THE LIFE CYCLE OF STERLING DRUG, INC.*

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The foundations of Sterling Drug were laid by William E. Weiss and Albert H. Diebold, boyhood friends in Canton, Ohio. Weiss graduated from the Philadelphia College of Pharmacy in 1896 and went to work in a drug store in Sistersville, West Virginia. Diebold raised funding from his father's company, Diebold Safe and Lock, and in 1901 the friends set up business together in Wheeling, WV. In fact, Sterling operated a plant in that town until 1962.

The history of the Corporation can conveniently be divided into five periods:

1901-1917 The Neuralgyline Period
1917-1928 Sterling Products I
1928-1933 Drug Inc.
1933-1942 Sterling Products II
1942-1988 Sterling Drug, Inc.

The Neuralgyline Period

On May 4, 1901, Weiss and Diebold, with three local business men as partners, established the Neuralgyline Company with the sole purpose of manufacturing and selling a pain-relieving preparation which they called "Neuralgine." There is now no company record of its composition, but it seems to have been a mixture of acetanilide, caffeine, and sodium salicylate. Total sales in 1901 were $10,000. During 1902 that entire amount was invested in advertising, partly in the Pittsburgh newspapers and partly on signs nailed to trees and posts. This generated sales of $60,000 in 1902 and set a pattern for the future. Over the next few years, the other partners were bought out. Weiss and Diebold realized that expansion required more product lines and that these would best be obtained by acquisition. This policy continued throughout the life of the organization, at least 130 companies being acquired, directly or indirectly, from 1902 through 1986. Ironically, the eventual fate of Sterling Drug was its acquisition by Eastman Kodak in 1988.

Figure 1. Where it all began: in 1901 the Neuralgyline Company occupied two upstairs rooms in this house in Wheeling, WV.

Purchase of the Knowlton Danderine Company in 1906 brought the first major brand. The name "Sterling" came with the acquisition of the Sterling Remedy

Company of Attica, Indiana. It had been founded by H. L. Kramer to market “No-To-Bac,” a product designed to help people stop smoking. The formula, however, was strongly constipating, so Kramer developed a product containing cascara, which he named “Cascarets;” this was much the more successful product. Another laxative product, but based on senna, came with the California Fig Syrup Company in 1912. The corporation also diversified into advertising via Thompson-Koch (still Sterling’s in-house agency through 1985) and other agencies. In 1913, Weiss and Diebold, recognizing the need for improved financial organization, set up Synthetic Patents. This division held intangible assets (trademarks, etc.) and tangible assets (offices and plants) separately from the trading activities. Then in 1914, with World War I looming, they set up Proprietary Agencies as an overseas trading company.

Figure 2. The first product: Neuralgine.

Sterling Products I

By 1917, Neuralgine was no longer a major product, and the company name—Neuralgyline—was difficult to say and remember. Weiss and Diebold reviewed the trading names available and switched to Sterling Products. Because supplies of drugs from Germany had been cut off by the Allied blockade, they set up the Winthrop Company to manufacture the active ingredients. After the entry of the US into World War I on April 6, 1917, the Custodian of Enemy Property began seizing the assets of German companies. Those of Bayer were taken over on January 10, 1918; and on December 12, 1918 they were offered for auction at the Bayer plant in Rensselaer, NY. Weiss, the successful bidder, acquired Bayer for $5.3 million. He sold the dyestuffs division of the business to Grasselli for $1.5 million; this passed successively to GAF (General Aniline and Film) and then in 1984 to BASF.

Sterling’s Long-term Relationship with Bayer

The Bayer Company had been established in Germany in 1863 by Friedrich Bayer, a dyestuffs merchant, and Johann Weskott, a cotton dyer. Carl Duisberg was hired as a research chemist in 1884 and sought a use for surplus *p*-nitrophenol. This led to the introduction of acetophenetidine under the trade name Phenacetin. All Bayer’s requirements in the US were imported from Germany, but US customs duties were so onerous that competitors smuggled in supplies from other sources through Canada and Mexico and thus dominated the market.

Acetylsalicylic acid was first marketed in 1899 in Germany under the trademark Aspirin. Prompted by its loss of sole rights to phenacetin, Bayer attempted to patent aspirin and to protect the trademark wherever possible. It had been a policy of German industry to protect its monopolies by not manufacturing outside Germany. However a new US tariff law made it necessary to manufacture dyestuffs and pharmaceuticals within the country, so in 1903 Duisberg visited the US to review manufacturing opportunities. As far back as 1881, Bayer had purchased 25% of the Hudson River Aniline and Color works at Riverside Avenue, Rensselaer, New York. Duisberg decided to acquire the outstanding equity and to remodel this plant. He also bought the American Color and Chemical facility on Rensselaer Island and moved its equipment to Riverside Avenue. In the US, Bayer continued to defend its monopoly of aspirin by threatening lawsuits against anyone, especially pharmacies, selling material from other sources. When the patent expired in February 1917, the trademark was reduced to generic status by the concerted efforts of other suppliers, notably Lehn & Fink (which, paradoxically, was acquired by Sterling in 1966) and by United Drug (which associated with Sterling in 1928 to form Drug Inc.).

Bayer had promoted aspirin as an ethical medicine, sold only through pharmacies. Sterling now positioned it with their patent medicines and increased sales dramatically in the US (and in Canada where “Bayer Aspirin” attained trademark status) over the next six decades. By contrast, Bayer Aspirin was sold by Sterling as an ethical medicine in the UK, Australia, and some other markets; sales dwindled and the product had generally disappeared from those markets by the 1960s. Bayer attempted to recover its name and the Bayer Cross trademark in various markets over the years. In 1970, Sterling surrendered them in territories other than the US, Canada, Jamaica, and Trinidad for a consideration of $2.8 million. In 1986, with the agreement of Sterling, the Rhinechem Corporation (a US holding company) was renamed Bayer USA Inc. Finally, when Sterling was broken up in 1994, Bayer USA was able to buy back the Bayer Aspirin business.

Sterling continued with pharmaceutical acquisitions, such as Phillips Milk of Magnesia in 1923. The first entry into a specialized dental business came in 1927 with acquisition of Cook Laboratories, manufacturers of dental syringes, and this was complemented in 1928 by the Antidolor Company, which produced dental anesthetics and other adjuncts. Sterling Products now took a surprising change of direction.

Drug Inc.

In 1900, Louis Kroh Liggett established a medicines distribution business in Boston, Mass., and found that many drug stores were compounding their own proprietary preparations. He persuaded forty of them to subscribe $4,000 each to set up a central manufacturing facility in the Back Bay area. The original druggists formed a loose association as the "Rexall" agents ("Rexall" meaning "king of all"). With expansion of the business a more formal structure was required, and the United Drug Company was established in 1916. Other manufacturing companies were acquired, mostly to supply nonmedicinal products, e.g., stationery (Marcus Ward), rubber goods (seamless rubber), dressings (absorbent cotton). Because promotional costs were low, Rexall products were priced very competitively and by 1930 there were about 10,000 Rexall agencies in North America. On the death or retirement of the owners, Liggett purchased outlets and operated them under his own name. He also acquired the Owl Drug chain in the western US and the May chain of Pittsburgh. By 1930 he controlled 706 stores in North America. His only overseas venture had been to acquire the Boots Pure Drug Company in the UK in 1920. Boots then had some 860 retail stores and they too made their own-brand products that sold at a low mark up. Later they also manufactured products for Sterling Drug and for Upjohn and for Vick; this had become necessary because of high UK import duties on finished medicines.

Two ideas men—George M. Gales of United Drug and Al Diebold of Sterling Products—were good friends and seem to have been responsible for the concept of an association of the two companies. Each company was making about $7 million annual profit. Sterling spent heavily on advertising and marketing; United Drug controlled about 20% of the estimated 60,000 drugstores in North America. Sterling's products would of course not become exclusive to United Drug outlets, but the Liggett stores and the Rexall agents would receive special terms; in return, they would give better displays and run promotions. United Drug and Sterling Products were there-

Figure 3. The Bayer plant at Rensselaer, NY, purchased by Weiss in 1918.

fore consolidated on March 2, 1928 into a new holding company, Drug Incorporated. It was a colossal outfit for its time, with about 37,000 employees. In 1930, not a year noted for prosperity, the sales of Drug Inc. were over $160 million; and its net income was about $21 million (at 1999 values, these figures would be $1.5 billion and $196 million, respectively). But the strength of the new organization lay in the fact that the original components continued to act independently. Indeed Sterling continued to acquire companies, such as Life Savers, Bristol-Myers, and Vick.

There was no regulatory or other legal opposition to the formation of Drug Inc., nor any legal pressures to break it up. The difficult issue was the question as to how the profits should be shared. United Drug had assumed a heavy debt burden, particularly with the acquisition of the Owl Drug chain where Liggett was buying sales volume rather than earnings. In 1932, Sterling's profitability was about 30% of sales, as compared to United's 5%. Eventually there was agreement on a Plan of Reorganization, dated August 7, 1933. For every ten shares in Drug Inc., a stockholder received five in Sterling Products, four in United Drug, two in Vick, two in Bristol-Myers, and one in Life Savers; and the business was partitioned along those lines. Drug Inc. existed for just five years and five months. It traded while the economy sank into the depths of the depression. Yet its sales and profits continued to grow and it broke up smoothly with little impact upon individuals.

Sterling Products II

The pace of acquisitions increased. The dental business was strengthened by the addition of R.L. Watkins (Dr. Lyons' Tooth Powder) and Delatone. The American Ferment Company brought a range of products based on papain. Creamalin antacid came with the Cleveland Chemical Company. Other major acquisitions included the Ironised Yeast range, and the pHisoDerm products (Fairchild Brothers and Foster) which later led to pHisoHex, a major surgical scrub.

Up to this time, overseas business had not been a major preoccupation. The Proprietary Agencies division exported packed stock. Phillips Milk of Magnesia was manufactured by Boots in the UK, and California Syrup of Figs was made by Parke-Davis in the UK, South Africa, and Australia; but these arrangements were made to avoid excessive import duties on packed stock. The first big move towards foreign business came with the acquisition in 1938 of the Sydney Ross Company of Newark, New Jersey, which had several plants in Latin America. This put Sterling in a strong position to fill the void left by the interruption of supplies from Europe (and especially from IG Farbenindustrie) to those markets during and following World War II. Marketing was supported by the formation of International Advertising Services in 1941.

During the period 1920 through 1926 Sterling had entered into a series of agreements with IG Farbenindustrie of Germany, with the general awareness of the authorities in Washington. However, under the trading conditions arising from the outbreak of World War II in Europe, these agreements were declared to be in breach of the anti-trust laws, and in December 1941 Weiss and Diebold had to resign. Weiss, returning to Wheeling, WV, died in an automobile accident in September 1942. Diebold retired to Palm Beach, FL, and died in 1964; his official obituary refers to him as the founder of American Home Products and of the Neuralgyline Company; there is no reference to Sterling.

Sterling Drug, Inc.

Edward S. Hills, a semi-retired lawyer whose firm had represented Sterling in trade mark negotiations, was named the new chairman of Sterling; but the effective operating officer was the former treasurer, James Hill, Jr., who kept Sterling on course. Because of possible confusion with other companies' names, Sterling Products could not be licensed to carry on business in certain states and so on October 15, 1942 the company name was changed to Sterling Drug, Inc. A major acquisition in 1942 was the Salvo Chemical Corporation. It had been founded in 1930 to convert lignin from lumber wastes into vanillin. Sterling already sold this compound for flavorings through its General Drug division; but because the big tonnages were used in rubber for tires, Sterling was now in the critical war materials business. Effluent treatment was a problem until Salvo found that the organic content was destroyed by aeration in water at high temperatures and pressures, leading to the Zimpro process used, for example, for the treatment of sewage sludge in major cities such as Chicago. Fortuitously, the reaction is exothermic and so actually generates energy. The Frederick Stearns Company, founded in 1855 also by a pharmacist, was bought by Sterling in 1944. It owned the Nyal trademark, having acquired the New York and London Medicine Company in 1904, but this product range was better known in Australia. The medical director of Stearns, Mark Hiebert, MD, became president of Sterling in 1955 and succeeded Hill as chairman in 1962 on the latter's untimely death. (Hiebert in turn was succeeded in 1972 by Clarke Wescoe, MD, a former Chancellor of the University of Kansas; when he retired in 1984, Jack Pietruski became chairman). In 1945 the Hilton-Davis Company was acquired, partly to complement the existing chemicals operations at Rensselaer but more particularly as a captive source of salicylic acid (the increasing demand for acetylation by the Bayer Aspirin process led to the purchase also of the McKay Davis Chemical Company in 1947).

Sterling's first move into vaccines and sera came in 1954 when the Bayer Biological Institute was set up in former racing stables near Newmarket, England. Superannuated racehorses were used to produce antibodies for veterinary preparations. This and the rest of the UK veterinary business were sold to Pfizer in 1962. Meanwhile in the US, various poultry vaccine businesses (Dorn & Mitchell, Delaware Poultry Laboratories) were acquired in 1958 and sold in 1985. Other ventures into biologicals included a short-lived human influenza vaccine unit at Rensselaer in 1965 and a range of fluorescent antibodies for the rapid identification of microorganisms, made and sold in the UK from 1966 through 1969.

The next big leap in growth came in 1958. Until that time, most foreign activity was in Latin America (through the Sydney Ross Company) and through uncoordinated units in Australasia, the Philippines, South Africa, and the UK. Canada operated virtually as part of the US, but business in most other countries was carried on through agents. The reorganisation outside the US was based more on personalities than on logic. However, it did lead to the setting up of Sterling companies in many more countries: in virtually all those in western Europe, in the major countries in Africa and the Middle East, in India and Pakistan, and elsewhere. This expansion was accompanied by the building of a number of new manufacturing plants. Changes in local regulations and in trade agreements meant that there was a shifting pattern of agency and manufacturing arrangements over the years; but, during its last two decades of existence, Sterling generally operated about seventy plants located in about forty countries and had direct or agency marketing in over 130 countries.

Despite all this activity, the policy of acquisition continued, but the emphasis moved towards household and similar consumer goods. Perhaps the most important acquisition was that of Lehn & Fink in 1966. Founded in New York in 1874, the business had been one of the major players in breaking Bayer's stranglehold on aspirin in the US in 1917. It brought with it subsidiaries, notably Schulke & Mayr (disinfectants in West Germany), Hinds (cosmetic creams), and Beacon Wax. A further disinfectant manufacturer, Phagogène in France, was added in 1971. In 1973, Sterling acquired the Izal business in the UK, a move that largely complemented the Lehn & Fink operations. Izal was founded in 1880 to sell household disinfectants and now included furniture polishes (Ronuk), floor treatments and other cleaning systems, and barrier creams. The Ronuk division went on to develop various do-it-yourself wood treatment products. Sterling then acquired a similar US firm Minwax in 1977, and Thompson and Formby (waterproofing of brickwork and other exterior surfaces) in 1986. There was a return to pharmaceutical acquisitions in 1985 and 1986—notably Maggioni of Italy—and then Sterling came to the end of the road.

The Fate of Sterling

On January 4, 1988, Hofmann-La Roche made a hostile bid to take over the entire assets of Sterling Drug, Inc. Sterling in turn sought a "white knight" and on February 22, 1988, Sterling became a division of Eastman Kodak for the sum of $5.1 billion. Eastman Kodak saw Sterling—especially its ethical pharmaceuticals and its diagnostic imaging—as complementary to its own health sciences business. In particular the facilities in Sterling's major research centers in Rensselaer (NY), Alnwick (UK), and Dijon (France) would be of great help in screening and evaluating compounds available to Eastman Kodak. It was decided to centralize all US research in magnificent new facilities in Upper Providence Township, PA. The building was only partly occupied, however, when Eastman Kodak decided in 1994 to dispose of its health-related businesses. The Sterling segment was broken up as follows:

In 1991 Sanofi and Sterling had formed a strategic alliance, so in 1994 Sanofi bought Sterling's worldwide ethicals business for $1.675 billion and immediately sold the diagnostic imaging portion to Nycomed of Norway for $425 million.

SmithKline Beecham purchased the worldwide over-the-counter pharmaceuticals business for $2.9 billion and promptly sold the US portion to Bayer for $1 billion. So, after 75 years, Bayer Aspirin in the US returned to its original owner.

Figure 4. The Rensselaer research complex and (behind it) the East Greenbush manufacturing plant at the time of Sterling's acquisition by Eastman Kodak in 1988.

Reckitt and Colman of the UK bought the Lehn & Fink business for $1.5 billion; this was partly funded by the sale of the Colman mustard business.

What Did Sterling Achieve?

In the first four decades under Weiss and Diebold the annual sales grew from $10,000 to $50 million. Over the next four and a half decades, four successive chief operating officers continued to drive up the sales, achieving $2.3 billion in 1987, the last full year. There were four major factors contributing to this growth:

- an aggressive acquisition policy over the years.
- innovative marketing, especially in the UK in the 1960s.
- an imaginative research program for discovering and evaluating novel new chemical entities.
- expansion into nondrug areas, especially household and other consumer products, but also into bulk specialty chemicals.

REFERENCES AND NOTES

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ABOUT THE AUTHORS

Joseph C. Collins received his Ph.D. degree from the University of Wisconsin and joined Sterling Winthrop Research Institute in 1958 as a research chemist. In 1962 he accepted an appointment as Chairman of the Chemistry Department at Illinois Wesleyan University. In 1967 he returned to Sterling as Director and then Vice President for Chemistry. He retired from Sterling as Vice President for Technical Affairs in 1987. His address is 178 West Shore Drive, Valatie, New York 12184. John R. Gwilt earned his Ph.D. at the University of London. He joined Sterling Drug, Inc. in 1947 in the UK. He transferred to Sterling's headquarters in New York in 1967 and retired as a Corporate Vice-President shortly after Sterling was acquired by Eastman Kodak in 1988. He resides at Wellstone House, Hartwell Road, Roade, Northampton NN7 2NT, England