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INTRODUCTION

Rooted deep in the history of Indiana legends is the respected company of Eli Lilly. Eli Lilly and Company's contribution to society spans from its local activities in Indianapolis to the far corners of the world. It is a major manufacturer and marketer of ethical drugs, or prescription drugs that are available to consumers only through medical practitioners; agricultural products; and cosmetics. This study details the history of the industry, the company's and its presidents' background, and a financial analysis.

PHARMACOLOGICAL EVOLUTION

Since the beginning of time, health and longevity have been among the greatest ambitions of men and women. Anticipation for progress in corporeal prosperity has altered the course of history. It prompted Christopher Columbus to brave the "flat world" of the Atlantic in order to discover America. When seeking a crosscut to the East, Columbus' era used the spices of the East as medicinal herbs rather than seasonings for food. Likewise, the dream of eternal pleasure sent Ponce de Leon into the swamps of Florida in search of the fountain of youth. The quest for healthfulness has led the dignified and courageous to risk their fortunes and, at times, their lives in jungles, high seas, and laboratories.

Though new successes in the industry are discovered every day, the drug trade is very old. The word "chemistry" is derived
from the ancient name of Egypt, "the land of Kahmi or Chemi." Furthermore, the Rx insignia on today's prescriptions is a prayer to Horus, the Egyptian god of healing. The origin of the word "drugs" can be traced back to the priest-physicians of ancient Persia who used herbs to combat disease demons or "drogues."

Among the remedies of the ancients were lizard flesh, crocodile dung, and the blood of bats. It was inevitable that they should chance upon a handful of beneficial substances, as they experimented with everything imaginable. Cinchona bark and coca leaves, the source of quinine and cocaine, respectively, and the opium-yielding poppy are a few notable discoveries by the ancients.

With almost entirely medicinal herbs, the physicians of ancient Greece and Rome prepared their own drugs. Besides employment as medicine, herbs were also used for food, cosmetics, perfumes, and dyes. This established connection of pharmacy with these fields continues today.

The concept of the apothecary was spread throughout the Mediterranean by the Arabs. At the command of Caliph of Bagdad, the first apothecary shop known to history was opened by Abu Coreisch Isa el Szandalani about A.D. 754. The Arabs assigned numerals and words like "alkali," "alembic," and "alcohol" to the science of their day. Using techniques derived by their alchemists, they filtered, distilled, evaporated, and crystallized raw drugs. With the passing of time, apothecary shops spread through Europe and then into Colonial America.

While disease has not been entirely eliminated, man in the
second half of the twentieth century is closer than ever before to attaining his desires for physical well-being and extended life span. By 1900 there were only three known synthetic drugs which were all developed in Germany, namely; aspirin, phenacetin and barbitone. However, the 40-year period from 1900 to 1940 held three major discoveries that revolutionized the pharmaceutical industry.

In 1910, Paul Ehrlich discovered an arsenic compound, arsphenamine, which cured syphilis effectively. This development was a major milestone in medicine, for it substantiated the supposition that a man-made compound could cure an infectious disease in man. Dr. Gerhard Domagk, in 1935, characterized the antibacterial properties of sulphonamido-chrysoidin, the first of the sulfa drugs. This breakthrough heralded the first effective treatment of bacterial infections and launched the race for sulfonamide drugs in the industry. Finally, the discovery of penicillin in 1929 credited Sir Alexander Fleming with the first known antibiotic. While significant advances have occurred in the drug industry, these discoveries paved the way for continued success in pharmaceuticals.

LILLY PRESIDENTS AND THEIR CONTRIBUTIONS

ELI LILLY, FOUNDER

On the morning of May 10, 1876, Eli Lilly walked briskly to a small downtown Indianapolis side street known as Pearl Street. Here he turned a big key in the double doors and opened the doors to the future of Eli Lilly and Company. Having served as an
apprentice in an apothecary shop called "The Good Samaritan Drug Store," Eli Lilly had learned his business in a creditable manner. Indeed, he had had more than his own share of afflictions. As a Yankee officer in the Civil War, Eli Lilly was taken as a prisoner of war. His wife of six years died in 1866, leaving him with a five-year-old son to raise. Unfortunately, his dreams of earning a living as a cotton planter in Mississippi crumbled that same year, as he had gone bankrupt. After returning north, Eli Lilly entered two more businesses in which he failed to achieve satisfactory success in either one. At the rather mature age of 38, Eli Lilly's sorrows and disappointments coupled with the experience gained over the years likely bolstered the determination to make this venture permanent.

With total capital of $1,400, $1,000 in negotiable notes and $400 in finished merchandise, Eli Lilly began business in his two-story, red brick building with only two employees. A month later would show the addition of his then 14-year-old son and eventual successor, Josiah Kirby Lilly, to his staff of assistants. The young company meticulously developed such exotically named fluid extracts as Bear's Foot, Cramp Bark, Life Root, Squaw Vine, and Wormseed. In the first 18 months of operations, sales averaged less than $1,000 a month. As of December, 1986, Eli Lilly and Company had more than 29,200 employees and annual sales of well over $3,100,000,000.

As early as 1879, Colonel Lilly developed and applied a revolutionary process for coating pills with gelatin. The company later began to manufacture gelatin capsules for its own use and from 1898 onward, began selling them to others.
A radical departure from conventional practice of the late nineteenth century, the distribution of drug products exclusively through wholesalers became a company policy established by Colonel Lilly. In order to create a degree of stability in drug pricing, he announced there would be no variations in Lilly discounts. Therefore, the goods he manufactured would be available to all wholesalers at an equal discount.

Incorporated in 1881, the business was recognized as a corporation with 800 shares of stock issued, worth $50 a piece. With his gradually expanding business, the Colonel moved his laboratories to a former chair factory on McCarty Street in 1881. The following year, the company began putting a facsimile of the Colonel's smooth signature on its business cards. This practice continued when in 1900, the signature was printed on the packages containing Lilly products. In that same year, Eli Lilly and Company began using the slogan, "If It Bears a Red Lilly It's Right" in its promotional endeavors.

Having been raised in a religious atmosphere, the Colonel attended church and following the service, would ride around the city stopping to pluck herbs that he knew or hoped had therapeutic value. However, in the eighteen-nineties Colonel Eli grew less interested in the business. As the company prospered, he began to focus his attention on civic works and the economic and social development of Indianapolis. He donated a children's hospital to the city and was a chairman of a committee to provide relief to the poor during the financial panic of 1893. On June 6, 1898, Colonel Eli, the founder of an Indiana legend, died of
Perhaps more instrumental than his forebear in shaping the destiny of the firm, Josiah K. Lilly, Sr., succeeded his father as president in 1898. He entered the business as superintendent of the laboratories upon graduating from the Philadelphia College of Pharmacy in 1882. In that same year, he married his second cousin, Lilly Ridgely, who became the only Lilly Lilly in the history of the company.

Possessing experience and knowledge of the production end of the business and other aspects as well, J.K., Sr., focused his efforts on sales, wholesalers, finances, and expansion. His results: sales were increased by $100,000 in the year following the Colonel's death. He recognized the importance of employment of new personnel in order that the business might continue to grow.

Under the leadership of J.K., Sr., sales increased and operations subsequently expanded. "A couple of years after he became president he told his two young sons, shooting as it were for the moon, 'Someday, boys, we're going to sell a million a year.'" The company attained this milestone in 1905, perhaps sooner than J.K., Sr., had dreamed, when sales were reported to have reached the million-dollar mark. The growth of Eli Lilly and Company required the opening of branch offices at St. Louis in 1900; Dallas in 1901, which was moved to New Orleans two years later; and the New York Branch in 1902. Indianapolis' North Plant was constructed in 1902 and 1903 and consisted of
three buildings: a power plant, a warehouse, and a building for a milling department. Accompanying this expansion was the installation of a new 175 horsepower Atlas Corliss engine. This addition to the production department was the first introduction into the plant of electric energy for the transmission of power.

Starting in 1911-1912, President Lilly began contemplating plans for the future growth of the company. He advocated increasing the range of products in order to provide distributors with a full service line. In addition, he appealed to the stockholders that responsibilities in all aspects of the business be delegated to individuals who would be capable of shouldering the necessary tasks when older executives were no longer able to function accordingly. An important development of this period was the construction of the biological plant in 1912. Under the guidance of Professor Severance Burrage of Purdue University, the project was established on 156 acres of ground that had been purchased on the Old National Road outside of Greenfield, Indiana. Today, many Lilly lifesaving biologicals and much of Elanco's research is carried on at the Greenfield plant.

With the Great Depression of the 1930s, many American workers were laid off their jobs. However, J.K., Sr., established that as long as the company could keep its doors open, no one would be discharged. While a new research building was under construction, employees painted fences, washed windows, and were responsible for general maintenance and upkeep. J.K. Lilly, Sr., found work for everyone. He had fences painted three
or four times, varying the colors with each new coat to prevent boredom.

When the country's banks closed on March 6, 1933, Lilly's traveling salesmen were spared the agony of suspended operations. The company's management had built up a cash and security reserve in the event of such an occurrence. Likewise, wholesalers were extended credit for the purchase of pharmaceuticals. Eli Lilly and Company's ability to weather the storm and to continue with operations is both unusual and commendable.

In addition to his keen business sense, J.K. Lilly, Sr., was an admirer of composer Stephen Collins Foster. J.K., Sr., amassed the most comprehensive collection of Foster memorabilia ever assembled. His invaluable collection was moved to Pittsburgh, Pennsylvania, in 1937 after he concluded that it should be permanently housed in the city of Foster's birth.

Retiring as president in 1932, Josiah K. Lilly, Sr., moved up to chairman of the board. In 1943, he developed a serious infection that was hermetic to any available drug. Although penicillin was still in crude form, he was administered the medication by doctors. The penicillin cured him, but he was diagnosed with cancer four years later. Having influenced the course of Lilly history in an incalculable way, Josiah K. Lilly, Sr., died on February 8, 1948, at the age of 86.

ELI LILLY

Following in the footsteps of his father, J.K., Sr., Eli Lilly, the founder's namesake, became president in 1932. He had graduated from the Philadelphia College of Pharmacy in 1909, and
that same year obtained the position as superintendent of the laboratories. His performance in this capacity credits him with having introduced modern industrial practices including the blueprinting of manufacturing formulas and the installation of straight-line production methods after having visited a Ford assembly plant. Mr. Eli personally supervised the design of production lines in order that there might be a constantly regulated flow from the arrival of raw materials to the departure of finished products.

While instrumental in bringing about events important to drug therapy, Mr. Eli was himself a creator. He developed a suppository-making machine and was also granted two patents of his own for the following devices: a hypodermic syringe and an insulin carrying case. However, Mr. Eli mainly served as a restless, alert watchdog, constantly searching to spot flaws and correct them. Before the construction of a new building, he was inspecting the old one with a sample-room stock clerk when they heard a yell. Rushing to the spot they found a heavy woman employee had fallen through the floor. After rescuing the damsel in distress and seeing that she was attended to with first aid, Mr. Eli grabbed an ax and rancorously chopped a larger hole in the floor. The hole was so great that a fence was built around it so that the company's employees might not vanish into the chasm.

Established by Eli Lilly in 1937, the Lilly Endowment became one of the major philanthropic organizations in the country. Possessing an affinity and proficiency for historic publications, Mr. Eli wrote and published Antiquities of Indiana. In addition,
he became interested in historic landmarks and bought and restored the Conner Prairie Farm in Noblesville, Indiana. Ultimately, he conferred the landmark to Earlham College. This donation was just a drop in the bucket of his personal philanthropies. Owing to his insistence on anonymity, the source of many contributions was never revealed by their recipients.

Since Mr. Eli shunned public acknowledgment of his philanthropies, a most uncomfortable moment came when on his eight-fourth birthday in 1969, Governor Edgar D. Whitcom proclaimed April 1 as "Mr. Eli Lilly Day."

JOSIAH K. LILLY, JR.

As the seventh Lilly to join the firm, J.K. Lilly, Jr., Eli's younger brother, began working for the company in 1914 upon graduating from the University of Michigan with a degree in pharmacy. J.K., Jr., was responsible for organizing the Efficiency Division in 1914; the planning department for the Production Division; and the Sales Research Division which was later supplemented with a Salesmen's Training School. In 1948, J.K., Jr., succeeded his brother as president of Eli Lilly and Company.

Wishing to emulate his grandfather, J.K., Jr., enlisted in the service during World War I. Much to his dismay, his commission was in the Sanitary Corps rather than the field artillery. He spent eighteen months overseas and, in due time, had 311 men and $8 million in medical supplies under his command. At the age of 25, J.K., Jr., received an honorable discharge on April 1, 1919, and attained the rank, at his mustering out, of
major the following day.

An unflagging collector for forty years, Josiah, Jr., accumulated an incredible collection of rare books, stamps and coins. In 1956, he presented his collection of rare books, valued at more than $5 million and including some 20,000 first editions such as Ben Hur, Peter Pan and works of Edgar Allen Poe, to Indiana University. The Eli Lilly Library at Indiana instantly became one of the premier repositories of rare books. Josiah also had a collection of 6,127 gold coins, some dating from the early Mesopotamian empires, which is now housed at the Smithsonian Institution in Washington, D.C. Stepping down from the presidency in 1953, Josiah spent his later years reading the Encyclopaedia Brittanica. At the time of his death in 1966, he had reached the letter "G."

EUGENE N. BEESLEY

Though a full-time employee of the company for 24 years, Eugene N. Beesley was the first person to become president who was not a member of the Lilly family. Beesley was a sales representative for the company around the Cleveland, Ohio, area during the Depression. His personal goal was to make at least one sale per day, and he never failed in attaining this self-established quota.

At Beesley's ascension in 1953, the fundamental aspects of the company remained unchanged from what they had been in the early days. Colonel Eli's philosophy and practice continued to provide a foundation for the company's operation: to manufacture ethical drugs of the highest attainable quality and to maintain
the best possible relationship with its employees. Nevertheless, net sales were increasing yearly; net profit was maintaining a steady growth rate; and the number of employees became increasingly larger with the passing of each year. The McCarty Street headquarters was now comprised of thirty buildings; extensive manufacturing facilities were located on Kentucky Avenue; the first buildings of the Tippecanoe Laboratories had been built; and additional manufacturing plants in Great Britain, Brazil, and Argentina supplemented the company's operations.

Beesley was internationally minded. At the onset of his command, he informed his junior executives that experience working in other countries besides the United States was excellent training and would be a plus quality when promotions were being considered. The year following his appointment as president, Beesley made a tour of Europe, traveling south from Paris through Switzerland, Germany, Spain, and Italy. As a result of his trip, Beesley concluded that there was a considerable untapped potential for Lilly in the European area. In 1963, Lilly acquired the biochemicals division of Distiller Company Limited located in England. Though principally engaged in producing whiskey and gin, the company had experience in the manufacture of penicillin. With a fermentation capacity of 500,000 gallons, Distillers proved very enticing to Lilly. Thus, the purchase of one of Eli Lilly and Company's major subsidiaries, Dista Products Limited, was made during Beesley's term as president.

Not only was Beesley president of Eli Lilly and Company, but
he was also chairman of the Pharmaceutical Manufacturers Association (P.M.A.). The Thorntown, Indiana, farm boy proved to be a well-respected and eloquent spokesman for the entire drug industry. On December 4, 1961, Beesley was summoned to assist the Kennedy Administration during an international crisis. Fidel Castro had informed the United States that the 1,113 prisoners of war he had been holding since the Bay of Pigs incident could be released if the following demand was met by Christmas: twenty-three million dollars' worth of drugs must be delivered to Havana. As chairman of the P.M.A., Beesley and his board pledged to meet the deadline, if at all possible. Each company was to provide a share of the total roughly proportional to its share of the pharmaceutical market. The operation proved successful, with Lilly's contribution approximating $2,342,797 worth of drugs.

With the courage to make an inherently risky decision, Beesley approved the production of Salk's polio vaccine for a field trial, another landmark development that proved to be a consequential lifesaving action. The slow, laborious task of processing raw virus shipped from Toronto and testing vaccine in preparation for the field trial was pursued with safety standards implemented for the benefit of the workers. Although other companies were in the process of developing a safe and stable polio vaccine, Lilly had got a head start due to the work of some of its scientists. When it was generally made available, more than half of all the Salk vaccine eventually used was accompanied by the ever-reputable Lilly label. Beesley's initiative proved profitable for the company as sales rose from $141 million in 1955, to $181 million in the following year, and to $199 million
the year after that.

BURTON E. BECK

As Beesley's successor, Burton E. Beck found his roots in Lilly after his graduation from Cornell University. J.K. Lilly III was a fraternity brother of his, and they were both assigned to a company training program. Beck's progression up the corporate ladder was, however, markedly different from his peer. In 1959, Beck was chosen as the new Lilly International president. His task involved changing International from an exporter of products to a country to a maker and seller of products in a country. Indeed, Beck was successful, as he revitalized the headquarters' management group and improved the decision-making pipeline to distant outposts.

With a long-standing interest in cattle and, in fact, a desire to get into cattle ranching, Beck was a firm supporter of George Varnes, Elanco Products Company's first president. Elanco marketed agricultural and animal products, which was a new concept to Eli Lilly and Company. "Beck reflected afterward. 'For three-quarters of a century, Lilly had construed its mission to be to do things that related exclusively to the effects that biologicals and chemicals had on human beings. Now, we broadened our thinking and began to perceive our mission as relating to every kind of life, which of course included animal and plant life as well as human.'" Beck's open-minded attitude and expertise were essential to the continued growth of the company. Nevertheless, in 1972, Beck took early retirement at the age of 54 after only serving as president for a year and a half. Though
his action astounded many people, Beck evidently preferred quarter horses to quarterly reports.

THOMAS LAKE

While Beck greatly improved and solidified Lilly International, he had also opened the opportunity for Thomas Lake to move upward through the executive ranks and become a president of Lilly International. Lake lived in Puerto Rico, Portugal, and England. Likewise, his background was international, for his parents had come to the United States from England. With a family to support during the Depression, Lake's father worked as a coal miner in western Pennsylvania. Lake's mother was a seamstress, and she made all his shirts by hand until he went to the Temple University College of Pharmacy on a scholarship.

During employment at a pharmacy in Philadelphia, Lake had encountered a Lilly salesman and was very impressed with him. Furthermore, he had observed that the only salesman who could easily obtain entry into one Army hospital where he was assigned during the war was from Lilly. Hence, Lake opted to be a Lilly salesman and took a position in Cleveland in 1915. Within four years he had been summoned to the Indianapolis headquarters to utilize his talent and energy in sales promotion and merchandising for Lilly International. In 1951, Lake was sent to Puerto Rico where he had studied Spanish and gained adequate proficiency when he was transferred to Lisbon, where he then learned Portuguese.

Lake served as Eli Lilly and Company's president from 1973-1976. A distinguished honor for both Lake and, subsequently, the
company took place when he dedicated a new Lilly plant at Alcobendas, Spain, in 1974, and the Spanish government decorated him with its Grand Cross of Health. This was only the third time that the medal had been presented to a non-Spanish person, and the other two recipients had both been Nobel laureates.

RICHARD WOOD

Without even a letter of introduction, Richard Wood presented himself at Eli Lilly and Company's employment offices in 1950. Nobody had even conceived that Wood might eventually outrank everyone else at Lilly, nor had the awesome idea even entered his mind. A native of Brazil, Indiana, Wood had obtained a Bachelor of Science degree from Purdue University in engineering and a Master of Business Administration degree from the University of Pennsylvania's Wharton School of Finance and Commerce.

In 1954, the company was in the process of investigating the potential markets for products that the "Agricultural and Industrials Products Division," which later changed its name to Elanco, would sell. Executive Vice-President William R. Spurlock confronted Richard Wood, a financial research man who had only been with the company for four years, with the problem. Wood assembled a mirage of financial data, and both astounded and pleasantly surprised management with his results.

When Spurlock tapped Wood for his exploratory mission, he was well known around the company as a staunch competitor in Employee Activities tennis tournaments. However, Wood's reputation for excellence spread as he became a president of
Lilly International, living in Argentina and Mexico. Wood's climb to the top continued when in 1972, he became president of Eli Lilly and Company and has served in this position from 1977 to the present. Likewise, he has occupied the position of Chairman of the Board from 1973 to the present. When Wood became Chairman of the Board, many of his colleagues were astounded, not because they considered him unqualified for the position but because he had not worked for the company long enough to attend the annual dinner for people with a quarter of a century's service. Richard Wood's talent, ability, and energy quickly catapulted him to the head of Eli Lilly and Company.

REVOLUTIONARY BREAKTHROUGHS

While Eli Lilly and Company has discovered and developed antibiotics, penicillins, herbicides, barbiturates, and a myriad of other products, only a few major ones are highlighted in the following section. Indeed, the ramifications of Eli Lilly and company's research and development are immeasurably beneficial to the nation and the world.

INSULIN

Perhaps more revolutionary than any medical discovery before its time, insulin has enabled the diabetic to lead a normal, healthy life. Diabetes is a disease in which the body is unable to utilize sugar and the afflicted person has a hunger and thirst beyond appeasement. Dr. Frederick Banting, a young physician and scientist of Toronto, Canada, and his assistant Charles Best made
The monumental discovery. An invitation to assist the Toronto scientist in the production and purification of the new product was extended to the Lilly Research Laboratories in 1922. Through Lilly efforts toward improved methods of purification and large-scale production, insulin became generally available to the medical profession in 1923. The Lilly name used for this product was Iletin.

**Pernicious Anemia**

Saved with an injection of insulin, Dr. George R. Minot went on to make a valuable contribution to the medical world. His association with Dr. William P. Murphy led to the discovery that meals of liver, or injections of liver extract, restored red blood and extended the lives of persons with pernicious anemia. At the time of research and experiment, the Lilly brothers' mother was dying of this affliction, but the finalized product was not released in the market until 1928.

**Merthiolate**

In 1929, the firm introduced Merthiolate, a popular antiseptic. At the time of its introduction, the prevailing notion of the public was that a medication had to look bad, smell bad, taste bad, or feel bad if it was to be effective. In its original solution form, Merthiolate was colorless and did not proffer discomforture when applied. By adding red vegetable dye and a little alcohol, Merthiolate became a smash pharmaceutical hit.
POLIOMYELITIS VACCINE

As outlined in Beesley's term as president, Eli Lilly and Company participated in the discovery by Dr. Jonas Salk of killed-virus poliomyelitis vaccine. Lilly was instrumental in developing methods and producing vaccine for field trials in the spring of 1954, with an entire building set aside for polio vaccine manufacture. Through Lilly's efforts and Dr. Salk's conclusive research, the vaccine was released in the market in 1955.

TREFLAN

Of all the agricultural products marketed by the Elanco Products Company, Treflan has been the prize winner. Treflan is a long lasting herbicide which is effective against weeds that plague growers of cotton, soybeans, vegetables, peanuts, and more than twenty other commercial crops. Introduced into the U.S. market in 1963, Treflan soon became internationally accepted.

STRATEGIC ACQUISITIONS

In January 1977, Lilly acquired Elizabeth Arden Sales Corporation for $37,815,000. Elizabeth Arden specializes in skin-care preparations, make-up products, and fragrances. The company's cosmetic products compete in the upper-price-range markets and are marketed internationally. At present, Eli Lilly and Company is in the process of selling its Elizabeth Arden division.

Acquired in exchange for 1,438,114 common shares of stock,
IVAC Corporation manufactures and markets top of the line patient temperature-measuring and vital sign products, enteral feeding systems, and intravenous fluid-infusion systems. Within the United States, sales are handled by two direct sales forces. Sales representatives and independent distributors conduct international business sales.

Cardiac Pacemakers, Inc., was acquired in December of 1978 for 2,317,450 common shares of Lilly stock. The company is engaged in the marketing of pacemaker products, automatic implantable cardioverter/defibrillators, and an ambulatory insulin-infusion pump. With principal customers consisting of physicians and hospitals, direct sales representatives are employed in order to generate sales.

An exchange of 0.7 shares of Lilly common stock for each share of Physio-Control stock allowed for the acquisition of the latter. Physio-Control Corporation, similar to companies already acquired by Lilly, markets acute cardiac care systems, cardiac defibrillators and monitors, and vital-signs-measurement equipment. Its main customers are hospitals and emergency room units. In the same manner as mentioned previously, sales are conducted by direct sales representatives and one independent sales organization.

On May 31, 1984, Advanced Cardiovascular Systems Inc. (ACS) was taken under the Lilly wing. The company sells coronary dilatation balloon catheter systems to cardiologists to open obstructed coronary arteries. Sales outside the United States are handled by independent distributors but within the United States are conducted by sales representatives.
Announced in September, 1985, Lilly acquired Hybritech Incorporated for approximately $350,000,000. Hybritech researches, develops and markets monoclonal antibodies and immunodiagnostic devices in a growing market. The acquisition of Hybritech further promotes diversification while providing an immediate entry into the diagnostics market. In addition, Lilly's interest in the use of monoclonal antibodies for the therapeutic treatment of certain types of cancers is enhanced in the efforts of Hybritech.

FINANCIAL ANALYSIS

In order to determine Eli Lilly and Company's overall corporate financial structure and key ratios for the period 1977-1986, various tables and figures have been developed. Figure I, Sales and Net Income, shows a steady rise in the aforementioned. Over the ten-year period 1977-1986, sales rose from $1,518 million to $3,720 million, an increase of 145 percent with an average annual increase of 9.40 percent. Likewise, net income escalated from $218.7 million to $558.2 million during the same period, an increase of 155 percent and an average annual increase of 9.90 percent. The dramatic growth in sales and net income from 1985 to 1986 could be due, in large part, to the acquisition of Hybritech in March of 1986. Figure II diagrams the return on sales and the return on equity for the period 1977-1986.

With data obtained from the Robert Morris Annual Statement Studies, Eli Lilly's 1986 performance can be compared to
FIGURE I
SALES AND NET INCOME

ELI LILLY AND COMPANY
12-31-77 thru 12-31-86

(in billions of dollars)

sales
net income
FIGURE II
RETURN ON SALES AND RETURN ON EQUITY

ELI LILLY AND COMPANY
12-31-77 thru 12-31-86

RETURN ON SALES
RETURN ON EQUITY
companies having an SIC number of 2831. SIC number 2831 has been designated with companies manufacturing drugs and medicine. Table I presents nineteen financial ratios for Eli Lilly and Company over a ten-year period. Table II, however, pinpoints key ratios for Lilly in 1986 that are comparable to industry values in the upper, median, and lower quartiles. Lilly turnover ratios rank low, and liquidity ratios are average for the industry. Lilly's ability to meet interest payments is evidenced in its hefty times interest earned ratio, and its sales/working capital ratio holds a solid position with 4.09. When examining the leverage ratios, fixed/worth and debt/worth, the Company appears secure in the degree of protection provided for its creditors. In the same respect, operating ratios rank high as compared to the industry.

The ten-year period from December 31, 1977 to December 31, 1986, witnessed a major rise in the stock price from $18.94 to $74.25. This progression amounts to a tremendous increase in price of 292 percent over the ten-year period with an average annual appreciation of 14.70 percent. The stock price fluctuation per share is graphed in Figure III. Prices utilized in the diagram were closing stock prices as of December 31 of the respective year. Likewise, Table III has been constructed to detail the high and low stock prices and their respective P/E ratios over the time period contained in the study. Fluctuations in the book value per share are reflected in Figure IV. During the ten-year period, book value per share vacillated wildly but managed to attain an increase of 134 percent from 1977 to 1986. Illustrated in Figure V is the individual industry segment
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<td>3.28</td>
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<td>2.76</td>
<td>2.61</td>
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<td>0.87</td>
<td>0.90</td>
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<td>0.98</td>
<td>0.96</td>
<td>0.94</td>
<td>0.89</td>
<td>0.85</td>
<td>0.83</td>
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<td>LEVERAGE</td>
<td>31.04</td>
<td>32.48</td>
<td>27.93</td>
<td>33.40</td>
<td>34.94</td>
<td>34.85</td>
<td>37.87</td>
<td>39.04</td>
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<td>0.092</td>
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<td>0.26%</td>
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<td>2.77%</td>
<td>2.35%</td>
<td>4.10%</td>
<td>4.99%</td>
<td>9.09%</td>
<td>12.41%</td>
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<td>DEBT TO EQUITY</td>
<td>65.91</td>
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<td>53.70%</td>
<td>53.50%</td>
<td>60.95%</td>
<td>64.05%</td>
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<td>49.92</td>
<td>33.01</td>
<td>30.13</td>
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<td>60.92%</td>
<td>61.89%</td>
<td>63.64%</td>
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<td>64.06%</td>
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<td>23.07%</td>
<td>23.29%</td>
<td>23.09%</td>
<td>24.88%</td>
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<td>13.37%</td>
<td>13.50%</td>
<td>13.90%</td>
<td>15.06%</td>
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<td>13.12%</td>
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<td>13.05%</td>
<td>13.40%</td>
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<td>21.57%</td>
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<td>22.49%</td>
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<tr>
<td></td>
<td>Eli Lilly A Company</td>
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<td>Robert Morris Associates Industry Statistics</td>
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<td>Inventory Turnover</td>
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<td>Fixed Asset Turnover</td>
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<tr>
<td>Total Asset Turnover</td>
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<td>1.7</td>
<td>1.2</td>
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<td>Times Interest Earned</td>
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<td>1.2</td>
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<td>Sales/Working Capital</td>
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<td>15.2</td>
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<td>Fixed Assets/Net Worth</td>
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<td>Total Liabilities/Net Worth</td>
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<td>% Profit Before Taxes/Tangible Net Worth</td>
<td>31.09%</td>
<td>40.90%</td>
<td>22.50%</td>
<td>4.90%</td>
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<tr>
<td>% Profit Before Taxes/Total</td>
<td>19.67%</td>
<td>19.10%</td>
<td>8.40%</td>
<td>1.70%</td>
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FIGURE III
STOCK PRICE PER SHARE

ELI LILLY AND COMPANY
12-31-77 through 12-31-86

[Graph showing stock price per share from 1977 to 1986, adjusted for a 2-for-1 stock split effective December, 1985.]
TABLE III
ELI LILLY AND COMPANY
H/L STOCK PRICE AND P/E RATIOS
1977-1986

<table>
<thead>
<tr>
<th>Year</th>
<th>H</th>
<th>L</th>
<th>H</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>24.1</td>
<td>16.4</td>
<td>15.5</td>
<td>10.5</td>
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<td>1978</td>
<td>27.0</td>
<td>18.4</td>
<td>14.1</td>
<td>9.6</td>
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<td>1979</td>
<td>31.8</td>
<td>23.6</td>
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<td>1980</td>
<td>31.8</td>
<td>22.8</td>
<td>14.0</td>
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<td>1981</td>
<td>34.5</td>
<td>22.6</td>
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<td>9.1</td>
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<td>1982</td>
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<td>12.0</td>
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<td>1985</td>
<td>55.8</td>
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<td>8.7</td>
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<td>1986</td>
<td>83.5</td>
<td>50.6</td>
<td>15.5</td>
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*ADJUSTED FOR STOCK SPLIT*
FIGURE IV
BOOK VALUE PER SHARE

ELI LILLY AND COMPANY
12-31-77 THRU 12-31-86

(All dollars)

YEAR

ADJUSTED TO REFLECT 2 FOR 1 STOCK SPLIT
EFFECTIVE DECEMBER, 1985
FIGURE V
INDUSTRY SEGMENT CONTRIBUTION TO SALES

ELI LILLY AND COMPANY
AS OF 12-31-86

COSMETICS (70.7%)

AGRICULTURE (14.5%)

HUMAN HEALTH (7.5%)
contribution to Lilly sales for the year of 1986. Human health, agriculture, and cosmetics accounted for 70.5 percent, 18.8 percent, and 10.7 percent, respectively, of the Company's total sales. Not surprisingly, human health commanded the largest percentage. Table IV presents a composite of Eli Lilly and its major competitors. Key statistics averaged over the three-year period of 1982-1984 have been provided in order that comparisons between the companies' performance can be made. Figure VI offers an apparent picture of Lilly's record pertaining to earnings per share and their attitude toward dividends per share. Since 1977, dividends paid per share have increased at an average rate of 9.75 percent per year, while the increase from 1977 to 1986 amounts to a tremendous 153.5 percent.

Traded on the New York Stock Exchange, Eli Lilly and Company has attained a high P/E ratio of 15.5 and a low of 7.9 over the ten-year period, 1977-1986. The closing price of Lilly stock on December 31, 1986, was $74.25 with EPS of $4.01. Derivation of the ten-year average of the high and low P/E ratio and EPS provides the basis for the following projections. Assuming an average high P/E ratio of 13.5, a low P/E ratio of 9.3, and an expected increase in EPS of 10.3 percent annually, conditions remaining the same, the Company's EPS should approximate $5.93 by the end of 1990. Therefore, a foreseeable price by December 31, 1990, could fall between $80.00 to $55.00. As of May 1, 1987, the Company's stock had reached a price of $91.00 per share. With the acquisition of Hybritech and plans to sell Elizabeth Arden, Eli Lilly and Company's future financial success is, in effect, inevitable.
### TABLE IV

**MAJOR COMPETITORS' PERFORMANCE VS. ELI LILLY**

<table>
<thead>
<tr>
<th>1982-1984 AVERAGE KEY STATISTICS</th>
<th>AMERICAN HOME PRODUCTS CORP.</th>
<th>ELI LILLY &amp; CO.</th>
<th>MERCK &amp; CO.</th>
<th>PFIZER INC.</th>
<th>SMITHKLINE BEECHAM CORP.</th>
<th>WARNER LAMBERT CO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURRENT RATIO</td>
<td>3.6</td>
<td>1.8</td>
<td>1.9</td>
<td>2.1</td>
<td>2.1</td>
<td>1.9</td>
</tr>
<tr>
<td>P/E H-L</td>
<td>13 - 10</td>
<td>11 - 8</td>
<td>16 - 12</td>
<td>16 - 11</td>
<td>12 - 9</td>
<td>14 - 10</td>
</tr>
<tr>
<td>DIVIDEND PAYOUT</td>
<td>60%</td>
<td>45%</td>
<td>47%</td>
<td>43%</td>
<td>44%</td>
<td>58%</td>
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<tr>
<td>EPS</td>
<td>$3.95</td>
<td>$3.05</td>
<td>$6.14</td>
<td>$2.65</td>
<td>$5.85</td>
<td>$2.51</td>
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<tr>
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<td>$11.49</td>
<td>$14.30</td>
<td>$31.08</td>
<td>$13.29</td>
<td>$23.13</td>
<td>$10.88</td>
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</table>
FIGURE VI
EPS & DIVIDENDS PER SHARE

ELI LILLY AND COMPANY
12-31-77 thru 12-31-86

[Diagram showing EPS and dividends per share from 1977 to 1986 with calculations based on split stock.

CALCULATIONS BASED ON SPLIT STOCK.
FOOTNOTES

2. Ibid., p. 5.
3. Ibid., p. 6.
4. Ibid.
5. Ibid.
13. Ibid., p. 23.
15. Ibid., p. 38.
16. Clark, Threescore Years and Ten, p. 41.
17. Kahn, All in a Century, p. 35.
18. Ibid.
19. Clark, Threescore Years and Ten, p. 45.
20. Ibid., p. 50.
22. Ibid., p. 43.
24. Ibid., p. 63.
25 Clark, Threescore Years and Ten, p. 49.
27 Kahn, All in a Century, p. 71.
28 Ibid., p. 72.
29 Ibid., pp. 69-70.
31 Clark, Threescore Years and Ten, p. 64.
32 Kahn, All in a Century, p. 80.
33 Moskowitz, Everybody’s Business, p. 228.
34 Kahn, All in a Century, p. 85.
36 Ibid., p. 184.
37 Ibid., p. 133.
38 Ibid., p. 57.
39 Ibid., pp. 162-165.
40 Ibid., p. 186.
41 Ibid., p. 175.
42 Ibid.
43 Ibid., p. 187.
44 Ibid.
45 Ibid., p. 188.
46 Ibid., p. 172.
47 Ibid.
48 Ibid., p. 45.
49 Clark, Threescore Years and Ten, p. 58.
50 Mahoney, The Merchants of Life, p. 91.
51 Kahn, *All in a Century*, p. 76.
52 Ibid., p. 162.
53 *The Expanding World of Eli Lilly and Company*, p. 35.
55 Ibid.
56 Ibid.
57 Ibid.
58 Ibid.
59 Ibid.
BIBLIOGRAPHY


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*The Expanding World of Eli Lilly and Company*.