THE PHARMACEUTICAL INDUSTRY: A STUDY IN CORPORATE POWER

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Most studies of the pharmaceutical industry have focused on such issues as restrictive patent regulation, ineffective products, duplicative marketing procedures, misrepresentative advertising, and the peculiar noncompetitive structure of markets. These investigations have revealed only certain aspects of the structure of the pharmaceutical industry. Three significant trends are investigated in this paper: international expansion, diversification through mergers and acquisitions, and interlocking directorates with financial institutions. The thesis of this paper is that small-scale drug manufacturing firms have been gradually replaced by large-scale multinational conglomerates. Production and sales are no longer dependent on pharmaceutical products. In the typical case, large-scale pharmaceutical-producing firms have been increasingly linked to financial institutions through interlocking directorates.

The health care industry presently constitutes one of the most promising growth sectors in both the national and international economies.[1] This industry has consistently been one of the top three profit-making industries in the United States and now returns over $3 billion in after-tax profits. Total spending for health care in the United States has more than doubled in the past decade. The Department of Health, Education, and Welfare estimates that national health care expenditures will increase at an average annual rate of 10 to 12 per cent during the 1970s, reaching $125 billion by 1975, or 8 per cent of the gross national product (1).

This article describes three trends within the pharmaceutical industry over the past decade: international expansion, diversification through mergers and acquisitions, and interlocking directorates with banking institutions. The thesis is that, through its larger firms, the pharmaceutical industry has gradually become integrated into larger and more diverse production units that are linked to large banking institutions with increasing frequency. This development is certainly not unique to the pharmaceutical industry; the overall trend in the American economy is toward conglomerated production and marketing units with diversified holdings in numerous industries.

THE DRUG MANUFACTURING INDUSTRY

Presently there are about 2000 American companies which produce or sell pharmaceutical products for human use. The 136 companies that comprise the Pharmaceutical Manufacturers Association account for 95 per cent of the prescription (ethical) drugs sold on the domestic market (2, 3). Rarely is any given product produced

[1] The health care industry includes such disparate areas as pharmaceutical products, precision instruments, medical facilities, and related professional services.

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by more than two or three companies. In fact, more than half of all drug sales are of products made by only one company (4). The 30 largest companies have approximately 75 per cent of the total domestic market (5).

Today, when even *Fortune* magazine (6) asserts that "American medicine, the pride of the nation for many years, stands now on the brink of chaos," the pharmaceutical industry has been for nearly 20 years one of the three most profitable industries in the American economy in terms of percentage return on invested capital (7). Among the largest pharmaceutical firms, profit as a percentage of the sales dollar is consistently more than twice that of the other 500 most profitable American manufacturing enterprises, and profit as a percentage of invested capital is always more than 50 per cent higher, and occasionally twice as high, as that of the other 500 most profitable American manufacturing firms (8). Between 1955 and 1966, for example, the profits of the pharmaceutical industry (based on after-tax income as a percentage of net worth) were never ranked lower than third of the 41 major American industries and in six of those years the industry was ranked first (2). It is also significant that the pharmaceutical industry earns an average return of 18.1 per cent of its invested capital. In comparison, 31 other major industries (including defense, automobiles and trucks, oil, steel, chemicals, airlines, and telephone and telegraph) earn an average of 9.7 per cent on invested capital (4, 9, 10).

Nevertheless, the pharmaceutical industry depends upon developmental breakthroughs that expand existing markets or create new ones. Presently, no new markets have been discovered to match the boom of the last quarter century: antibiotics in the late 1940s, tranquilizers in the late 1950s and early 1960s, and birth control pills in the early and mid-1960s (9, 11-14). In 1959, for example, 315 new pharmaceutical products were introduced on the market. By 1968 this number had declined to 87, and by 1970 the number of new products had dwindled to approximately 12 (9). To compensate for this research and development downturn, the pharmaceutical industry has turned to advertising and promotion to maintain and expand sales. Even as early as 1958, the 22 largest pharmaceutical firms spent $580 million in advertising and promoting their products. This expenditure represented 24 per cent of sales, compared to 6 per cent spent in its much-heralded research and development efforts that are matched by very few other industries (15). By 1963, the advertising-to-sales ratio ranked first nationally at 15.4 per cent, followed by soaps and cleaners at 12.1 per cent (16). This relationship has remained generally constant since that time.

INTERNATIONAL EXPANSION

International expansion is unquestionably the fastest growing operation of the American pharmaceutical industry. This expansion occurs less through increased exports than through the establishment of branch plants and the acquisition of preexisting manufacturing and sales facilities. All in all, American pharmaceutical sales overseas are expanding at an annual 15 per cent rate, nearly double the annual rate at home. Presently, over 30 per cent of the total revenue of American-based pharmaceutical firms originates abroad; this is projected to reach about 50 per cent by the end of this decade if the present rate of expansion continues (17). This figure represents a significant increase in foreign revenues since 1960, when the figure was 23 per cent (18). Table 1 reveals the

Table 1

The top fifteen pharmaceutical firms in the United States by drug sales, total sales, and foreign sales, in thousands of dollars, for 1960 and 1970[a]

Rank by Drug Sales, 1970	Drug Sales				Total Sales		Foreign Sales as Percentage of Total	
	1970	Percentage of Total	1960	Percentage of Total	1970.	1960	1970	1960
1. American Home Products	$732	52	$227	48[b]	$1,382	$480	24	19
2. Pfizer Corporation	708	80	269	90[b]	885[b]	262[b]	48	25
3. Warner Lambert Company[c]	691	55	137	49	1,257	271	36	30
4. Merck & Company, Inc.	673	90	207	95	748	218	38	26
5. Bristol-Myers Company	490	50	74	50	981	147	16	6
6. Sterling Drug, Inc.	451	70	134[b]	75[b]	644	246[b]	42[d]	37
7. Eli Lilly and Company	428	71[b]	161[b]	90[b]	592	179	28	6
8. Abbott Laboratories	412	90	116[b]	92[b]	458	126	28	25[b]
9. Richardson-Merrell, Inc.	346	92	114	95	381	132	39	22
10. Squibb Corporation[e]	339[f]	42	–[g]	–	784	–	22[b]	–
11. Upjohn Company	338	90[b]	150	95[b]	398	159	33	12
12. Smith Kline & French Laboratories	265	75	–	–	–	–	23	–
13. Schering Corporation	255	65[b]	–	–	402	–	30	–
14. Dart Industries, Inc.[h]	247	38[b]	–	–	703	–	–	–
15. American Cyanamid Company	243	21	–	–	1,158	–	20	–

[a] Sources, Company Annual Reports.

[b] Author's estimate.

[c] Includes Parke-Davis (1970 data: total sales, 273,542; drug sales, 247,000; foreign sales, 42%).

[d] 1965 data.

[e] Named Squibb Corporation in 1969; formed as Squibb Beech-Nut in 1965.

[f] 1969 data.

[g] Dashes indicate data not available.

[h] Formerly Rexall Drug & Chemical.

expansion of foreign investment between 1960 and 1970.[2] Western European and Latin American markets are expanding at a slightly higher rate than that of the domestic United States, but the Asian and Australian markets are currently expanding at nearly double the rate of the United States.

The foreign expansion of pharmaceutical firms assumes the form of true "multinational" investments--the typical production facility imports the bulk of its inputs, exports nearly all its output, and thus remains almost totally unintegrated into the local economy (19). There is no doubt that this type of investment has had a tremendous effect on local economies. The experience of the past few decades is that American-based pharmaceutical firms utilize low-cost local labor, drain local capital reserves, subsume by acquisition small-scale local manufacturing and sales facilities wherever possible, and otherwise dominate local and regional foreign markets by virtual monopoly over international licensing agreements, patents, research and development, and the latest technologic advances.

One aspect of this multinational investment is that foreign plants purchase inputs from one branch of a corporation, which may be located in a different country, and sell final outputs to another branch of the same corporation located elsewhere (19). This type of investment is often characterized by "product-by-plant" specialization. In the typical case, large-scale pharmaceutical firms import technically skilled personnel, specialized technology, and the necessary raw materials, acquire the required capital either through local capital markets or directly from parent firms, and finally export the completed product to specially designated marketing areas to be distributed through sales offices located elsewhere. This entire process takes place outside the domestic United States, except for the importation of the final output in many, although not all, instances. In Puerto Rico, for example, the drug and pharmaceutical industry has developed into a substantial United States drug-producing auxiliary. A study conducted by Puerto Rico's Economic Development Office in 1970 revealed that, of 47 drug-manufacturing plants which were in operation, a total of 29 were established by 14 American firms. Of 16 additional projects that were being established in 1970, 14 were expansions of United States firms. Prior to 1960, the pharmaceutical industry in Puerto Rico included only two American-based drug-producing auxiliaries. Production in the industry exceeded $89 million by 1968, an increase of over 150 per cent from 1965. By 1970 approximately 67 per cent of the final output of the Puerto Rican pharmaceutical industry was exported to the United States, 15 per cent to other countries, and the remainder sold on the Puerto Rican market (20). In addition, most foreign pharmaceutical firms operating in Puerto Rico have been able to take advantage of the 17-year, 100 per cent tax exemptions on property taxes, excise taxes, municipal taxes, and licensing offered by the Puerto Rican government. Costs of production are further reduced by the inexpensive price of labor, particularly that of women (21).

Another example of the base of operations of multinational investment can be seen in the Colon Free Zone in Panama. This area has been called the "doorstep to Latin American markets." Here there are no export levies, no customs duties, no processing taxes, and no currency restrictions on foreign investors. Fifteen American firms, including Bristol-Myers, Wyeth (American Home Products), Syntex, Schering, Revlon, Pfizer, Parke-Davis, and others, operate manufacturing facilities there. One final point deserves

[2] The Pfizer Corporation is the leading pharmaceutical firm in terms of foreign sales. Nearly 50 per cent of its sales are concentrated overseas and more than 50 per cent of its profits are from overseas sales.

mention. The large number of American-based pharmaceutical firms does not imply a great deal of competition. Monopolies and oligopolistic pricing are made possible by the nonduplication of product lines of the "competing" American-based firms.

Another aspect of multinational investment is vertical and horizontal integration. The typical large-scale pharmaceutical firm is dependent upon a strong chemicals-manufacturing base, preferably of its own making or readily available from local sources or prearranged importation. Pfizer, for example, has expanded its operations through vertical growth in Ireland, Colombia, and Mexico. By 1972, Pfizer had completed two major organic chemical synthesis plants and a drug-production unit in Ireland, opened its third petrochemical plant (40 per cent owned) in Mexico, and completed its Colombian chemical plant to complement its pharmaceutical facilities there (22-24). American Cyanamid, on the other hand, is basically a chemical producer which has reduced chemical sales to under 35 per cent of total volume and under 28 per cent of net profit. American Cyanamid has increased its emphasis on ethical drugs through forward vertical mergers into the pharmaceutical field, through its Lederle Labs division, and through its substantial chemical production facilities (25).

The rhythm of pharmaceutical investment of American-based corporations generally follows a discernible pattern. Sales outlets are usually the first form of penetration and are typically followed by manufacturing facilities. Upjohn, for example, began distribution operations in Argentina in 1947, purchased an existing pharmaceutical plant in 1962 to begin local manufacturing, and then sold this facility in 1968 to make way for the construction of new facilities for the manufacture of pharmaceutical, agricultural, and veterinary products (26). Pfizer's operations in Brazil are another case in point. Pfizer began sales work there in 1950, made an initial investment of $25 million in 1952, and by 1962 had built its Brazilian operations to where they ranked second only to Great Britain in total foreign assets (27).

A third aspect of multinational investment of American-based pharmaceutical firms is "product-by-plant" specialization. The manufacture of pharmaceutical products involves standardized procedures and requires an established array of raw or partially produced materials. To minimize costs of production, multinational pharmaceutical firms coordinate their production processes on a worldwide basis. Parke-Davis, for example, recently completed the construction of a number of plants specializing in the manufacture of empty gelatin capsules in France, Mexico, Australia, and Canada, and expanded existing facilities in Japan. These capsules are then exported to other countries where Parke-Davis has affiliates and subsidiaries (28). Two studies of the Brazilian pharmaceutical industry have shown that in 1962 foreign pharmaceutical firms used 4 per cent Brazilian raw materials, 6 per cent imported finished products, and 90 per cent imported raw materials in production (29, 30).

This "product-by-plant" specialization offers advantages to foreign firms through transfer pricing. In this process, American-based parent companies often overcharge local affiliates for machinery or technical assistance, or, in the reverse situation, a foreign affiliate or subsidiary undercharges the American-based parent for raw materials or for the output produced in the foreign country. Pricing is thus transferred from one country to another to avoid taxation, inflation, or currency regulations. A recent study of the Colombian pharmaceutical industry has shown how this process works there (31). In this study of 17 foreign-owned firms in Colombia (which comprise 40-50 per cent of the national pharmaceutical industry), intermediate goods are imported at prices 155 per cent higher than standard market prices in Europe and the United States. These goods are first

shipped to Panama, where taxation is extremely low, and then exported to Colombia with substantially raised prices. Hence, the European or United States supplier realizes low profits and is taxed accordingly, whereas the Panamanian supplier realizes high profits at low taxation. The high costs of inputs for the foreign firms located in Colombia result in lower profits and thus lower taxes. It is estimated that the annual tax loss to the Colombian government in the foreign-owned sector of the pharmaceutical industry alone amounts to approximately $6 million (31).

A fourth aspect of multinational investment is the wide variety of sources of financing. First, United States pharmaceutical affiliates and subsidiaries are financed by loans and investment subsidies from the parent firms themselves. American-based firms directly finance foreign expansion through the combination of retained earnings at home and capital returns through royalties, licensing agreements, and remitted earnings from other overseas operations. In addition, capital generally flows from the lesser developed nations to the more developed nations. Pacheco (29) and Machado (30), for example, claim that by 1959 nearly $100 million had left Brazil in royalties alone. In 1960, $21.5 million ($17.8 to the United States) was remitted in royalties to European and American multinational firms. Another example of this typical situation is that of Merck & Company, which remitted approximately 78 per cent of earnings from subsidiaries and branches to the United States in 1970 (32).

Second, foreign subsidiaries, branches, and affiliates of American-based pharmaceutical firms are financed by local capital. Pfizer's $1 million program for expansion of existing chemical facilities in Ontario, Canada, was financed in part by a $250,000 "forgivable" loan from the Ontario Development Corporation, an agency of the Canadian government. "Forgivable" loans are made to stimulate expansion in so-called "slow-growth" industries, and in Pfizer's case the loan will not have to be repaid if certain conditions are met over the next six years (33). Local capital is mobilized through the sale of bonds and through loans from financial institutions. One way that pharmaceutical firms frequently reduce taxes, and thereby increase profits, is by raising as little capital as possible from equity (stock) sources for their overseas operations. The reason is that interest payments for loans by a company are tax-deductible whereas dividend payments for equity are not. Instead, foreign affiliates typically borrow as much as possible either from American-based parent firms or from local sources. This "undercapitalization" in turn reduces the threat to pharmaceutical firms from nationalization, since minimal amounts of their own funds (equity/ownership) are invested (34).

Third, foreign subsidiaries and branch plants of American-based pharmaceutical firms are partially financed by retained earnings accumulated through local sales. Fourth, foreign affiliates are partially financed by United States government subsidies in the form of guaranteed loans or outright purchases. Under the foreign aid program, the Agency for International Development, for example, finances the overseas sales of bulk pharmaceutical products manufactured by American affiliates (35). Eli Lilly has in fact initiated a government sales department within its overseas operations to facilitate United States government purchases of pharmaceutical products (36). Long-term, low-interest loans such as those from the "Cooley Fund" are granted to overseas operations of American-based corporations in order to stimulate and expand markets for United States agricultural commodities. In 1965, Lab Wyeth Interamericanos (American Home Products) in Peru received a Cooley Fund loan of $111,000 to facilitate the construction of a pharmaceutical plant (37).

A fifth aspect of multinational investment of American-based pharmaceutical firms is the process of "denationalization." Until publication of its annual report on mergers and acquisitions was curtailed, the trade journal *American Druggist* noted no fewer than 82 foreign acquisitions in the drug field by American-based firms between 1959 and 1968. A cursory look at three countries reveals that one form of international expansion by American-based pharmaceutical firms is the purchase of existing manufacturing and sales facilities, thereby reducing the extent of local ownership. In Brazil, for example, studies by both Pacheco (29) and Machado (30) show that by 1962 over 90 per cent of the Brazilian pharmaceutical industry was foreign-owned, compared to the 66 per cent foreign ownership figure for 1957.

A study conducted on the Mexican pharmaceutical industry in 1962 showed that, from a cross-sectional selection of 150 companies (from a total of 420 in Mexico), 104 (or 69.3 per cent) were foreign-owned. This 69.3 per cent figure represented 84.5 per cent of the total capital invested in the pharmaceutical industry. Thirty-seven American-based firms represented the total United States investment of $34.2 million and 61.4 per cent of the total foreign investment (38).

The absorption of national firms has also taken place in the Italian pharmaceutical industry. The Italian pharmaceutical market represents over $1 billion in total sales; foreign ownership has expanded to somewhere between 35 and 50 per cent (39). Between 1963 and 1968, the *American Druggist* listed six acquisitions by American firms, making the Italian industry one of the markets hardest hit by American-based pharmaceutical firms.[3]

MERGERS AND ACQUISITIONS

Mergers and acquisitions have played a major role in the development of the pharmaceutical industry. Between 1952 and 1957, a total of 189 mergers occurred—an average of 32 per year (40). In comparison, a total of 581 mergers occurred between 1963 and 1968—an average of 97 per year. Table 2 relates the merger activities of the 15 largest drug-producing firms in 1970 to the overall merger activities between 1959 and 1968. In the first five-year period (1959-1963), the mergers of these 15 firms comprised 10 per cent of the total. In the second five-year period (1964-1968), the mergers of the 15 firms accounted for 16 per cent of the total number. In recent years, the major drug manufacturers have emphasized the acquisition of foreign firms. Fifty-one such acquisitions were completed between 1964 and 1968. In comparison, only 32 foreign acquisitions by American-based pharmaceutical firms occurred during the period of 1959 to 1963.

Merger and acquisition activities represent three key trends within the pharmaceutical industry. First, mergers and acquisitions contribute significantly to market concentration in the pharmaceutical industry in the United States. Although there are more than 1200 drug manufacturers in the United States, the 124 companies that comprise the Pharmaceutical Manufacturers Association manufacture about 95 per cent of domestic prescription (ethical) drugs (13). While no single pharmaceutical manufacturer contributes more than 7 per cent of the market (13), the peculiar structure of the

[3] Previously, in the first issue of every year, the *American Druggist* ran an article on the previous year's mergers and acquisitions. Unfortunately, this practice was discontinued after the 1969 report.

Table 2

Mergers and acquisitions in the pharmaceutical industry, 1959-1968[a]

Year	No. of Mergers	Mergers by 15 Largest Firms, 1970[b]	Mergers with Foreign Firms
1959	50	4	5
1960	66	2	6
1961	64	6	1
1962	70	9	9
1963	71	12	11
Total, 1959-1963	321	33 (10% of total)	32
1964	106	17	14
1965	113	17	13
1966	79	14	8
1967	94	13	8
1968	118	21	8
Total, 1964-1968	510[c]	82 (16% of total)	51

[a] Sources, *American Druggist*, issues of January 11, 1960, January 9, 1961, January 8, 1962, January 7, 1963, January 6, 1964, January 4, 1965, January 3, 1966, January 2, 1967, January 1, 1968, January 13, 1969.

[b] The 15 firms, in order of drug sales, are the following: American Home Products, Pfizer, Merck, Bristol-Myers, Sterling, Eli Lilly, Warner Lambert, Abbott, Upjohn, Richardson-Merrell, Squibb Beech-Nut, Smith Kline & French, Parke-Davis, Rexall Drug & Chemical, American Cyanamid. The 1970 merger of Schering-Plough placed the new firm in the 15 largest, but it was excluded from Table 2 data because neither Schering nor Plough ranked in the 15 largest during 1959 to 1968. If Squibb Beech-Nut were excluded because it did not actually become constituted as such until 1965, Miles Laboratories would be included. This alteration would only change the data slightly (1959-1963: total 323, 35 mergers among 15 largest; 1964-1968: total 514, 86 mergers among 15 largest).

[c] This figure represents a 60 per cent increase over the previous five-year period.

pharmaceutical market provides a virtual monopoly owing to the separate, noncompetitive nature of their products. Two American-based firms (Syntex and G.D. Searle), for example, dominated the oral contraceptive market in the early 1960s (41), and Abbott Laboratories presently manufactures over 45 per cent of the intravenous solution used in the United States and over one-half used in hospitals and clinics (42, 43). The unusually lengthy exclusive patent right (17 years) in the United States pharmaceutical industry makes it easier for a relatively small number of firms to dominate markets through their own manufacturing and sales and licensing agreements.

The 1970 merger of Schering and Plough (both ranked in the top 20 in total drug sales) reflects the tendency within the pharmaceutical industry to combine firms formerly oriented to different marketing areas. Schering primarily manufactures and markets ethical pharmaceutical preparations; Plough primarily produces proprietary (nonethical) preparations, toiletries, cosmetics, and household products. The federally contested merger of Parke-Davis and Warner Lambert is another case in point. According to the Interstate Commerce Commission, 42 per cent of sales in the $4.7 billion-a-year hospital-drug store market rests with eight companies. The merger of Warner Lambert and Parke-Davis in 1970 could result in the elimination of competition in 52 specific drug lines (44). The merger of these two giants makes Warner Lambert the third ranking

pharmaceutical firm in total drug sales. Nevertheless, 1977 is the earliest possible date Warner Lambert would be forced to divest itself of Parke-Davis, if divestiture occurs at all.

A second significant trend within the pharmaceutical industry is a broadening of operations by the largest companies. Mergers and acquisitions reflect this movement of pharmaceutical firms to establish a permanent beachhead in the rapidly expanding health care market, now estimated at nearly $12 billion a year, as well as in totally unrelated production and marketing areas. Abbott Laboratories' diversification program is an excellent example of this trend. In 1970, one-quarter of Abbott's total sales came from mergers or acquisitions made since 1964 (45). Hospital and pediatrics products now account for about 40 per cent of Abbott's total volume sales (46).

Abbott's diversification program is typical of other large firms in the pharmaceutical industry. This company recently branched into the eye care market (with the purchase of Murine Company in 1969), the health products industry (Courtland Labs was acquired in 1967, and the Borchedt Company, Reference Labs, and Labor-Source Gmb H of West Germany in 1968), and the foods industry (with the purchase of Leslie Salt Company's Spice Islands operations, including a manufacturing plant and an herb farm, in 1969). In addition, Abbott has recently entered the medical electronics field with a line of nuclear instruments to complement its radio-pharmaceuticals, of which it is the largest American-based manufacturer (47, 48). Abbott has also recently purchased a golf club plant (49).

Diversification in the pharmaceutical industry can also be seen elsewhere. The charter members of the drug-producing field, Eli Lilly and Upjohn, have significantly reduced their dependence on pharmaceuticals to around 70 per cent of total sales.[4] Some particular cases of diversification are worth mentioning simply because they are so totally unrelated to pharmaceuticals. Bristol-Myers, for example, has expanded into the movie-making and television business (50). Eli Lilly has entered the commercial livestock market (51), and Merck has entered the anti-pollution industry with the purchase of the second largest water purification company in the United States (Calgon Corporation) and a manufacturer of water thermal pollution control equipment (52).

In the typical case, the largest pharmaceutical firms have expanded their operations first into the entire range of fields in the health care market, then into such other areas as prepared foodstuffs, animal health care, chemicals, confections, toiletries, household products, and cosmetics. The inescapable conclusion is that a distinctly "pharmaceutical" industry no longer exists.

The third key trend represented by the mergers and acquisitions in the pharmaceutical industry is the attempt of large-scale conglomerates to partake in the profitability in drug manufacturing and sales. Numerous American-based corporations have acquired pharmaceutical manufacturing facilities or retail pharmaceutical outlets: Coca Cola (1964), Litton Industries (1964), Minnesota Mining and Manufacturing (1964), American Hospital Supply (1959), Dow Chemical (1960), Standard Oil (1963), Bell & Howell (1961), Colgate-Palmolive (1961), Liggett & Meyers (1968), Philip Morris (1963), Penn Central Railroad (1968), J.C. Penny (1968), Pennsalt Chemicals (1968), International Paper (1968), Foremost Dairies (1965, 1967), Pepsi-Cola (1965), United Fruit Company (1965), Hershey Chocolates (1966), and Standard Metals (1967) are only a few. Food

[4] Both Eli Lilly and Upjohn are conservative, family-controlled firms. Family interests control approximately 35 per cent of Upjohn and about 25 per cent of Lilly.

chains have also diversified into the retail drug field in order to expand their product lines with "high margin" merchandise. The cosmetics producer Revlon is an excellent example of how firms traditionally outside the drug-producing field have entered the field to capture its exceptional profitability. Between 1959 and 1968, Revlon made 13 acquisitions of manufacturing firms, wholesale houses, and chain store facilities in the drug, toiletry, and allied fields.[5]

Large-scale conglomerates have entered the pharmaceutical industry. The largest United States pharmaceutical producer, American Home Products, has approximately 50 per cent of its total sales in other unrelated fields. Squibb Corporation, the tenth-ranked pharmaceutical producer in 1970, has only about 38 per cent of its total sales in the drug field. Finally, the large-scale chemicals producer, American Cyanamid, has only about 30 per cent of its total sales in pharmaceuticals. Nevertheless, that was enough to rank it fifteenth in total drug sales in 1970.

Table 3

Growth of the Warner Lambert Company from 1952 to 1971[a,b]

Year	Drug Firm Acquired or Merger Effected
1952	Chilcott Laboratories
1955	Lambert Pharmacal Company
1956	Emerson Drug Company
1957	Nepera Chemical Company
1961	Lactona, Inc.
1962	DuBarry Perfumery Company (United Kingdom)[c]
1964	Laboratories S.A.M. (Belgium)
	Hall Brothers (United Kingdom)
1966	General Candy
	Texas Pharmacal Company
1967	American Optical
	Vister S.p.a. (Italy)
1969	Elizabeth Bio-Chemical Laboratory
1970	Eversharp's Schick Wetshave
	Parke-Davis
	Surgident Limited (United Kingdom)
	Universal Dental Corporation
	Pope Brace Company[d]
	Brewer Pharmacal Engineering Company[d]
1971	Sarce GMBH (West Germany)[d]

[a] In 1952 the firm was known as Warner Hudnut, Inc.; in 1955 the name was changed to Warner Lambert Pharmaceutical Company; and in 1970 the present name was adopted.

[b] Sources, Warner Lambert, *Annual Report*, 1970; *Business Week*, February 20, 1971; *Moody's Industrial Manual*, Moody's Investor's Service, Inc., 1970, pp. 1970-1974.

[c] Purchased by an English subsidiary.

[d] Acquired by Parke-Davis.

[5] See sources listed for Table 2.

Mergers and acquisitions in the pharmaceutical industry have met with unusual success. The Justice Department antitrust division, for example, has conducted an average of only 13 antitrust trials per year in the entire economy over the past decade. The pharmaceutical industry itself represents an expanding growth sector of the economy. The typical pharmaceutical firm has rapidly expanded its worldwide sales and decreased its dependency upon strictly pharmaceutical products. Table 3 reports the growth of Warner Lambert Company from 1952 to 1971. It is clear that mergers and acquisitions of existing firms and facilities represent the quickest way for the typical large-scale pharmaceutical firm to attempt to gain commanding positions in specific markets within the industry and to expand to growth sectors outside of pharmaceuticals.

RELATIONSHIP TO FINANCIAL INSTITUTIONS

Table 4 presents a company-by-company examination of the 20 largest pharmaceutical companies ranked by total drug sales in 1961 and 1972. The number of total interlocks expanded approximately 92 per cent between 1961 and 1972. In contrast, the number of directorates interlocking with financial institutions expanded 132 per cent in the same period. In 1961, the 20 largest pharmaceutical firms averaged 3.5 interlocks with financial institutions; by 1972, that average had increased to 8 per company. With a total of 18, Bristol-Myers ranked first in 1972 for the greatest number of interlocks with financial institutions.

Table 4 also depicts the relationship between the "inside" director and "outside" director of the 20 largest pharmaceutical companies. The inside director is defined as any individual who is listed on the board of directors of the firm under scrutiny and is not

Table 4

Twenty pharmaceutical firms ranked by total 1972 drug sales, showing type of directors and interlocking directorates for 1961 and 1972[a]

Company and Year	No. of Directors			Interlocking Directorates	
	Total	Inside	Outside	Bank/Investment	Total[b]
1. American Home Products					
1961	12	6	6	4	17
1972	10	4	6	11	44
2. Pfizer Corporation					
1961	14	11	3	2	4
1972	12	6	6	1	16
3. Warner Lambert					
1961	17	6	11	11	33
1972 (merged[c])	16	3	13	13	48
4. Merck & Company, Inc.					
1961	12	4	8	6	21
1972	15	5	10	7	38
5. Bristol-Myers Company					
1961	10	5	5	5	10
1972	11	0	11	18	59
6. Sterling Drug, Inc.					
1961	8	3	5	2	18
1972	11	4	7	1	28

Table 4 continued

Company and Year	No. of Directors			Interlocking Directorates	
	Total	Inside	Outside	Bank/Investment	Total[b]
7. Eli Lilly and Company					
1961	14	10	4	2	11
1972	20	10	10	5	37
8. Abbott Laboratories					
1961	15	11	4	3	16
1972	13	2	11	14	43
9. Richardson-Merrell, Inc.					
1961	8	6	2	2	7
1972	8	1	7	2	24
10. Upjohn Company					
1961	18	15	3	2	4
1972	13	5	8	7	14
11. Smith Kline & French					
1961	16	8	8	3	24
1972	13	6	7	13	36
12. Schering Corporation					
1961	9	4	5	4	20
1972	13	5	8	8	27
13. Dart Industries, Inc.					
1961	16	9	7	5	25
1972	19	6	13	10	32
14. American Cyanamid Company					
1961	14	2	12	1	39
1972	12	3	9	9	41
15. Miles Laboratories					
1961	15	6	9	2	12
1972	14	9	5	3	11
16. G. D. Searle & Company					
1961	9	4	5	5	13
1972	11	1	10	10	20
17. Johnson & Johnson					
1961	21	13	8	3	10
1971	17	12	5	0	12
18. Morton-Norwich					
1961	14	7	7	4	29
1971	12	0	12	11	58
19. A. H. Robins					
1961	4	2	2	3	8
1971	6	0	6	10	31
20. Baxter Laboratories					
1961	5	4	1	0	2
1972	10	5	5	7	26
Total					
1961	251	136	115	69	323
1972	256	87	169	160	625

[a] Sources, *Poor's Register of Corporations, Directors and Executives, United States and Canada, 1961*, Standard and Poor's, New York, 1961; *Poor's Register of Corporations, Directors and Executives, United States and Canada, 1972*, Standard and Poor's, New York 1972; *Million Dollar Directory, 1972*, Dun and Bradstreet, New York, 1972.

[b] This figure does not include subsidiaries, either domestic or foreign.

[c] "Merged" refers to the 1970 merger of Parke-Davis and Warner Lambert.

listed on any other industrial or banking-investment firm's board of directors. An outside director is defined as any individual who is listed on one or more boards of directors in addition to the pharmaceutical firm under scrutiny. In 1961, inside directors comprised 54 per cent of the total number of directors. By 1972 the proportion of inside directors had slipped to 34 per cent.

Table 5 reveals that inside directors had a fatality of 84.1 per cent between 1961 and 1972. In contrast, the survival rate of "outside" directors (whether with financial or nonfinancial interlocks) remained slightly over 50 per cent during the same period. It seems clear that the major factor predicting survival is whether the director is an inside or outside director.

Table 5

Retention rates for total outside directors, outside directors with bank/investment interlocks, and inside directors, 1961-1972[a]

Type of Director	No. in 1961	No. Retained	Retention Rate
Total outsiders	117	64	54.7
Outsiders with bank/investment interlocks	66	34	51.5
Inside directors	136	23	15.9

[a] Sources, see Table 4.

Two more specific examples also point to a closer relationship between the largest pharmaceutical firms and financial institutions. First, the proposed new board of directors for the 1970 merger between Warner Lambert and Parke-Davis had 17 directors, 10 of whom also represented financial institutions. This 1971 board of directors was composed of four directors taken from the Parke-Davis board of directors. Three of these four also represented financial institutions, interlocking a total of five times. Second, the largest pharmaceutical firm, American Home Products, interlocked five times with the Manufacturers Hanover Trust complex, one of the largest financial institutions in the United States. In each of three years surveyed (1961, 1966, and 1972) the American Home Products had a different chairman of the board of directors. In each year this chairman also served as a director of Manufacturers Hanover Trust.

CONCLUSIONS

In recent years criticism of the pharmaceutical industry has intensified, focusing on restrictive patent regulation, ineffective products, duplicative marketing procedures, misrepresentative advertising, overpricing, noncompetitive pricing, and the ill effects of many drug lines owing to insufficient research and ineffective quality control (53-59). Yet these features of the pharmaceutical industry cannot be fully understood without an analysis of the structure of the industry and the actual locus of power. International expansion, diversification through mergers and acquisitions, and interlocking directorates with financial institutions are part of the changing structure of the pharmaceutical industry and changing power relations.

At present, the stability of the pharmaceutical industry rests on its high rate of profit in the past which was accomplished through periodic market breakthroughs, restrictive

patent regulations and licensing procedures, oligopolistic pricing, and the peculiar noncompetitive structure of the pharmaceutical markets. The industry itself is highly concentrated in 30 large firms (5, 9), which typically determine the rhythm of production and distribution within the industry in general because of their ability to make long-range planning decisions. Small-scale firms are compelled to conform to the patterns adopted by the major manufacturers with regard to pricing, allocation of profits, production goals and techniques, labor relations, investment priorities, purchasing conditions, the scale and type of expansion, and marketing policies.

No longer is the pharmaceutical industry characterized by drug manufacturing alone. Backward and forward vertical growth and straight horizontal expansion have integrated into widely diversified corporations large segments of the following industries: chemical, cosmetics and toiletries, animal health care, hospital products, consumer products, agricultural products, and pharmaceuticals. Growth in these corporations depends less on research and development, introduction of capital, intensive production techniques, and improved marketing than on outright acquisition or merger with other firms engaged in either similar or dissimilar lines of manufacturing or sales.

Problems such as stock and bond issues, mergers and acquisitions, mobilization of capital, the anticipation and "rationalization" of corporate debt, diversification, foreign currency regulations, and foreign tax policies and licensing regulations require a technical knowledge of finance beyond the expertise of most salaried executives of nonfinancial corporations (60). The typical large-scale pharmaceutical firm has become integrated into financial institutions through the expansion of interlocking directorates. In 1972, half of the chairmen of the boards of directors of the 20 largest pharmaceutical firms also sat on the boards of directors of at least one financial institution. This figure represents an increase of nearly 100 per cent over that of 1961, and supports the view that the men who control the large-scale pharmaceutical firms are both industrialists and bankers.

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