MARKETING HISTORY: EXPERIENCES OF SUCCESSFUL INDUSTRIAL FIRMS

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ABSTRACT

Can the history of successful industrial goods firms provide guidelines for marketing teachers and practitioners? This article concerns eight industrial firms listed on the New York Stock Exchange which paid dividends consecutively for 100 years or more. How and why did these firms manage to be so successful? What can we learn about marketing from their experiences? There are three themes. The first reveals the sensitivity to supplier and customer markets, a middleman-merchant role. Second, the events describe how these firms spun a web between manufacturing and marketing. Third, none produce solely their original product, a demonstration of diversification. Teachers and practitioners will find a strong affirmation in these histories.

Few firms in American business history possess two unique characteristics: they survived for at least a century, and they paid annual dividends consecutively for that length of time. This article concerns eight industrial firms listed on the New York Stock Exchange which paid dividends consecutively for 100 years or more.(1) How and why did these firms manage to be so successful? What can we learn about marketing from their experiences?

In descending longevity of paying consecutive dividends annually these eight firms are: Scovill, Inc. (1856); Pennwalt Corp. (1863); Singer (1863); Pullman, Inc. (1867); Ludlow Corp. (1872); The Stanley Works (1877); Corning Glass Works (1881); Diamond International Corp. (1882). Three of these--Pullman, Ludlow, and Stanley--had an unbroken quarterly dividend payout of at least 100 years. Since this investigation began, two firms - Pullman (1980), Diamond (1982), have merged with other companies. However, because these firms paid dividends consecutively for a century I have included them in this analysis. The dates in parentheses are the first in the unbroken record. Many of these firms originated at earlier times. For example, Scovill was started in 1802 during President Thomas Jefferson's second term. In Chart I you will find information pertaining to chronology and products.

Primary sources of information included direct interviews with current executives of the various firms and with retired officers, board of directors' members, and others who contributed to the oral histories by virtue of long-term relationships with the subject firms. These same primary sources often provided direct access to current and historical files of the firms including records of board meetings, ledgers, financial transactions, et al. Histories of these firms were obtained form secondary sources such as libraries, local newspaper files and museums and from financial institutions. However, not all firms were equally cooperative nor were all archives equally rich. Consequently the account which follows reflects these limitations.

The New York Stock Exchange lists seventy-five member firms within all industries which have paid consecutive dividends for long periods of time. The oldest is the Bank of New York Co., Inc., since 1784. The longest unbroken quarterly record since 1827 belongs to a bank, The Chemical New York Corporation.

In this article I describe three themes. The first concerns the sensitivity to supplier and customer markets long ere the genesis of the so-called marketing concept rubric. Second, the events cited herein will demonstrate the close affinity between manufacturing and marketing, a relationship infrequently described in textbooks. The urge to merge, or to diversify in some other fashion, seems to be indigenous in American business history. Diversification certainly characterizes these eight firms for none of them produces or markets solely what it did originally. Respectively, I entitled these themes: middlemen--merchants; the web of manufacturing--marketing; and, diversification.

MIDDLEMEN-MERCHANTS: TWO DIRECTION VISION

These companies had two-direction vision; they saw themselves operating in two markets: a supply market and a demand market; buying in one, transforming, and then selling into another market. Often this process became the basis for diversification, a characteristic of all companies as they changed in order to survive over 100 years or more.

Sometimes the relationship with suppliers outlasted those with customers. For example, Pennwalt, originally the Pennsylvania Salt Company, signed an agreement in 1864 with the Kryolith Company in Denmark, for the importation from Greenland of cryolite, a rare combination of sodium, aluminum, and fluorine. It became a prime source for this chemical, used as a processing agent in making aluminum.

The company changed its name to Pennwalt, as it transformed itself from a chemical commodity producer to a marketer of differentiated chemical and allied products, a change made possible, in part, by securing rights to limited natural resources--oil, gas, salt, fluorspar, sodium sulfate on long-term arrangements so that it was assured by these suppliers of its major requirements.

Suppliers, of course, provide invaluable information--about markets, about competitors, and about potential candidates for employment. Indeed, an alert supplier knows a great deal about your business--and, not unimportantly, suppliers provide short-term credit to a firm. Further, several of the 100-year club utilize their Board members, especially the outside directors, as invaluable suppliers of that key ingredient, information. At The Stanley Works the board chairman brings managers to Board meetings to present what is going on, or what will happen, in their respective divisions. The division manager is expected to answer questions about both sides of his market--the supply as well as the demand side.

From the 1899 "President's Report to the Stockholders of the Diamond Match Company," we learn of the intense knowledge of both sides of the firm's markets:

> It is much safer to be historian than prophet, yet I think it safe to predict that the future of the Company is as secure, and on a more lasting and permanent foundation than it has been for some years. This conclusion is formed, not merely from having secured the ownership of the properties of those who had acquired a large trade--at a great sacrifice of capital--but from the firm hold we have on the trade by our exact knowledge that no competitor in the world can successfully compete with us in the quality and cheapness of our product, of which fact we are more firmly convinced than ever, after finding out the cost of matches as produced by the several factories we have purchased.
>
> Your Directors have, in a large measure, forecasted events and anticipated the wants of the Company for several years in advance of contracting for many of the articles entering into the manufacture of matches at prices prevailing two years ago. This must of necessity help augment our profits in the future.(2)

Ludlow's dependence upon jute from India caused the company to regard sources of supply to be as important as the markets to which converted products were sold. Until 1910, all raw material had been purchased through brokers, either in the United States or in Europe. Jute standards were fallible. Constant recourse to arbitration regarding quality, shipping, et al, caused considerable dissatisfaction as well as expensive interruptions in the converting process.

In the face of these handicaps, the management reached a decision of far-reaching importance. Only a complete control in India over the jute purchased would secure a supply upon which Ludlow could depend for the manufacture of high-grade yarns. Consequently, Ludlow opened an office for purposes of buying, selecting and baling jute. This extension of functions backwards in the channel enabled the firm to sustain its favorable position in both markets.

Awareness as a buyer and seller both--as a middleman--impelled the Singer Sewing Machine Company to integrate both forwards and backwards. The Singer Company introduced installment selling in 1856, a time when average family income was $500 a year. The purchase price of $125 for a Singer machine was a major obstacle. An innovative "hire-purchase" marketing plan enabled thousands of people to obtain the use of a modified manufacturing model by the plan which required $5 down and $3 a month. Concurrently, Singer detected that many commission agents had only a small amount of technical knowledge of the machines. Nor, were they able to demonstrate them properly. The product eventually required repairs, service, and parts.

> "By 1859, Singer had opened fourteen branches, each with a female demonstrator, a mechanic to repair and service, and a salesman or canvasser to sell the machine, as well as a manager who supervised the others and handled collections and credits."(4)

Therefore, in 1860, Singer replaced regional distributors with branch stores supervised by full-time salaried regional agents. By 1863, sales of Singer sewing machines reached 20,000 a year, most of them outside the United States. When Singer realized that it was by far the largest user of cabinets, the firm established its own cabinet factory in South Bend, Indiana, in 1867.

Singer devised other means to reach the ultimate consumer. The company used advertising extensively to acquaint potential buyers with the product. It sought potential agents to sell the new machines. Free demonstrations were offered. A booklet which explained the mechanism and method of operation accompanied each machine. Wives of ministers were offered these new machines at half-price!

Comment

These vignettes of marketing history demonstrate actions we describe currently under the marketing concept dictum. The manufacturing firms recognized that decisions must reflect judgments concerning both suppliers and customers. Profit was a function of how accurately they utilized knowledge of both markets.

WEB OF MANUFACTURING-MARKETING: THE WBAWI QUESTION

Over the long history of these firms the owners-operators managers had a ready answer to the perennial question: "What business are we in (WBAWI)?" This does not imply that the answer was apparent in each and every year. But the evidence supports the claim that these survivors intuitively answered the question. Further, the evidence points to historical transitions from manufacturing-oriented to marketing-directed firms. And among the best of these eight firms the management retained the advantages of both strategies.

From 1850-1980 Scovill had but twelve presidents. One of these, C. P. Goss (1900-1918), was asked on the factory floor what the company made. The able leader, a long-time employee, responded, "money." The records indicate he meant just that, "Scovill made money," primarily by its manufacturing prowess. Company records, brokerage company reports, other historical documents, especially those concerning the 1802-1920 period, emphasize the manufacturing-orientation of the firm. Although J. M. L. Scovill, one of the founders, was himself a real "Yankee Peddler," he concentrated on the manufacturing efficiencies and innovations, the process, as the primary source for generating profits. In more modern parlance, Scovill, like many others referred to in this article, believed manufacturing was the key link in strategy.(5)

The Stanley Works survived and grew in earlier years, among other reasons, because of "Yankee ingenuity" applied to manufacturing. Outstanding technicians consistently and constantly innovated in process and product. Innovative mastery of basic metal processes characterized the company thrust: in the 1870s by better methods of cold rolling of wrought iron strip; in the 1880's by development of a "softer" steel; in 1889 by patenting a hinge with ball bearings; in 1931 by patenting the first "Magic Eye"-activated operation of a door by a photoelectric cell. In all instances quality was the sole standard--for process, product and in customer relations. The name "Stanley" told it all.

In more recent years, the period from 1960 to the present, the Stanley Works has sustained growth by answering more creatively the WBAWI question. The president commented (in 1980):

> "Manufacturing was what this company was originally built and based on. We still have hinge making machines that were designed within the company that have never been improved on, anywhere. But in the last 20 years we have changed from being a manufacturing-oriented company to being a marketing-oriented company and today, some of our most successful programs are based on products that we don't manufacture. We are just learning that we have this marketing strength. We don't have to manufacture everything. We can get a good quality product and package it, promote it, advertise it, and put our name on it and get it distributed. We have two dramatic examples of that: One is weather-stripping, an energy saving product, which we introduced about 2½ years ago. These were actually purchased and packaged with our name on it. We will gradually manufacture this product as the volume increases but we expect to go from 0% of the market to 25% in 5 years...we did exactly the same thing with fasteners. Hundreds of different screws, bolts, brackets, picture hooks, etc. We did not manufacture all of these items. We designed ingenious little packages that became drawers in a plastic storage box. We will have 25% of that market within 5 years. This is a marketing strength, not a manufacturing strength... I think the whole world has moved in that direction. We recognized the tremendous strength we had in the name "Stanley", an almost universal recognition that the name stands for quality products. Then when we began to recognize the factors that were fueling the consumer do-it-yourself--which we now call an industry rather than a market--and that we had a very strong position in that. Then about 15 years ago it became crystal clear to me that this should become the major focus of the company: capitalize on the name and reputation. The name is important to industrial products and building products, but even more important to consumer products, where the franchise means so much. And that is why we started with the slogan and all of the emphasis on the do-it-yourself. We are now trying to posture ourselves as the leading company in the do-it-yourself industry."(6)

Attention to manufacturing costs is a constant emphasis in these companies. Throughout the chronicles and records reviewed you find repeated references to the need for a low-cost, if not lowest, in the industry. The tandem relationship of manufacturing-marketing is best illustrated by The Stanley Works. The tool and hardware divisions have strengths from native know-how in production techniques. Capital is invested on a continuing basis to assure the greatest possible efficiency. During the 1960s the firm was plagued by foreign competition. The president recounted:

> "Japan was taking the entire hinge market away from us. They were shipping hinges to the West Coast at half the prices that we could produce them. We made an agonizing decision that we were going to stay in the hinge business and we hired some very expensive engineers that were very creative and we said that we want you to mechanize our hinge production and take all the labor out of it. You put a coil steel in one end and get a package of hinges out of the other. And that is what we did. We took virtually all of the labor out of it. We became the low-cost producer, and today, Japan is out of the hinge business; we beat them at their own game. Now in hand tools we were lucky. In Japan they use tools differently. They pull them toward--like chisels, planes, and saws--instead of pushing them away. So they design them differently and Japan never really got in the world market with their hand tools. That is just luck."(7)

The WBAWI question illustrates the web of manufacturing, marketing and finance. Willingness to divest, to merchandise capital rather than pursue illusory manufacturing and marketing goals, say efficiency and market share, for example, characterize some of these successful companies; or, unwillingness may lead to dismal results. The first case can be illustrated by the Scovill history. Since its inception the Scovill Company had been connected with the brass business, originally as a buyer of brass, later as a foremost producer of brass. By 1975, however, it became apparent that even a preeminent position in that business could not provide sufficient margins for capital expansion in metals nor for necessary diversification. Even as a low-cost producer the future was not promising. Consequently, the management persuaded the Board of Directors to assume what seemed to some a horrendous risk--to divest itself of the brass business. Scovill sold the brass portion of its business, continued its diversification into home-related products, including safety and protection devices, and has continued to pay dividends as it had since 1857.

As noted, Pennwalt shifted emphasis by utilizing its know-how in chemical engineering and manufacturing to become a leader in such fields as high performance plastics, fluorine chemistry, aerosal propellents and refrigerants and nitrogen products. Impetus for these moves can be traced to need for recognition in the financial community. Prior to the 1950s Pennwalt had virtually no debt. This Quaker-founded firm never believed in "leverage" nor had it ever really needed such sources of capital. However, the new diversification strategy compelled the company to recognize that the financial community had become an important resource supplier, as it moved from a position of a debt-averting firm to that of a prudent borrower. Further, Pennwalt recognized that a least-known firm within the financial community often suffers from an undervalued stock position.(8)

Product-service was a hyphenated word for Scovill. Success in the marketplace was a function of facility in the tool room. The evolution of a mechanically attached button represented great ingenuity. However, garment manufacturers required a convenient workshop method of attaching the button. So Scovill developed presses which attached the tack-buttons mechanically and by 1882 rented out machines to buyers of their buttons.

Scovill's business with the rubber and garment industries was threatened in 1924 by Goodrich's introduction of its "Zipper boot," which incorporated a slide fastener. By 1926 Scovill responded with a new snap fastener along with machines to attach them. Eventually this product was modified so that the fastener was thin enough to be no obstacle in laundering and dry cleaning. The result was the Scovill "Gripper" Fastener. Rapid adoption by the garment industry impelled Scovill executives to consider the merit of branding its products and "pull" the demand through distribution channels. In 1939 the company launched an advertising campaign aimed at the consumer who increased requests for garments made with "Gripper" Fasteners. Company success had resulted from manufacturing prowess, including contract work for other firms. Now, the skill in metal working was harnessed with the skill in marketing to reach expanded industrial and consumer markets.

Comment

In response to competition and technological innovation these eight firms shifted functional emphasis from manufacturing to marketing to financial. However, they managed these functions as interdependent, not discrete, functions. They did not become "marketing-oriented" at the expense of another activity. They did not succumb to current business fads in management. A shift in strategy did not require a downgrading nor a negligence of a function. They demonstrated that a firm could be "marketing-oriented" concurrent with a "manufacturing-orientation."

DIVERSIFICATION

Diversification characterizes each and all of these companies. That is not surprising, given the long span of time. In some companies diversification occurred for greater control of supply resources; in others, forward integration to control a customer. What is important is how and why these firms diversified.

Although it was not customary at the turn of the century to use census data for marketing and production decisions, Mr. O. C. Barber, president of the Diamond Match Company, wrote to stockholders in 1900:

> The increase in the Company's business during the past twenty years has exceeded the increase in the population of the country for the same period in the ratio of six to one...

> Should we be as successful in holding the trade in the future as in the past, the increase of the business will follow in as great proportions as ever, and we shall have use for some of our surplus earnings to increase our output in order to keep with the demands made upon us. I think, therefore, that it will be the policy of the Company to make some extensions of its plants during this year.(9)

During the early 1900s Diamond acquired major tracts of timberland in New England and California to assure ample supplies of wood for the match business at prices it could control. Knowledge of forest products--growing, harvesting, management--led Diamond to enter a secondary market, retail lumber yards, where it sold some of its output. This diversified expansion continued so that a chain of 165 stores became a major profit source.

By 1925, the Diamond Match Company listed as its business: matches, lumber, woodenware, wood and paper products, chemicals, building materials, machinery, engineering and manufacturing supplies, and retail stores. In the Annual Report for that year the president stated:

> Giving due and proper consideration to the general trend, your management several years ago inaugurated the policy of materially changing and extending certain phases of its operations beyond the match field, of developing in generally associated lines of business...so that earnings from the highly competitive domestic and foreign match field should cease to be the sole factor in the determination of net earnings and dividend returns, as was the case prior to the war.

This same policy prevailed in the 1950s. The president of Diamond, Robert Fairburn, sought replacement products. He decided to move Diamond into production of molded paper products, paperboard, and carton packaging, for which the raw materials were actually the waste or by-products of existing manufacturing processes. In 1952 Diamond merged with Gardner Board and Carton Company. Lacking the equipment and plant facilities necessary for production, Diamond acquired General Packaging in 1955. Both the merger and the acquisition enabled Diamond to become one of the leading producers of molded pulp products. In 1959, Diamond merged with U.S. Printing & Lithograph, improving its product line by offering pre-printed folding cartons, displays, posters, labels, and wrappers. What started as a vertical extension in 1900 to bolster a primary business led the company to a diversified manufacturing-marketing position in 1981. The eighty-year pattern demonstrates that Diamond diversified within its own manufacturing and marketing bases of knowledge.

<u>Pullman</u> was founded in 1867 to build plush railroad sleeping cars. All of its diversifications grew out of the Pullman Company knowledge of steel, steel production processes, construction, heavy equipment, and manufacturing in general. Thus, in 1944, caused by a court requirement to divest its railroad car-leasing business, the company purchased M. W. Kellogg Company, a leading engineering and construction business which

enabled Pullman to develop its global operation. Familiarity with transportation led Pullman to expand from rails to the "open road" with the purchase in 1951 of the Trailmobile Company, and by 1980 Pullman became the world's second largest truck trailer builder. Revenues from services and materials related to engineering and construction exceeded those from manufactured products in 1976.

Yet, we have at hand a paradox. In the Pullman case the barnacles of tradition eventually stemmed progress. Directors and some officers never forgot that they regarded the company as a railroad car building business, particularly the passenger car business. The tenacity in retaining this phase of the business proved to be an Achilles' heel. Drain of cash caused stock market prices of the firm to fall so low that Pullman was taken over in 1980 by Wheelabrator-Frye, Inc., a much smaller firm.(10)

Success in one field does not guarantee equal performance in another. In the 1960s and until 1975, the Corning Glass Works dominated the business of making glass envelopes that house TV picture tubes. This company pioneered in the technology which made the instrument possible. In 1966, half of Corning's sales and three-quarters of its profits resulted from this single product line.

The market burst in 1975 when the Japanese blitz of the American TV market occurred, causing orders for Corning's tubes to decline to almost zero. To overcome this sudden change in fortune, Corning obtained control of a French glass-related firm and a British glass producer. Both ventures produced either red ink or marginal profits.

In 1962, Corning purchased Signetics, a maker of integrated circuits, a business Corning did not understand and whose technology obsolescence was so rapid that Corning never did catch up with the rate and amount of changes. Corning had no research, manufacturing, or marketing expertise in integrated circuits; it had no base for competing with those who did.

One more example from Corning's history aids us to see that while diversification may be a necessary condition for survival it does not necessarily lead to success. The company pioneered in research and production of a smooth-top cooking surface made of glass. Because its costs were too high, Corning could not persuade any range manufacturer to incorporate this unit into existing or future products. Therefore, Corning started to make its own ranges. The high-priced stoves achieved only a marginally profitable volume. After selling the range operation to the Amana division of Raytheon, Corning became the supplier of the cooking surface. Both firms are faring better with their respective product lines than before.

The Scovill brothers invested small sums in other enterprises, sometimes to support men who could become useful customers for mill products, sometimes to encourage those who might supply new materials. The company did not hesitate to diversify if the result meant greater orders for the brass mill--brass, itself, or product lines--buttons, medals, coins. It acquired a thimble business in 1858, enabling Scovill to broaden the range of products offered to the garment industry. For the same reason it purchased a cloth-covered button factory at that time.

In 1839 the world learned of a new process of "fixing an image" on a metallic plate. Louis Daguerre, the inventor, specified the use of a sheet of copper plated with silver. Scovill had established an industry-wide reputation as a master producer of rolled metal plate. The interest in the daguerreotype plate was stimulated by the possibilities of business for the Waterbury (Mass.) mill and factory. By 1845 the firm furnished almost the whole supply of these plates for the American market. Indeed, the volume with the New York photographic trade increased so rapidly that Scovill opened its own store in that city in 1846. In addition to plates the store sold cameras, other photographic supplies, and an array of products from the mill. During a 25-year period (1850-1874) the photographic store generated almost as large a profit as the parent. More than 75% of these profits were reinvested in the brass business which enabled Scovill to modernize the factory. The tail enabled the dog to survive and prosper.

The small world of photography business history includes another Scovill relationship. A distributor, Edward Anthony, competed with imported Voigtlander camera and lens products. By 1855, due to changes in distribution, both Anthony and Scovill found it profitable to associate either in production or distribution of photographic products, or both. In 1902 the companies merged under the title of the Anthony and Scovill Company, projecting the name of ANSCO into that industry.

Two diversifications by Scovill since 1900 illustrate the theme of compatibility as a necessary condition for success. Hamilton Beach established an enviable reputation through its skill with "fractional horsepower motors," an essential component in soda fountain equipment, hair dryers, sewing machines, among other industrial and consumer products. Scovill supplied brass as a basic material, and, in addition, offered manufacturing advice to Hamilton Beach, thereby, learning more about its customer's business. This familiarity and confidence made it easier for Scovill to acquire Hamilton Beach in 1923 when the latter encountered financial difficulties. As a creditor Scovill could, by virtue of its experience, provide capital and management and thereby sustain a major customer.

Acquisition of A. Schrader and Sons by Scovill in 1930 is a second example of familiarity as a condition for successful diversification. Founded in 1884 as a maker of Daguerreotype apparatus, the company supplied fittings and valves for rubber products made by the Goodyear Brothers, one of whom, Charles Goodyear, had obtained a patent for the vulcanization of rubber. In 1982, Schrader was granted a patent for a pneumatic tire value. Originally a competitor with Scovill in the photographic equipment business, Schrader became a large buyer of the Waterbury brass mill's output. Again, intensive experience with a customer's processes, and need to keep its customers, led Scovill to purchase Schrader when that company's third generation decided to sell the business due to changing interests. Although Schrader was profitable Scovill incurred considerable indebtedness for the diversification. Schrader's international operations provided Scovill with an opportunity for global trade.

Marketing opportunities may necessitate or justify diversification. However, successful diversification, illustrated by the history of these firms, requires close coordination of the other functions within a firm.

That is, marketing may be a necessary, but often is, an insufficient condition for diversification.

SUMMARY

There is a paucity of history in the current literature of marketing. This is evident by examination of marketing texts, journals, and other periodicals. Yet, the illustrations in this account of eight successful industrial firms demonstrate contributions to marketing thought and practice.

Most textbooks published prior to 1980 ignored the significant relationship between suppliers, or "resources," and a successful marketing strategy. What I have called the "middleman-merchant" role, the two-direction vision, is played throughout the 100-year (or more) history of each of these firms.

America's current concentration on manufacturing as a route to greater productivity is lamentably late. The history of these firms forcibly places before us that manufacturing was always linked to marketing and that each may have been the more predominant function leading to survival and growth. Productivity in these firms was pervasive, not identified with one discrete function. At various points in these individual histories, productivity of capital or labor or both increased from focus on marketing opportunities.

Those charged with formulation of marketing strategy rely partially on the disciplines of economics and demography for forecasting and prediction bases. The objective is to reduce the uncertainty of the future. The existence of demographic changes, e.g. population magnitudes, birth rates, migration, immigration, educational standards, etc., and economic gyrations caused by wars, agricultural and industrial cycles, etc., were certainly present during the century from which these histories were drawn. By deriving lessons from how these eight firms (and others, of course) coped with what were then uncertainties, current managers can derive lessons not only in formulation but also implementation of strategies.

CHART 1: 8 NYSE COMPANIES PAYING DIVIDENDS CONSECUTIVELY FOR 100 YEARS OR MORE

Year of Origin	Year of Initial Dividend In Current Study	Name of Company	Original Business of Firm	Current Business of the Firm (1980)
1. 1802	1856	Scovill	Brass manufacturing; button-making; brass lamps.	mfgs. wide variety of products; housing products Nu Tone; housewares group--Hamilton Beach.
2. 1850	1863	Pennwalt	Mining of salt and production and sale of basic or commodity chemicals, initially caustic soda; in 1860's, petroleum refining and sale of kerosene.	mfgs. several 000 chemical, health, specialized equipment products-worldwide; commodity chemicals; pharmaceuticals, dental, and health equipment for medical field.
3. 1851	1863	Singer	Sewing machines, industrial, and later, consumer	mfgs. consumer and industrial sewing machines; aerospace and marina systems; motor products; furniture; air conditioning controls; electronics
4. 1858	1868	Pullman	Manufactured railroad sleeping cars.	Engineering and construction, oil and gas processing, nitrogen-fertilizers; petrochemicals; transportation equipment
5. 1868	1872	Ludlow	Importer, manufacturer, and seller of jute products	specialty supplier of high value added papers, packaging, and other flexible materials with interests in selected home furnishing products; furniture, carpet cushion, mats, matting and textile
6. 1843	1877	The Stanley Works	Manufactured bolts, tools, then machinery	major factor in production (domestically and abroad) of tools for the construction, industrial and consumer markets; also mfgs. other household, builder and industrial products
7. 1851	1881	The Corning Glass Company	Glass manufacturing and fabrication	mfgs. products made from specialty glasses including consumer products (tableware and housewares: Pyrex, Corning Ware, etc.); consumer durable components (glass bulbs); capital goods components (individual electronic components, optical waveguides, glass piping and fillings, specialty glass products).
8. 1881	1882	Diamond International Works	Manufactured matches	major producer of pkg. and of lumber (pkg. includes production of folding cartons, labels and wrappers, molded pulp items, metal containers, plastic pumps, dispensers and corrugated items, and pulp; lumber includes rough and finished products); operates a chain of 116 bldg. materials outlets and 5 wholesale outlets serving const. and "do-it-yourself" markets in 17 states; owns 1.4 million acres of timberland; consumer products include tissues, towels, fine and business.

ENDNOTES

1. Fact Book, 1980, New York Stock Exchange, 25th ed.

2. 1899 Annual Report, Diamond Match Company, company archives, New York City.

3. Interview with Joseph Meyers, Senior Vice-President, The Stanley Works, New Britain, Conn., October, 1980.

4. Alfred P. Chandler, "Strategy and Structure," Cambridge, M.I.T. Press, 1962, pp. 303-304.

5. The Scovill Company references are voluminous. Malcolm Baldridge, then Chairman and Chief Executive Officer, cooperated extensively with interviews, access to other officers, retired board members, and provided access to a very extensive collection of company documents. Also, several brokerage houses published analyses, the earliest I found to be 1925. Interviews were conducted in Waterbury, Connecticut in September, 1980. The Museum of Waterbury possesses very early records of the company.

6. Mr. Donald W. Davis, Chairman and Chief Executive Officer, The Stanley Works, also was generous with his time, access to historical documents, and by providing introductions to several of the company's executives. I interviewed at The Stanley Works in October, 1980.

7. Ibid.

8. Leavitt, R. K. "Prologue to Tomorrow," Philadelphia, The Pennsylvania Salt Manufacturing Company, 1950, a company history, p. 65. In addition, the two major Philadelphia newspapers' libraries contained stories published about "Pennwalt" dating to the early 1920's. The Philadelphia Public Library includes documents pertaining to this venerable firm. Another source was the Baker Library, at Harvard. This last named source proved to be the best source of information on the Ludlow history.

9. The Diamond Match Company, "Report To The Stockholders, 1901," obtained at the company headquarters, New York City, September, 1980.

10. The Pullman Company Headquarters, Chicago, also included a large number of documents, among them records of shareholders' meetings dating back to the 1890s. Also, I conducted a number of interviews with executives in November, 1980.