities in the United States increased 7 percent over 1987 and operating income increased by 27 percent. The year-to-year improvement in sales and profitability was experienced across all business segments. Crop Chemicals herbicides, *Alimet* animal feed supplement, certain Chemicals products and Pharmaceuticals products, primarily *Calan* SR calcium channel blocker, generated the most pronounced improvement. U.S. export sales volume, especially for Crop Chemicals and Chemicals, expanded during 1988 because of worldwide economic conditions and competitive pricing. Direct sales from the United States to ex-U.S. third party customers were $502 million, $408 million and $279 million for 1988-1986, respectively.

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Net sales in 1987 increased 5 percent over 1986. Operating income was positively affected by the growth of *Roundup* herbicide and improved profitability of Fisher Controls and Electronic Materials. However, Chemicals unit profit margins were lower. In addition, *Lasso* herbicide experienced lower selling prices and volumes. Operating income in 1986 included $155 million of restructuring income and a $90 million write-down of Electronic Materials assets. Operating income in 1987 included $32 million of restructuring income. Excluding these unusual items, operating income increased 6 percent in 1987.

Europe-Africa Had Record Results

Net sales increased 17 percent in 1988 and operating income was up 35 percent; both were new records. Selling price reductions, expansion of differentiated products and innovative marketing programs produced a significant gain in *Roundup* herbicide sales volume and profit. *Lustran* ABS thermoplastics, *Saflex* plastic interlayer, rubber chemicals and pharmaceutical products also had improved performance in both sales volumes and profits due to strong market demand.

Net sales in 1987 in Europe-Africa improved 25 percent over 1986, while operating income increased 55 percent. Net sales and operating income benefited in 1987 from increased sales volumes of U.S.-produced Chemicals products resold in Europe-Africa and higher Pharmaceuticals and Crop Chemicals net sales. Operating income in 1986 included expenses associated with the fixed cost reduction program of Fisher Controls.

Canada Herbicide Sales Growth Continued

Led by Crop Chemicals, net sales increased 15 percent in 1988 and operating income increased 19 percent. *Roundup* and *Avadex* BW herbicides continued to be the principal products contributing to Canada's improved financial results. Pharmaceuticals had record sales and Fisher Controls sales and operating income rebounded. Sales and operating income continued to benefit from the translation of a stronger Canadian dollar into the U.S. dollar.

Net sales and operating income in 1987 increased 13 percent and 19 percent, respectively, over 1986. Most business segments improved over 1986, led by strong sales volumes of *Roundup* and *Avadex* BW herbicides and Chemicals products. The effect of translating stronger Canadian dollar-denominated operating results into U.S. dollars helped 1987 sales and operating income.

Latin America Improved in All Businesses

Net sales increased 4 percent over 1987 in Latin America and operating income grew significantly. Increases in *Roundup* and *Lasso* herbicides sales volume contributed to the sales and profit improvement. The rubber chemicals business also experienced performance gains. Pharmaceuticals profitability improved with the restructured Brazilian operations.

In Brazil, a *Santoprene* thermoplastic rubber facility was completed and a rubber chemicals raw material plant is under construction. Projects for manufacturing *Saflex* plastic interlayer and *NutraSweet* brand low-calorie sweetener in Brazil also were approved.

Latin American operating income does not include the equity income from Monsanto's joint venture companies in Latin America. Such equity income is reflected in "Other income — net" in the Statement of Consolidated Income.

Latin American sales in 1987 increased 4 percent, but operating income declined. Sales volumes of *Roundup* herbicide, *Lustrex* polystyrene and rubber chemicals improved in 1987, but an unfavorable change in product sales mix coupled with the impact of currency devaluation in Argentina resulted in a year-to-year decline in operating income. In addition, Brazilian import restrictions hampered Pharmaceuticals commercial activities.

Asia-Pacific Markets Prospered

Economic growth in the Asia-Pacific world area continued to escalate. Operating income increased 51 percent in 1988 despite a slight decline in net sales brought about by the sale of the Australian commodity chemicals and plastics businesses early in 1988. The higher 1988 profitability was principally generated from higher Crop Chemicals and Electronic Materials sales. Crop Chemicals volume continued to increase in all major Asia-Pacific countries. Electronic Materials sales benefited from strong semiconductor demand. Solid financial performance was achieved by the Chemicals business, led by plastics and specialty chemicals. The sale of the Australian businesses represented another step in Monsanto's strategy to divest from cyclical, capital-intensive commodity chemicals businesses.

Asia-Pacific net sales and operating income improved 37 percent and 206 percent, respectively, in 1987. Sales and profitability of styrene, phenol and *Lustrex* polystyrene businesses, which were divested in 1988, were particularly strong in Australia. Fisher Controls and Pharmaceuticals also had significant sales and operating income improvements. In addition, sales volume of *Roundup* herbicide was higher in all major Asia-Pacific countries.

Statement of Consolidated Financial Position

(Dollars in millions, except per share)	At December 31,	
Assets	1988	1987
Current Assets:		
Cash, time deposits and certificates of deposit	$ 203	$ 180
Short-term securities, at cost which approximates market	18	43
Trade receivables, net of allowances of $28 in 1988 and $38 in 1987	1,234	1,209
Miscellaneous receivables and prepaid expenses	284	325
Deferred income tax benefit	188	165
Inventories	1,170	1,081
Total Current Assets	3,097	3,003
Intangible Assets, net of accumulated amortization of $798 in 1988 and $566 in 1987	1,790	1,953
Investments in Affiliates	205	240
Other Assets	223	183
Property, Plant and Equipment:		
Land	111	112
Buildings	1,122	1,097
Machinery and equipment	5,388	5,242
Construction-in-progress	305	279
Total property, plant and equipment	6,926	6,730
Less accumulated depreciation	3,780	3,654
Net Property, Plant and Equipment	3,146	3,076
Total Assets	$8,461	$8,455

Liabilities and Shareowners' Equity		
Current Liabilities:		
Accounts payable	$ 545	$ 485
Wages	208	175
Income and other taxes	124	101
Miscellaneous accruals	547	500
Short-term debt	556	539
Total Current Liabilities	1,980	1,800
Long-Term Debt	1,408	1,564
Deferred Income Taxes	588	584
Other Liabilities	685	606
Shareowners' Equity:		
Common stock — authorized, 200,000,000 shares, par value $2; issued, 82,197,097 shares in 1988 and 1987	164	164
Additional contributed capital	874	872
Accumulated currency adjustment	52	100
Reinvested earnings	3,662	3,282
Treasury stock, at cost (13,364,917 shares in 1988 and 8,099,580 shares in 1987)	(952)	(517)
Total Shareowners' Equity	3,800	3,901
Total Liabilities and Shareowners' Equity	$8,461	$8,455

The above statement should be read in conjunction with pages 37 through 42 of this report.

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Review of Liquidity and Capital Resources

Monsanto's financial position remained strong in 1988. Financial resources were readily available to support existing businesses and fund new business opportunities.

In order to maintain adequate financial flexibility and access to debt markets worldwide, Monsanto management intends to maintain a debt rating in the United States of "A" or equivalent. An important factor in establishing that rating is the interest coverage ratio which improved to 5.5 in 1988 from 4.5 in 1987.

Monsanto utilizes both the domestic and international financial markets for its financing needs and has available various short- and medium-term bank credit facilities, which are discussed in the notes to financial statements (page 39). These credit facilities provide the financing flexibility to take advantage of investment opportunities that may arise and satisfy future funding requirements.

Management believes that a total debt to total capitalization ratio of approximately 35 percent is appropriate. At year-end 1988, that percentage was 34 percent versus 35 percent in 1987.

The current ratio was 1.6 at year-end 1988, compared with 1.7 at year-end 1987. Working capital was $1,117 million, $86 million lower than year-end 1987. Trade receivables increased $25 million primarily because of higher sales levels. Inventories at year-end increased $89 million from 1987, with a turnover ratio approximating 4 times per year. However, trade accounts payable and accrued liabilities increased $163 million.

Intangible assets declined due to amortization, principally The NutraSweet Company's aspartame patent. Intangible assets of $50 million were acquired in G.D. Searle & Co.'s merger of its Italian business with a local firm. Net property, plant and equipment increased in 1988 as capital additions exceeded depreciation, normal retirements and reductions due to divestitures of several businesses.

Other liabilities increased $79 million principally due to the higher minority interest from G.D. Searle & Co.'s Italian merger.

The Financial Accounting Standards Board has issued new accounting rules that change the method of calculating deferred income taxes. These new rules must be adopted by 1990. The new rules will have no effect on cash flow and, under existing tax laws, are not expected to have a material effect on Monsanto's financial position or future results of operations.

Monsanto is subject to various laws and governmental regulations concerning employee health, product safety and environmental matters. It can be anticipated that increasingly stringent requirements will be imposed upon Monsanto and the chemical industry. Monsanto is dedicated to a long-term environmental protection program which reduces emissions of hazardous materials into the environment, as well as the remediation of identified existing environmental concerns. Monsanto showed leadership in the industry by announcing its goal to reduce its hazardous air emissions by 90 percent by 1992. Achieving this target will require the development and installation of new technology. The cost to accomplish this target is not expected to affect operating results materially.

In 1988, Monsanto spent $36 million on environmental capital projects and approximately $207 million for operation and maintenance of environmental protection facilities. Monsanto is negotiating with various government agencies concerning Superfund clean-up sites. The Company spent $19 million in 1988 for remediation of old waste disposal sites and expenditures of a similar or greater amount can be expected in future years. Monsanto's liquidity, financial position or results of operations are not expected to be materially affected by the cost of clean-up of Superfund and old waste disposal sites.

Monsanto's commitments and contingencies are described in the notes to financial statements on page 41.

Monsanto continually evaluates risk retention and insurance levels for product liability, property damage and other potential areas of risk. Monsanto devotes significant effort to maintaining and improving safety and internal control programs, which reduce exposure to certain risks. Based on the cost and availability of insurance and the likelihood of a loss occurring, management decides the amount of insurance coverage to purchase from unaffiliated companies and the appropriate amount of risk to retain. This risk includes being insured in the liability area on the "claims made" policy basis. Management believes that the current levels of risk retention are appropriate and are consistent with those of other companies in the various industries in which Monsanto operates.

Key Financial Statistics	1988	1987
Working Capital (Current assets less current liabilities)	$1,117	$1,203
Current Ratio (Current assets divided by current liabilities)	1.6	1.7
Percent of Total Debt to Total Capitalization*	34%	35%

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**Total capitalization is the sum of short-term debt, long-term debt and shareowners' equity.*

Statement of Consolidated Cash Flow

(Dollars in millions)

Increase (Decrease) in Cash and Cash Equivalents	1988	1987	1986
Operating Activities:			
Net income	$ 591	$ 436	$ 433
Add income tax expense	302	237	203
Income before income taxes	893	673	636
Adjustments to reconcile to Cash Provided by Operations:			
Income tax payments	(235)	(229)	(221)
Items that did not use (provide) cash:			
Depreciation and amortization	703	679	780
Restructuring income — net		(32)	(158)
Other	14	37	(9)
Working capital changes that provided (used) cash:			
Accounts receivable	(46)	(172)	117
Inventories	(136)	(22)	(2)
Accounts payable and accrued liabilities	86	13	(173)
Other	67	(19)	80
Nonoperating gains from asset disposals (before tax)	(42)	(26)	(90)
Cash Provided by Operations	1,304	902	960
Investing Activities:			
Property, plant and equipment purchases	(590)	(505)	(520)
Acquisition and investment payments	(100)	(59)	(29)
Investment and property disposal proceeds	121	75	503
Cash Used in Investing Activities	(569)	(489)	(46)
Financing Activities:			
Net change in short-term financing	53	150	(315)
Long-term debt proceeds	21	26	675
Long-term debt reductions	(167)	(122)	(1,139)
Treasury stock purchases	(457)	(339)	
Dividend payments	(211)	(212)	(199)
Other financing activities	24	33	45
Cash Used in Financing Activities	(737)	(464)	(933)
Decrease in Cash and Cash Equivalents	(2)	(51)	(19)
Cash and Cash Equivalents*:			
Beginning of year	223	274	293
End of year	$ 221	$ 223	$ 274

The above statement should be read in conjunction with pages 37 through 42 of this report.

The effect of exchange rate changes on cash and cash equivalents was not material.

Cash payments for interest (net of amounts capitalized) were $167 million, $167 million and $173 million for the years 1988-1986, respectively.

**Includes cash, time deposits, certificates of deposit and short-term securities.*

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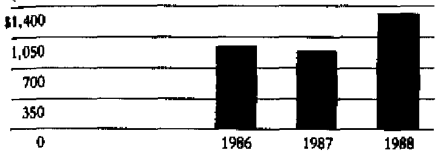
Review of Cash Flow

Monsanto's cash flow for the three-year period 1988-1986 is shown in the Statement of Consolidated Cash Flow on the preceding page.

Cash Provided by Operations
(dollars in millions)



Record Cash Provided by Operations

Cash provided by operations was $1,304 million in 1988, an increase of 45 percent over 1987 due primarily to the record profit performance. The Chemicals, Crop Chemicals and NutraSweet businesses continued to demonstrate excellent cash generating capabilities.

Major uses of cash included capital expenditures, treasury stock purchases and dividends. Monsanto's capital expenditures of $590 million in 1988 were focused on improved technology and ex-U.S. capacity expansions. The more significant expenditures were for expanded glyphosate and *Saflex* plastic interlayer capacity and a new detergent product facility.

Monsanto's operations have generated sufficient cash to fund existing businesses, growth-related research and investments. Management expects cash provided by operations supplemented by periodic borrowings to be adequate to fund its future operating requirements.

Stock Purchase Program Continued

In 1987 and 1988, the Company's Board of Directors authorized the purchase of up to 13 million shares of Monsanto common stock. Through December 31, 1988, the Company purchased 9.7 million shares for $796 million under these authorities. Management believes the treasury stock purchase program represents a sound economic investment for Monsanto's shareowners. In addition, these share purchases favorably affect earnings per share and augment profitability improvements as a means of achieving management's return on equity target.

Dividends Increase for the 16th Consecutive Year

The Company has paid dividends on its common shares without interruption or reduction since 1928 and has increased the dividend in each of the past sixteen years. Dividend payout for 1988 was 16 percent of cash provided by operations and 36 percent of net income. The Company's dividend policy reflects a desired long-term payout percentage based on Monsanto's expectation of future growth and profitability levels. In any individual year, additional consideration is given to expected financial position and results, working and fixed capital needs, scheduled debt repayments and economic conditions, including inflation.

Monsanto's common stock is traded principally on the New York Stock Exchange. The number of shareowners of record as of February 24, 1989, was 64,804 and the high and low common stock prices on that date were $89 and $88¼.

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Statement of Consolidated Shareowners' Equity

(Dollars in millions, except per share)	1988	1987	1986
Common Stock:			
Balance, January 1 and December 31	$ 164	$ 164	$ 164
Additional Contributed Capital:			
Balance, January 1	$ 872	$ 861	$ 854
Employee stock plans	2	11	7
Balance, December 31	$ 874	$ 872	$ 861
Accumulated Currency Adjustment:			
Balance, January 1	$ 100	$ (98)	$ (191)
Translation adjustments	(53)	197	103
Income taxes	5	1	(10)
Balance, December 31	$ 52	$ 100	$ (98)
Reinvested Earnings:			
Balance, January 1	$3,282	$3,058	$2,824
Net income	591	436	433
Dividends	(211)	(212)	(199)
Balance, December 31	$3,662	$3,282	$3,058
Treasury Stock:			
Balance, January 1	$ (517)	$ (204)	$ (244)
Shares purchased (5,605,300 and 4,120,100 shares in 1988 and 1987, respectively)	(457)	(339)	
Shares issued under employee stock plans (339,963; 558,528 and 906,536 shares in 1988-1986, respectively)	22	26	40
Balance, December 31	$ (952)	$ (517)	$ (204)

The above statement should be read in conjunction with pages 37 through 42 of this report.

Key Financial Statistics		1988	1987	1986
Stock Price*	High	$ 92⅜	$ 100¼	$ 81½
	Low	73½	57	44¾
	Year-end	81¾	83	76½
Per Share	Dividends	2.95	2.75	2.575
	Shareowners' Equity	55.21	52.65	48.69
Average Daily Share Trading Volume (thousands of shares)		323	372	269

Based on daily reported high and low stock prices.

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Significant Accounting Policies

Monsanto's significant accounting policies are italicized in the following Notes to Financial Statements.

Basis of Consolidation

The consolidated financial statements include the Company and its majority-owned subsidiaries. Intercompany transactions have been eliminated in consolidation. Other companies in which Monsanto has a significant ownership interest (generally greater than 20 percent) are included in "Investments in Affiliates" in the Statement of Consolidated Financial Position, and Monsanto's share of these companies' income or loss is included in "Other income — net" in the Statement of Consolidated Income.

Currency Translation

Most of Monsanto's ex-U.S. entities' financial statements are translated into U.S. dollars using current exchange rates. Unrealized currency adjustments in the Statement of Consolidated Financial Position are accumulated in shareowners' equity. The financial statements of ex-U.S. entities that operate in hyperinflationary economies, including Brazil, Mexico and Argentina, are translated at either current or historical exchange rates, as appropriate. These currency adjustments are included in net income.

Major currencies are the U.S. dollar, British pound sterling and Belgian franc. Other important currencies include the Brazilian cruzado, Canadian dollar, French franc, Japanese yen, Mexican peso and West German mark. Currency restrictions are not expected to have a significant effect on Monsanto's cash flow, liquidity or capital resources.

Principal Acquisitions and Divestitures

Monsanto has signed an agreement to sell the Electronic Materials business, subject to governmental approvals in the countries where that business has facilities. These approvals and the recording of the sale are expected to occur in the first part of 1989 and the income effect will be immaterial.

Monsanto's Australian commodity chemicals and plastics businesses (with net sales of $60 million for the first quarter of 1988 and $164 million for the full-year 1987) were sold in March 1988. The gain on this divestiture was not material.

G.D. Searle & Co.'s Italian subsidiary was merged with an Italian pharmaceuticals company in September 1988. This transaction increased intangible assets $50 million. Pro forma operating results of this acquired business are not presented due to immateriality.

Restructuring

In October 1985, the Company implemented a restructuring and reorganization program. The actions included the withdrawal from selected low-return businesses and production facilities, the sale of certain assets that no longer had strategic importance and reductions in the number of employees.

The 1986 gain included in "Restructuring expense (income) — net" resulted from the sale of product lines that were planned for divestiture under the 1985 restructuring program. The principal sale was product lines of the Texas City, Texas petrochemicals plant that were part of the restructuring program. The impact on 1986 net income from the restructuring gain was $97 million (after related taxes), or $1.25 per share.

Depreciation and Amortization

	1988	1987	1986
Depreciation	$435	$421	$423
Amortization of intangible assets	231	225	218
Obsolescence	37	33	139
Total	$703	$679	$780

Property, plant and equipment is recorded at cost. The cost of plant and equipment is depreciated over weighted average periods of 23 years for buildings and 12 years for machinery and equipment, using the straight-line method.

Intangible assets are recorded at cost less accumulated amortization. The components of intangible assets, and their estimated remaining useful lives, were as follows:

	Estimated Remaining Life*	1988	1987
Patents	5	$ 864	$1,057
Goodwill	34	653	639
Other intangible assets	22	273	257
Total		$1,790	$1,953

*Weighted average, in years, at December 31, 1988.

Patents obtained in a business acquisition are recorded at the present value of estimated future cash flows resulting from patent ownership. The cost of patents is amortized over their legal lives. Goodwill is the cost of acquired businesses in excess of the fair value of their identifiable net assets and is amortized over the estimated periods of benefit (5 to 40 years). The cost of other intangible assets (principally product rights and trademarks) is amortized over their estimated useful lives.

0701904

Obsolescence in 1986 included a $90 million charge ($46 million after tax, or $0.59 per share) to write down property, plant and equipment values of the Electronic Materials segment to amounts expected to be recovered from future cash flows.

Inventory Valuation

Inventories are stated at cost or market, whichever is less. Actual cost is used to value raw materials and supplies; standard cost, which approximates actual cost, is used to value finished goods and goods in process. Standard costs include direct labor, raw material and manufacturing overhead based on practical capacity. The cost of 56 percent of all inventories is determined using the last-in, first-out (LIFO) method, generally reflecting the effects of inflation or deflation on cost of goods sold sooner than other inventory cost methods. The cost of other inventories generally is determined using the first-in, first-out (FIFO) method.

The components of inventories were as follows:

	1988	1987
Finished goods	$ 662	$ 689
Goods in process	333	261
Raw materials and supplies	545	461
Inventories, at FIFO cost	1,540	1,411
Excess of FIFO over LIFO cost	(370)	(330)
Total	$1,170	$1,081

Inventories at FIFO cost approximate current cost.

Income Taxes

The components of income before income taxes were:

	1988	1987	1986
U.S.	$481	$422	$462
Ex-U.S.	412	251	174
Total	$893	$673	$636

The components of income tax expense were:

		1988	1987	1986
Current:	Federal	$111	$ 82	$ 20
	State	18	14	12
	Ex-U.S.	139	72	88
		268	168	120
Deferred:	Federal	31	39	74
	State	1	9	13
	Ex-U.S.	2	21	(4)
		34	69	83
Total		$302	$237	$203

Deferred taxes result from timing differences in the recognition of revenue and expense for tax and financial statement purposes. The source of these timing differences and the tax effect of each were as follows:

	1988	1987	1986
Depreciation and obsolescence	$ 28	$ 46	$(61)
Restructuring program	31	43	161
Employee benefit plans	(12)	15	(10)
Other	(13)	(35)	(7)
Total	$ 34	$ 69	$ 83

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

	1988	1987	1986
Federal statutory rate	34%	40%	46%
Higher (lower) ex-U.S. tax rates	—	(1)	1
Investment and other tax credits	—	(1)	(4)
Capital gains benefits	—	(2)	(8)
Benefits attributable to:			
United States export earnings	(2)	(2)	(3)
Puerto Rico operations	(1)	(2)	(3)
Other	3	3	3
Effective income tax rate	34%	35%	32%

Investment tax credits were available in 1986 and earlier years as a reduction of the United States federal income tax liability. Such credits were recorded as a reduction of income tax expense in the year they reduced the United States federal income tax liability. Investment tax credits, net of recapture, were $15 million for 1986.

Income and remittance taxes have not been recorded on $499 million of undistributed earnings of subsidiaries, either because any taxes on dividends would be offset substantially by foreign tax credits or because Monsanto intends to indefinitely reinvest those earnings. Income and remittance taxes on these earnings would be approximately $50 million at December 31, 1988.

Various ex-U.S. subsidiaries have tax loss carryforwards for which no tax benefits have been recorded. These carryforwards totaled $60 million at December 31, 1988, a substantial portion of which has an unlimited carryforward period.

As mentioned under Review of Liquidity and Capital Resources, Monsanto has not yet adopted Statement of Financial Accounting Standards No. 96, the new income tax accounting standard, which is effective beginning in 1990.

0701905

Short-Term Debt and Credit Arrangements

Short-term debt was:

	1988	1987
Notes payable:		
Banks	$ 79	$127
Commercial paper	228	157
Bank overdrafts	121	136
Current portion of long-term debt	128	119
Total	$556	$539
Maximum amount of notes payable and bank overdrafts outstanding at any month-end	$588	$438
Average notes payable and bank overdrafts outstanding	411	335
Weighted average interest rate during the year	9.9%	8.1%
Weighted average interest rate at December 31	7.9%	7.6%

Certain ex-U.S. subsidiaries have aggregate short-term loan facilities of $277 million, under which loans totaling $79 million were outstanding at December 31, 1988. Interest on these loans is related to various ex-U.S. bank rates. Monsanto's worldwide unused short-term loan facilities were $198 million at December 31, 1988.

Long-Term Debt

Long-term debt (exclusive of current maturities) was:

	1988	1987
Industrial development bond obligations, weighted average interest rate of 7½%, due 1990 to 2021	$ 256	$ 262
9¾% Eurodollar notes due 1991	101	101
10⅛% notes due 1992	150	150
9⅝% notes due 1996	150	150
8½% sinking fund debentures due 2000	127	127
8¾% sinking fund debentures due 2008	169	169
11⅝% sinking fund debentures due 2015	214	225
Other	241	380
Total	$1,408	$1,564

Maturities and sinking fund requirements on long-term debt are $128 million, $54 million, $139 million, $187 million and $40 million for 1989-1993, respectively.

A $750 million intermediate-term credit facility expires ratably from 1991 to 1994. There were no borrowings under this facility at December 31, 1988. The credit facility is used to support the issuance of commercial paper ($228 million outstanding at December 31, 1988). Interest on amounts borrowed under this agreement would likely be at money market rates determined by competitive bidding. Alternatively, interest may also be at, or at a margin above, the Citibank, N.A. base interest rate, or at a margin above the rates paid on either certificates of deposit or the London Interbank Offered Rate (LIBOR).

Covenants under this credit facility restrict maximum borrowings. It is not anticipated that future borrowings will be limited by these restrictions.

Pension Benefits

Most Monsanto employees are covered by noncontributory pension plans. The components of pension cost were as follows:

	1988	1987	1986
Service cost for benefits earned during the year	$ 65	$ 64	$ 60
Interest cost on projected benefit obligation	223	212	202
Assumed return on plan assets*	(246)	(237)	(208)
Amortization of unrecognized net gain	(38)	(32)	(21)
Total	$ 4	$ 7	$ 33

*Actual return on plan assets was $340 million in 1988, $187 million in 1987 and $458 million in 1986.

Pension benefits are determined based on the employee's years of service and compensation level. Pension plans are funded in accordance with Monsanto's long-range projections of the plans' financial conditions, considering benefits earned and expected to be earned in the future, anticipated future returns on pension plan assets and income tax and other regulations.

The excess of the fair value of plan assets over the projected benefit obligation as of January 1, 1986 for each plan is being amortized over the average expected future service period of employees (ranging generally from 14 to 18 years). The fair value of plan assets was used to calculate the assumed return on plan assets. Pension expense was lower in 1987 compared with 1986 due principally to the effect of favorable investment performance of plan assets in 1986.

0701906

Pension Benefits (continued)

Assumptions used for the principal plans were as follows:

	1988	1987	1986
Discount rate	8½%	8½%	8¼%
Assumed long-term rate of return on plan assets	8½	8½	8½
Annual rates of salary increase (for plans that base benefits on final compensation level)	6½	6½	6½

The funded status of Monsanto's pension plans at year-end was:

	1988	1987
Actuarial present value of plan benefits:		
Vested	$2,202	$2,124
Nonvested	110	154
Accumulated benefit obligation	2,312	2,278
Effect of projected future salary increases	328	337
Projected benefit obligation	$2,640	$2,615
Plan assets at fair value	$3,169	$3,118
Excess of plan assets over projected benefit obligation	$ 529	$ 503
Less:		
Unrecognized net gain at January 1, 1986	386	422
Subsequent unrecognized net gain	302	257
Accrued pension liability	$ 159	$ 176

Projected benefit obligations and plan assets included in the above table for the principal United States plans were approximately $2,437 million and $2,838 million, respectively, at December 31, 1988. Plan assets consist principally of common stocks and United States government and corporate obligations. Because the Company's pension plans are well-funded, contributions to the Company's principal plans were neither required nor made in 1988-1986.

For some employee savings plans, employee contributions are matched in part by Monsanto. The 1988-1986 expense recorded for such plans was $34 million, $33 million and $35 million, respectively.

Other Postemployment Benefits

Monsanto provides certain health care and life insurance benefits for retired employees. Substantially all of Monsanto's regular, full-time United States employees and certain employees in other countries may become eligible for these benefits if they reach retirement age while employed by Monsanto.

At December 31, 1988, approximately 28,600 active employees were eligible upon retirement to participate in these programs. In addition, approximately 18,100 individuals retired from active service were eligible to participate in these programs. *These other postemployment benefits are not funded and are expensed as benefits are paid.* The 1988-1986 expense recorded for other postemployment benefits was $38 million, $37 million and $26 million, respectively.

Stock Option Plans

As an incentive to increase shareowner value, key officers and employees have been granted Monsanto stock options under the Company's 1974, 1984 and 1988 Management Incentive Plans and the Searle Monsanto Stock Option Plan (Searle Plan). Information about the status of such stock options is presented below.

		Shares Exercisable	Shares Outstanding	Price per Share
December 31, 1986		1,295,094	2,484,167	$26.16-$79.31
1987:	Granted		620,200	66.56- 94.19
	Exercised		(550,559)	26.16- 69.00
	Expired		(28,751)	41.75- 94.19
December 31, 1987		1,203,305	2,525,057	26.16- 94.19
1988:	Granted		1,226,582	75.88- 89.44
	Exercised		(370,451)	26.16- 79.31
	Expired		(67,833)	45.63- 94.19
December 31, 1988		1,319,795	3,313,355	26.16- 94.19

Under the 1988 Management Incentive Plans and the Searle Plan, 3,894,061 shares remain available for grant.

Stock appreciation rights (SARs) have been authorized to be granted to Monsanto officers in tandem with stock options under the Plans, including retroactive grants for unexercised options. SARs may be exercised in lieu of stock options included in the table above. At December 31, 1988, SARs related to stock options for 1,141,296 shares were outstanding, of which 250,702 options were exercisable. During 1988, SARs related to stock options for 536,266 shares were granted and for 108,570 shares were exercised.

Earnings per Share

Earnings per share were computed using the weighted average number of common shares and common share equivalents outstanding each year (71,501,322; 77,498,752 and 77,957,975 in 1988-1986, respectively). Common share equivalents (344,986; 645,527 and 616,178 in 1988-1986, respectively) consist primarily of common stock issuable upon exercise of outstanding stock options. Earnings per share assuming full dilution were not significantly different from the primary amounts.

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Capital Stock

At December 31, 1988, there were 7,207,977 common shares reserved for employee stock options.

In January 1986, the Company's Board of Directors declared a dividend to shareowners consisting of one Common Stock Purchase Right on each outstanding share of the Company's common stock. A right will also be issued with each share of the Company's common stock that becomes outstanding prior to the time the rights become exercisable or expire. If a person or group acquires beneficial ownership of 20 percent or more, or announces a tender offer that would result in beneficial ownership of 30 percent or more, of the Company's outstanding common stock, the rights become exercisable and each right will entitle its holder to purchase one share of the Company's common stock for $150. If Monsanto is acquired in a business combination transaction, each right will entitle its holder to purchase, for $150, common shares of the acquiring company having a market value of $300. Alternatively, if a 20 percent holder were to acquire Monsanto by means of a reverse merger in which Monsanto and its stock survive or were to engage in certain "self-dealing" transactions, each right not owned by the 20 percent holder would entitle its holder to purchase, for $150, common shares of the Company having a market value of $300. The Company can redeem each right for 5 cents at any time prior to its becoming exercisable. The rights expire in 1996. These rights may cause substantial ownership dilution to a person or group who attempts to acquire the Company without approval of the Company's Board of Directors. The rights should not interfere with a business combination transaction that has been approved by the Board of Directors. As of December 31, 1988, 68,832,180 rights were outstanding.

Commitments and Contingencies

Commitments, principally in connection with uncompleted additions to property, were approximately $150 million at December 31, 1988. Monsanto was contingently liable as guarantor of bank loans and for discounted customers' receivables totaling approximately $94 million at December 31, 1988. Future minimum payments under noncancellable operating leases and unconditional inventory purchases are $73 million; $66 million; $62 million; $57 million and $56 million for 1989-1993, respectively, and $196 million thereafter.

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.

Supplemental Data

Supplemental income statement data were as follows:

	1988	1987	1986
Raw material and energy costs	$2,587	$2,383	$2,023
Employee compensation and benefits	2,022	1,955	1,937
Current income and other taxes	527	398	356
Rent expense	115	108	99
Technological expenses:			
Research and development	575	557	523
Engineering, commercial development and patent	73	58	73
Total technological expenses	648	615	596
Interest expense:			
Total interest cost	193	188	215
Less capitalized interest	(19)	(16)	(14)
Net interest expense	174	172	201
Equity in affiliates' income (loss)	(5)	7	12
Currency gains (losses) including equity in affiliates' currency gains and losses	(20)	(11)	8

Segment Information

Certain operating unit segment data and geographic data for 1988-1986 appear on pages 25 and 30 and are integral parts of the accompanying financial statements. The principal product lines included in each operating unit are shown in the operating unit segment data.

Sales between operating units were not significant. Inter-area sales, which are sales between Monsanto locations in different world areas, were made on a market price basis.

Certain corporate expenses, primarily those related to the overall management of Monsanto, were not allocated to the operating units or geographic areas. Corporate assets principally include certain miscellaneous receivables and investments.

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Segment Information (continued)

Inter-area sales by entities in each geographic area were:

	Inter-area Sales (Between Monsanto Entities)		
	1988	1987	1986
World area shipped from:			
United States	$ 855	$ 624	$ 527
Europe-Africa	167	103	82
Canada	13	8	4
Latin America	22	12	5
Asia-Pacific	39	35	26
Inter-area Eliminations	(1,096)	(782)	(644)
Total consolidated	$ –	$ –	$ –

Following is a reconciliation of ex-U.S. operating income and total assets to the net income and net assets of consolidated ex-U.S. subsidiaries.

	1988	1987	1986
Operating income	$ 383	$ 263	$ 165
Interest expense	(54)	(52)	(42)
Interest income	45	38	40
Other income — net	38	2	(16)
Income taxes	(141)	(93)	(70)
Net income of consolidated ex-U.S. subsidiaries	$ 271	$ 158	$ 77
Total operating assets	$ 2,316	$2,120	$1,757
Total liabilities	1,040	801	855
Net assets of consolidated ex-U.S. subsidiaries	$ 1,276	$1,319	$ 902

Quarterly Data

		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Total Year
Net Sales	1988	$2,127	$2,263	$2,022	$1,881	$8,293
	1987	1,866	2,025	1,902	1,846	7,639
Gross Profit	1988	890	977	764	690	3,321
	1987	765	801	684	634	2,884
Operating Income	1988	329	365	187	74	955
	1987	250	251	164	69	734
Net Income	1988	210	220	116	45	591
	1987	138	154	100	44	436
Earnings per Share	1988	2.86	3.04	1.67	0.70	8.27
	1987	1.76	1.95	1.30	0.62	5.63
Dividends per Share	1988	0.70	0.75	0.75	0.75	2.95
	1987	0.65	0.70	0.70	0.70	2.75
Common Stock Price						
1988	High	89¼	89½	92⅝	83¾	92⅝
	Low	74	75½	73½	75	73½
1987	High	87⅞	89⅝	99⅝	100¼	100¼
	Low	73	77¾	83	57	57

Net sales and net income for each quarter of 1988 were higher than the comparable 1987 quarter. Monsanto's net income is historically higher during the first half of the year attributable primarily to a concentration of the generally more profitable Crop Chemicals sales in the first half of the year.

The only significant unusual item affecting net income was the 1987 restructuring income of $1 million, $7 million and $10 million in the second, third and fourth quarters, respectively.

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Financial Summary

(Dollars in millions, except per share)		1988	1987[1]	1986[2]	1985[3]	1984
Operating Results						
Net Sales		$8,293	$7,639	$6,879	$6,747	$6,691
Operating Income (Loss)		955	734	635	(598)	677
As a Percent of Net Sales		12%	10%	9%	(9)%	10%
Income (Loss) Before Extraordinary Gain		591	436	433	(128)	439
Net Income (Loss)		591	436	433	(98)	439
As a Percent of Net Sales		7%	6%	6%	(1)%	7%
Return on Shareowners' Equity		15%	11%	12%	(3)%	12%
Earnings per Share						
Before Extraordinary Gain		$ 8.27	$ 5.63	$ 5.55	$ (1.67)	$ 5.42
Net Income (Loss)		8.27	5.63	5.55	(1.27)	5.42
Year-end Financial Position						
Total Assets		$8,461	$8,455	$8,269	$8,877	$6,373
Working Capital		1,117	1,203	1,092	899	1,395
Property, Plant and Equipment						
	Gross	$6,926	$6,730	$6,326	$6,840	$6,919
	Net	3,146	3,076	2,913	3,034	3,374
Long-Term Debt		$1,408	$1,564	$1,630	$2,087	$ 824
Shareowners' Equity		3,800	3,901	3,781	3,407	3,634
Current Ratio		1.6	1.7	1.6	1.4	2.2
Percent of Total Debt to Total Capitalization		34%	35%	35%	45%	23%
Other Data						
Property, Plant and Equipment Purchases		$ 590	$ 505	$ 520	$ 645	$ 614
Depreciation and Amortization		703	679	780	599	503
Interest Expense		174	172	201	178	100
Research and Development Expenses		575	557	523	470	370
Income Taxes		302	237	203	(170)	268
Cash Provided by Operations		1,304	902	960	535	915
Stock Price	High	$ 92⅜	$100¼	$ 81½	$ 55⅜	$ 53⅞
	Low	73½	57	44¾	40⅝	40⅝
	Year-end	81¾	83	76½	47¾	44
Price/Earnings Ratio on Year-end Stock Price		10	15	14	—	8
Per Share						
	Dividends	$ 2.95	$ 2.75	$2.575	$ 2.45	$ 2.25
	Shareowners' Equity	55.21	52.65	48.69	44.38	46.43
Shareowners (year-end)		66,066	68,032	70,367	72,081	71,343
Shares Outstanding (year-end, in millions)		69	74	78	77	78
Employees (year-end)		45,635	49,734	51,703	56,103	50,754

1) Net income for 1987 includes net restructuring income of $18 million ($0.24 per share).

2) Net income for 1986 includes $85 million ($1.10 per share) of net gains, principally from the sale of the Texas City, Texas petrochemicals plant and related assets, partially offset by the Electronic Materials asset impairment write-down. In addition, net income was increased $25 million ($0.32 per share) from adopting the requirements of Statement of Financial Accounting Standards No. 87, "Employers' Accounting for Pensions."

3) Net loss for 1985 includes net restructuring expense of $542 million ($7.04 per share), the gain from the sale of the oil and gas operations of $201 million ($2.61 per share) and an extraordinary gain of $30 million ($0.40 per share) from repayment of debt.

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Monsanto's Board of Directors

Monsanto's shareowners are represented by a Board of Directors drawn from diverse backgrounds and experiences, including business management, university administration, government service, scholarship and teaching, military command and other functions in fields such as manufacturing, banking, insurance, public utilities, construction and technology.

This diversity of experience and knowledge is critical to guiding a company that sells to a broad range of markets in more than 100 countries.

Monsanto's board represents the interests of all stake holders — customers, neighbors and employees, as well as shareowners. This requires independence and objectivity, and for that reason, outside directors predominate. Currently, 13 of the 15 members of the board are outside directors.

Monsanto's Advisory Directors

While it is essential to have the breadth of experience and the independent objectivity of a board composed mainly of outside directors, board decisions should also have the benefit of an intimate and detailed knowledge of the Company's ongoing operations. For that reason, six of Monsanto's senior executives serve as non-voting advisory directors.

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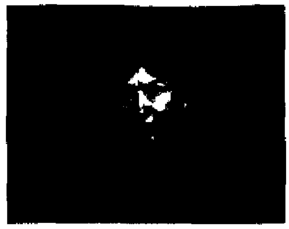
Richard J. Mahoney
St. Louis
Chairman and Chief Executive Officer,
Monsanto Company
Age: 55
Monsanto Director: 10 years

Marguerite Ross Barnett, Ph.D.
St. Louis
Chancellor,
University of Missouri-St. Louis
Age: 46
Monsanto Director: 1 year



Joan T. Bok
Westborough, Massachusetts
Chairman, New England Electric System
Age: 59
Monsanto Director: 2 years

Donald C. Carroll, Ph.D.
King of Prussia, Pennsylvania
Chairman, Schulco, Inc.;
Retired Dean, The Wharton School,
University of Pennsylvania
Age: 58
Monsanto Director: 14 years

C. Raymond Dahl
San Francisco
Retired Chairman and Chief Executive
Officer, Crown Zellerbach Corporation
Age: 67
Monsanto Director: 11 years

Richard I. Fricke
Montpelier, Vermont
Chairman, Executive Committee,
National Life Insurance Company
Age: 66
Monsanto Director: 14 years

John W. Hanley
Palm City, Florida
Chairman, Hanley Hazelden Center;
Retired Chairman and Chief Executive
Officer, Monsanto Company
Age: 67
Monsanto Director: 16 years

Earle H. Harbison, Jr.
St. Louis
President and Chief Operating Officer,
Monsanto Company
Age: 60
Monsanto Director: 3 years

Robert M. Heyssel, M.D.
Baltimore
President and Chief Executive Officer,
The Johns Hopkins Health System and
The Johns Hopkins Hospital
Age: 60
Monsanto Director: less than 1 year

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Howard M. Love
Pittsburgh
Chairman and Chief Executive Officer,
National Intergroup, Inc.
Age: 58
Monsanto Director: 11 years

Buck Mickel
Greenville, South Carolina
Chairman and Chief Executive Officer,
R.S.I. Corp.; Retired Vice Chairman,
Fluor Corp.; Chairman, Daniel
International Corp., a Fluor subsidiary
Age: 63
Monsanto Director: 14 years

John S. Reed
New York
Chairman, Citicorp and Citibank, N.A.
Age: 50
Monsanto Director: 4 years

William D. Ruckelshaus
Houston
Chairman and Chief Executive Officer,
Browning-Ferris Industries, Inc.;
Former Administrator,
U.S. Environmental Protection Agency
Age: 56
Monsanto Director: 4 years

John B. Slaughter, Ph.D.
Los Angeles
President, Occidental College;
Former Director, National
Science Foundation
Age: 54
Monsanto Director: 6 years

Admiral Stansfield Turner
(U.S. Navy, Retired)
McLean, Virginia
Lecturer and Writer; Former Director,
U.S. Central Intelligence and Central
Intelligence Agency
Age: 65
Monsanto Director: 8 years

Richard W. Duesenberg
Senior Vice President,
General Counsel and Secretary,
Monsanto Company
Age: 58

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Advisory Directors

Robert L. Berra
St. Louis
Senior Vice President, Administration,
Monsanto Company
Age: 64
Advisory Director: 7 years

Harold J. Corbett
St. Louis
Senior Vice President, Environment,
Safety & Health,
Monsanto Company
Age: 61
Advisory Director: 4 years

Robert G. Potter
St. Louis
Group Vice President,
Monsanto Company;
President, Monsanto Chemical Company
Age: 49
Advisory Director: 3 years

Nicholas L. Reding
St. Louis
Executive Vice President, Monsanto
Company; President, Monsanto
Agricultural Company
Age: 54
Advisory Director: 7 years

Howard A. Schneiderman, Ph.D.
St. Louis
Senior Vice President,
Research & Development,
Monsanto Company
Age: 62
Advisory Director: 7 years

Francis A. Stroble
St. Louis
Senior Vice President and
Chief Financial Officer,
Monsanto Company
Age: 58
Advisory Director: 7 years

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Committees of the Board

Audit Committee
Buck Mickel, Chairman
Joan T. Bok
Robert M. Heyssel, M.D.
William D. Ruckelshaus
John B. Slaughter, Ph.D.

Corporate Social Responsibility Committee
Admiral Stansfield Turner, Chairman
Joan T. Bok
William D. Ruckelshaus
John B. Slaughter, Ph.D.

Executive Committee
John W. Hanley, Chairman
Marguerite Ross Barnett, Ph.D.
Earle H. Harbison, Jr.
Richard J. Mahoney

Executive Compensation and Development Committee
Howard H. Love, Chairman
Richard I. Fricke
John W. Hanley
Buck Mickel

Finance Committee
Donald C. Carroll, Ph.D., Chairman
Marguerite Ross Barnett, Ph.D.
C. Raymond Dahl
John W. Hanley
Richard J. Mahoney
John S. Reed

Nominating Committee
Buck Mickel, Chairman
C. Raymond Dahl
Howard M. Love

Pension and Savings Funds Committee
Richard I. Fricke, Chairman
Donald C. Carroll, Ph.D.
Earle H. Harbison, Jr.
Admiral Stansfield Turner

Officers

Chairman and Chief Executive Officer
Richard J. Mahoney

President and Chief Operating Officer
Earle H. Harbison, Jr.

Executive Vice President
Nicholas L. Reding

Senior Vice Presidents
Robert L. Berra
Harold J. Corbett
Howard A. Schneiderman, Ph.D.

Senior Vice President and Chief Financial Officer
Francis A. Stroble

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

Group Vice President
Robert G. Potter

Vice Presidents
Earl N. Brasfield
Leonard A. Cohn
A. Nicholas Filippello, Ph.D.
S. Allen Heininger, Ph.D.
Martin J. Kallen
Thomas H. Lafferre
Philip Needleman, Ph.D.
Richard A. Overton
James H. Senger
David L. Sliney
Virginia V. Weldon, M.D.

Vice President, Finance
Lawrence B. Skatoff

Vice President and Controller
B. Clare Harris

Vice President and Treasurer
Juanita H. Hinshaw

Shareowner Information

Annual Meeting
The next annual meeting of the shareowners of Monsanto Company will be held at 1:45 p.m., Friday, April 28, 1989, in K Building at the Company's World Headquarters, 800 N. Lindbergh Blvd., St. Louis, Missouri. A formal notice of the meeting, together with a proxy statement, is being mailed to each shareowner.

10-K Report, Corporate Data Book and Investor News
A copy of Monsanto Company's 1988 Form 10-K Report filed with the Securities and Exchange Commission; 1988 Corporate Data Book, which contains additional information relating to Monsanto; and Investor News can be obtained by writing to:

Investor Relations Department
Monsanto Company
800 N. Lindbergh Blvd.
St. Louis, Missouri 63167

Stock Symbol — MTC

Stock Exchanges/Bourses

United States:	Europe:	
New York	Amsterdam	London
Chicago (options)	Brussels	Paris
	Frankfurt	Zurich
	Geneva	

Transfer Agent and Registrar
The First National Bank of Boston
Box 644
Boston, Massachusetts 02102

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Monsanto Company
800 North Lindbergh Boulevard
St. Louis, Missouri 63167

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